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Evaluating the Impact of Promotional Activity on Marketing

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Abstract – Promoting is part of the marketing mix. The promotional activity communicates the benefits of the products or actions of potential and current customers. The tools used in the promotional mix are advertising, direct marketing, sales promotion, public relations, personal sale and sponsorship. This study carries out a marketing analysis to promote products with promoters. The study is based on questionnaire research and literature research. At the end of this article is developed a conceptual framework for intercourse with the client in promoting direct communication strategies by exploiting the concepts of promotion such as target audience, marketing messages, communication channels, Promotional budgets and promotional performance monitoring.

Keywords: marketing, promotional mix, drinks, promotion, direct marketing.

I. INTRODUCTION

Promoting is an important means of communicating with current and potential customers, being used by all organizations wishing to highlight their products or launch them on the market. In order to make the communication process more effective, organizations need to align with customer needs and wishes [3]. This alignment can be achieved by identifying and analyzing the buyer's behavior. In this respect, the first step they need to do is to research the market, as marketing research leads to the identification of consumers' demands from them. Communication, in its essence, has been and is a relatively simple method. "Local newspaper advertising was the primary medium, and the message usually tends to provide incentives – usually a special price – to motivate customers to visit the store" [2].

At present, a variety of methods and channels are used by which an organization can promote its products, services and brand, but must pay more attention to target segments, the specificity of the offer or activities, and last but not least the budget. Technology has contributed to the use of the online promotion environment that is continually successful. However, certain products, such as beverages, food, are attractive to customers if they can be tested [3; 2].

The present work is structured on three parts. In the first part, the promotional activity of an organization is approached, the second part presents the results of a questionnaire survey on the satisfaction of young people in relation to the face-to-face promotion, and at the end of the paper is proposed a conceptual framework for intercourse with the client in promotion direct.

II. PROMOTIONAL ACTIVITY: IMPLICATIONS, OBJECTIVES AND TOOLS

Promotion activity can be seen as the action to coordinate all the efforts initiated by sellers to create channels of information, to facilitate the sale of goods or services or to accept an idea on the market. Promotional activity must achieve the goals set by the organization that fall in the directions of information, influence or persuasion [3; 4]. Promotion objectives should be developed in accordance with the overall objectives, vision and mission of the organization (see Figure 1).

Thus, the objectives of an organization that develops a promotion strategy come from a combination of the following: competitiveness, sustainable development, sales growth, brand recognition, market share,

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competitive advantage over competing products or their position on Market, the creation of a favorable climate for future sales, the expansion process, the penetration of new markets / segments and other actions [4].

In order for these promotional objectives to be met, it is necessary to create a promotional mix using specific tools. Choosing an instrument or more is directly related to the ability of the method to meet the promotional goal. Among the promotional tools [3; 2; 4] are the following:

- Advertising: paid form of presentation and non-personal promotion of goods or services (media advertisements with the help of television, newspapers and magazines, via the Internet or radio, flyers or street posters);
- Direct marketing: non-personal contract tools such as phone are used to request a response from clients or professional magazines;
- Promotional sales (price cuts), a method especially used to increase sales over a certain period of time to encourage the testing or purchase of a product, or to launch it again;
- “Face-to-face” promotion, personal sales, which is a direct interaction with customers or potential clients, thus enabling the service agent to provide explanations of the promoted products;
- Merchandising, using and arranging presentation equipment in a store to communicate the benefits

of a product and / or present the product in a favorable and attractive way for the customer;

- Exhibitions and fairs, product presentation of organizations to communicate the potential benefits of products to current and potential customers;
- Sponsoring, improving the image of the organization or brand by financing independent activities (sports activities, company activities and others).

Through the research of the specialized literature, in Figure 2, a systematization of the methods was carried out. Most of these integrate technology, so the transposition of reality into different forms is in the shape of a wider range of applications [3; 5; 1].

In this paper, we chose to address the latter method because it focuses on direct contact with customers, but especially consumers. Depending on the products of the organizations, this method can be considered the most appropriate [6; 7; 8]. This approach to people generates certain information about their requirements. Customers need to be constantly informed about the types of products an organization can make available to them, and that is why there is promotion, to be the direct link between the customer and the product.

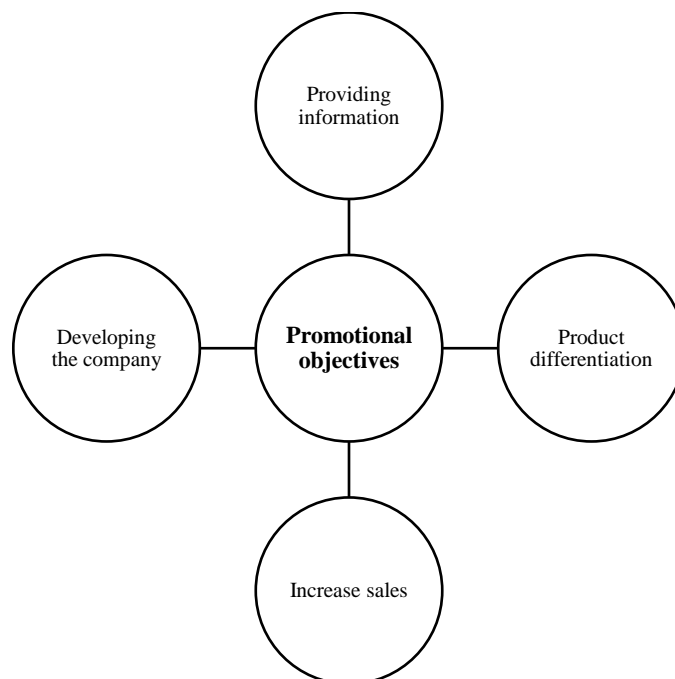


Figure 1. The main promotional objectives of an organization.

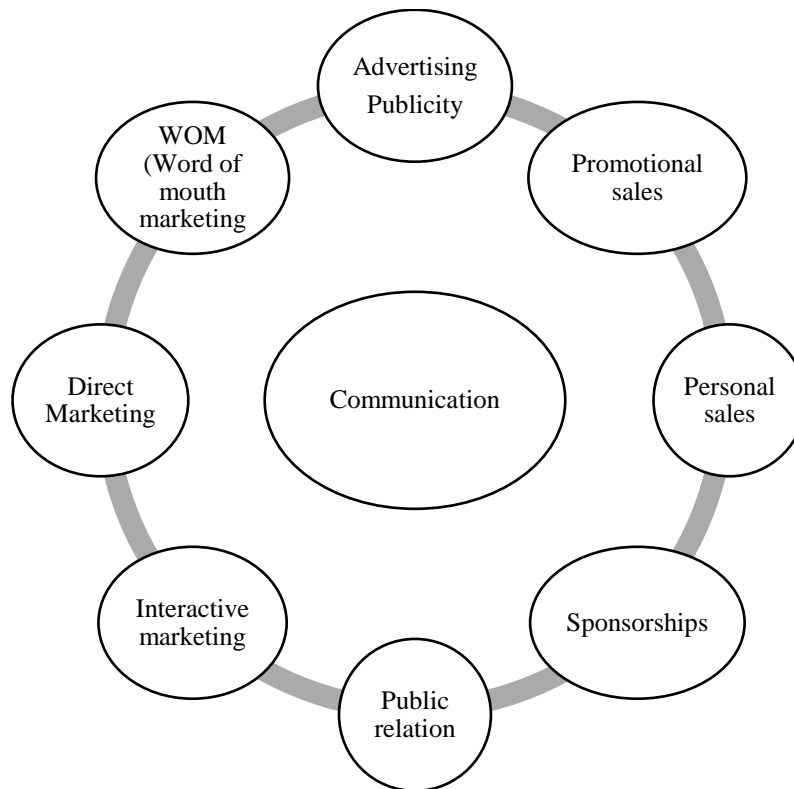


Figure 2. Tools related to the promotion activity

III. METHODOLOGY

The methodology approached in this paper is the questionnaire survey and the inventory of the information found on the websites of the Romanian organizations. The questionnaire survey supports the Google Form platform. The sample of this questionnaire consists of 150 young people (75% feminine and 25% male). The survey was conducted among young people, with 91.3% of the age group aged 18-25. Respondents in this questionnaire come from 81.6% of the urban area and the other 18.4% from rural areas. In terms of income, most of the respondents have their own income (over 1000 lei) and 38% are parents-funded. From the employment perspective, 67.90% are students and 26.4% are young people employed. This research is based on specialized literature, questionnaire survey and own experience in the field of direct promotion (see Figure 3).

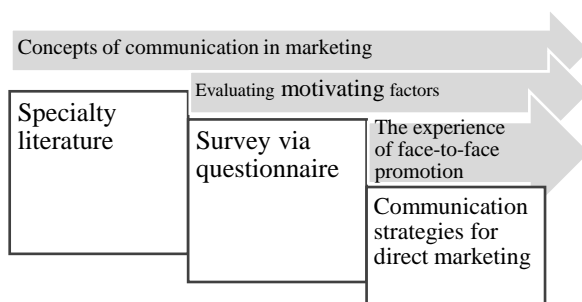


Figure 3. Structure of present research.

IV. RESEARCH RESULTS

Within this part of the research, the results obtained from the questionnaire survey are presented and analyzed. Respondents' responses are interpreted in line with the business environment.

Because of the questionnaire, it is noted that most of the interviewed persons (90.3%) know the method of promotion through promoters, but only 9.7% of them are unfamiliar with this method (9.7%), see Figure 4.

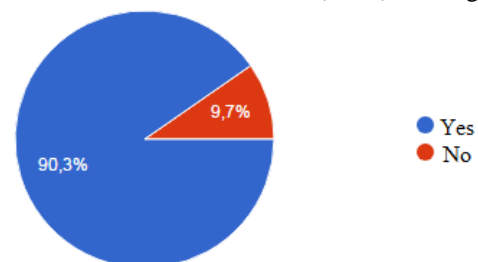


Figure 4. The popularity of the "face-to-face".

In Romania, this method is used predominantly because companies focus greatly on promoting the image of the company, but also on indirect contact with consumers.

It is noticeable that the majority of respondents consider the direct interaction between the client and the promoter (35.5% and 30.1%) to be beneficial because they reveal many of the benefits of the products. Only a small proportion of respondents (4.3%) feel that this interaction is not so important because they are not familiar with this type of promotion.

It is noticed that 58.7% of the respondents consider that "face-to-face" promotion has a significant influence on their purchasing decision because the persuasion power and the arguments put forward by the promoters are identified with the needs and desires of consumers, Figure 5.

Of the respondents, 26.1% consider that they are not influenced by this type of promotion because they know their needs and satisfy them with products they consider appropriate. Consequently, they are not considered to be influenced by promotional activity.

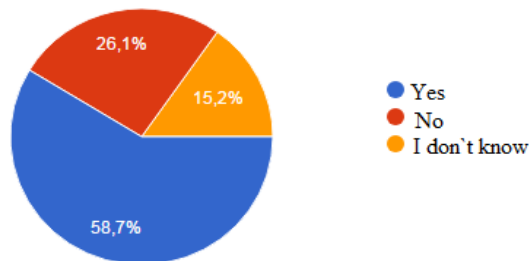


Figure 5. Decision to buy a particular product.

It is found that 95.7% of the respondents had direct contact with the promoters, while only a small part of them had no contact, Figure 6.

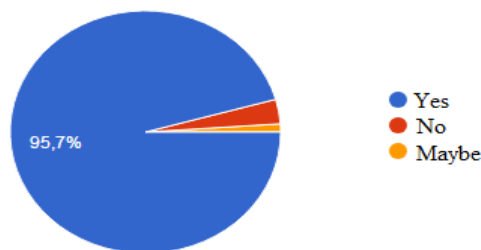


Figure 6. Customer promissory approach.

As a result of the survey conducted on the basis of discussions with respondents, this "face-to-face" promotion method is often met thanks to the benefits highlighted by direct contact with customers for informing and communicating them in connection with promotional offers and new brand Emerged.

It is noticed that in 58.5% of clients meet promoters in the locations where they are present, while only 3.2% of them have rarely met promoters, Figure 7.

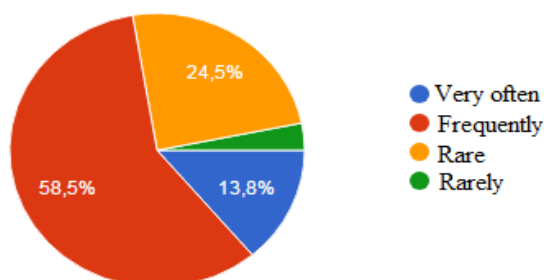


Figure 7. Frequent Encounters with Promoters.

From the perspective of promoters' interest, 83.7% of respondents encounter promoters in supermarkets

where customer density is higher and all types of psychosocial categories meet, while a relatively small number of people (13%) meet promoters in clubs and restaurants, which are predominantly visited by young teenagers, Figure 8.

When people are approached by promoters, most of the respondents, that is, 38.7% give them average attention, depending on where and when they are. It is noticed that 4.3% of the respondents are not willing to pay attention to the promoters' intervention. At the same time, 14% of people are interested and listen to what they are doing.

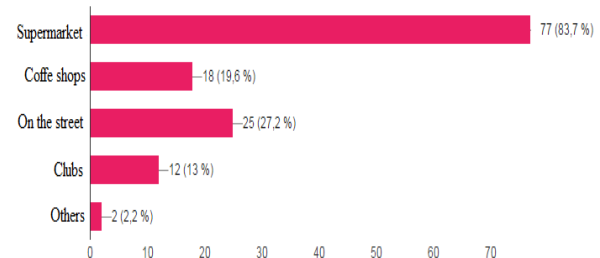


Figure 8. Places frequented by promoters.

The survey shows that the amount of time a consumer, Figure 9, has to spend on a promoter is 1-5 minutes because he considers the information to be brief and focused.

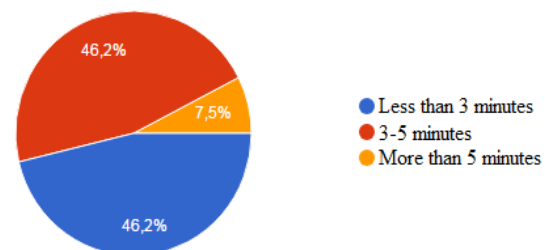


Figure 9. Time allocation for interaction with the promoter

Of the respondents, 60.2% consider that they respect what is presented by the promoters, but curiosity attracts them (54.8%), Figure 10.

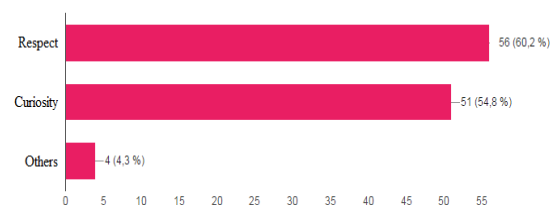


Figure 10. Reason for interacting with promoters.

The survey shows that the physical aspect of a promoter is not so important, while courtesy and persuasion are essential characteristics of the promoter, which often causes the consumer to be as receptive to the promoter's information as possible, Figure 11.

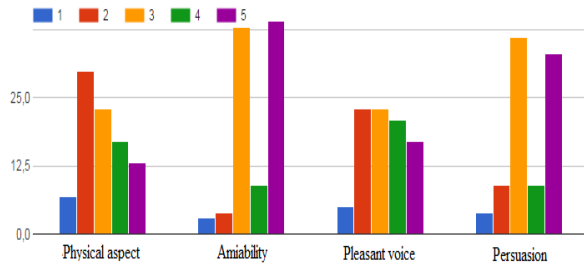


Figure 11. Importance of promoter features.

It has been noticed, Figure 12, that lack of time is one of the major problems faced by today's society, which causes consumers not to interact with promoters (55.9%). A large number of people think the insistence of the promoters makes them not engage in a conversation with them. Most people (81.3%) consider that promoters draw attention with the products offered, while in a proportion of 33% consumers consider prizes to attract more attention than products.

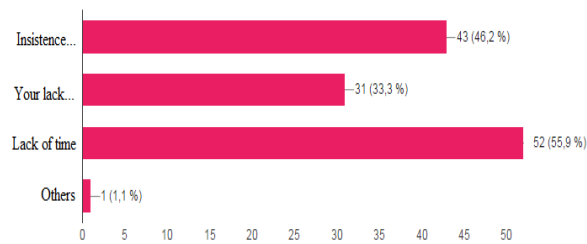


Figure 12. Reticence of dialogue with promoters.

Of the respondents, Figure 13, 43% cannot give an affirmative or negative answer to the provision of personal data, all depending on what implies the promotion and the subsequent confidentiality of the data, while 37.6% agree with the data provision. From the desire to have permanent contact with the company, as well as with the future promotional offers.

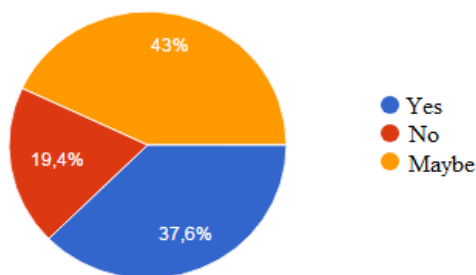


Figure 13. Accessibility to personal data.

It has been noticed that both data confidentiality (55.4%) and guaranteed winnings of a prize lead consumers to provide confidential data, Figure 14. In Romania, it is noted that although people are reluctant to provide data for reasons of insecurity, they are still attracted by winning a prize, which ultimately leads them to provide the promoters with the necessary information.

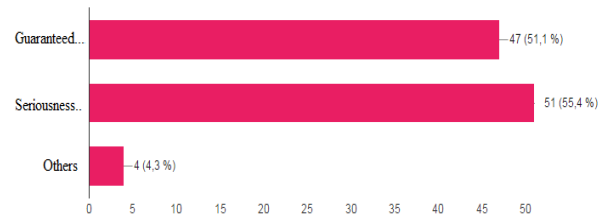


Figure 14. Privacy of personal data.

Although people react positively when awards and other earnings are available, I disagree with the places where promotions generally take place, these being the first-class restaurants with 54.8% as inadequate, the clubs with 39.2%, interaction on the streets of the city by 21.6% and shops by 16.5%, Figure 15.

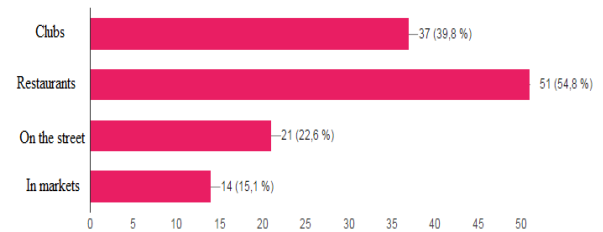


Figure 15. Inappropriate media for promotions.

Many organizations that make different promotions offer promoters equipment that translates their image with specific logos or signs, which 72% of respondents consider very important in the promotion as a person gains credibility when presenting the offers of a company with which he clearly collaborates (Figure 16).

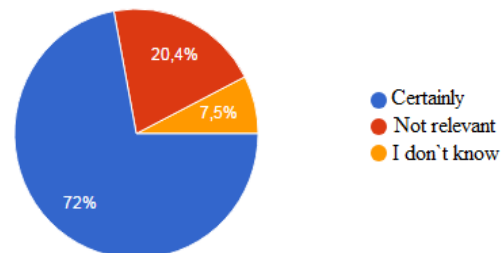


Figure 16. The importance of the promoter's clothing.

Even though promotion is a widely used method among both large and small and medium-sized companies, most people surveyed feel that this action does not influence their purchasing decision, considering that a particular drink may be good even if it is not promoted so intense, but it can have a negative effect, even if it is strongly promoted, Figure 17.

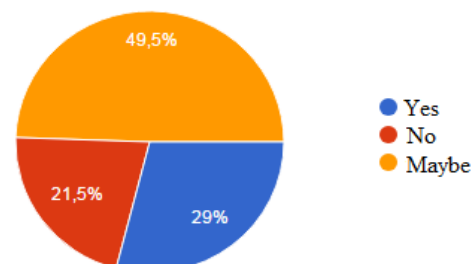


Figure 17. Influence of beverage promotion.

As noted in the previous question, promoting a drink does not matter so much to buyers. Customers often buy known products, thus being sure of their quality. People surveyed know a range of drinks promotion methods, advertisements rank first (71%), and face-to-face promotion ranked the last (49.5%) due to the fact that the advertisements, either televised, posters, have been used for a very long time, giving everyone the opportunity to get in touch with them, Figure 18.

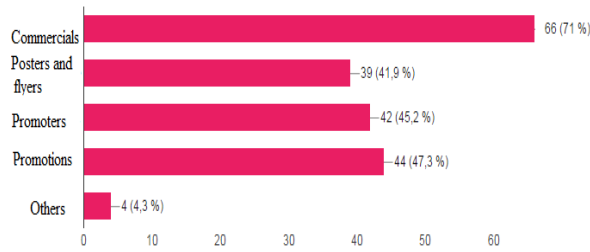


Figure 18. Promotion of soft drinks.

Drinking test testing is considered by most respondents to be a very good method because they do not have to pay to try a particular drink and can make a much smarter view, Figure 19.

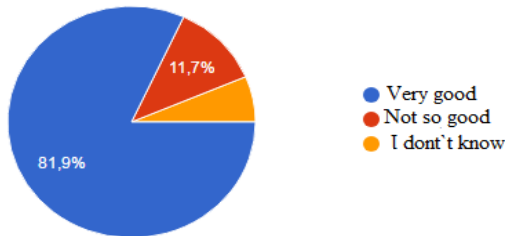


Figure 19. Promotion by testing the beverage.

Most of the people surveyed participated in free samples (65.6%), but there is also a small percentage of 14%, of respondents who did not encounter such activities (Figure 20). In addition, 20.4% of respondents have a curiosity about this action, wanting to participate.

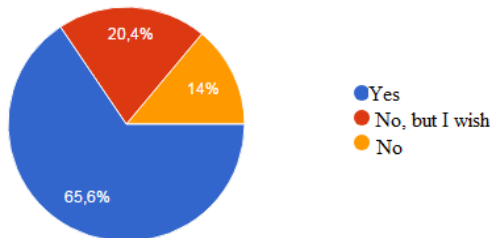


Figure 20. Attracting customers by free samples.

From the perspective of the free samples, it is noted that most of them became customers because they liked the drink, but there are a number of people who, although having a positive reaction to the product, could not become customers because of the price on who do not consider it appropriate.

The people who participated in this market survey claim 31.4% that it is a very relevant questionnaire and 11.8% think it is less relevant.

V. A FRAMEWORK APPROACH FOR PROMOTIONAL ACTIVITY

Research has found that most customers prefer trying or tasting a product before buying it. At the same time there is a reticence from the perspective of confidentiality. Evaluating the results of the survey and of the literature, the authors propose a framework for interaction with the client in direct, face-to-face promotion (Figure 21).

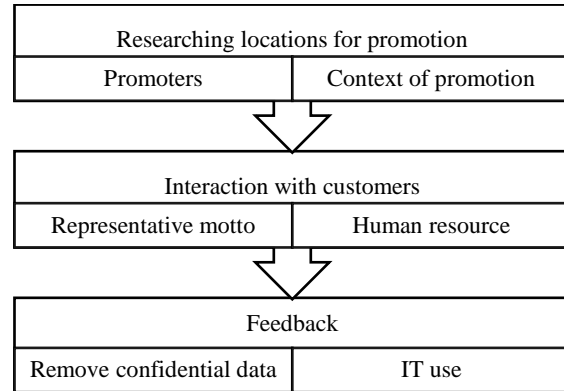


Figure 21. Conceptual framework for client intercourse in direct promotion.

The proposed framework includes the following steps:

1. Researching locations where there are current and potential customers. This step includes the selection of promoters and the promotion context (clothing, products offered, and impact on cleansers). All equipment offered to promoters must be branded and comply with the same principles as the organization.

2. Interaction with customers must be short and influence them. The presentation of the products must not extend over several minutes so that the customer does not give up this interaction. The human resource involved in promotion has an important role. These people must have communication skills, the ability to attract customers in their work, organizational and technical skills.

3. At the end of the interaction with the clients, the respondents' request for personal data should be eliminated. Various information technology (IT) tools can be used to monitor promoters, for example: tablet-monitoring programs, screen sharing with campaign coordinator, location of promoters, and more.

This framework for direct promotion contributes to attracting more customers by reducing contact time, increasing the impact of promotional activity, and eliminating the demand for personal data.

VI. CONCLUSIONS

Promotion is an important one for each organization. The intensity of this activity is dependent on the size of the organization. If a business is large or small, profitable or has another mission, its promotional

activities must have clear objectives to help achieve its goals and business objectives.

Any promotional activity done to support this goal must have clearly defined promotional goals and are capable of contributing to the increase of rental income over a short period. Direct promotion is appreciated by young people and contributes to meeting organizational goals.

The use of a conceptual framework for customer interaction contributes to the success of promotional activity and, in this case, to increased sales of the company.

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Risk Mitigation in Project Management Theoretical Issues and Case Study

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Abstract – The objective of this article is to evaluate how the risk management process is used in the software development industry and how practitioners are managing risks in early stages of a project. Further, a description of how risk assessment might help to mitigate risks associated to events that could occur to different phases of a project life cycle will be presented. The core of the research is the theoretical approach for designing a simulation model to estimate costs prior to a project. In the application part, this model is implemented using a case study and the results of the estimation costs which are analyzed and simulated using the theoretical framework of Monte Carlo simulation model are presented. In the conclusions section the final recommendations are drawn up.

Keywords: risk management, project, software industry, Monte Carlo simulation, cost management

I. INTRODUCTION

Risk Management (RM) is a concept, which is used in all industries, from Information Technologies (IT) related business, automobile or pharmaceutical industry, to the software sector. Each industry has developed their own RM standards, but the general ideas of the concept usually remain the same regardless of the sector. According to the Project Management Institute (PMI) [30], project risk management is one of the nine most critical parts of project commissioning. This indicates a strong relationship between managing risks and a project success. While RM is described as the most difficult area within software management, its application is promoted in all projects in order to avoid negative consequences [6].

One concept, which is widely used within the field of RM, is called the Risk Management Process (RMP) and consists of four main steps: identification, assessment, taking action and monitoring the risks [7].

In each of these steps, there are a number of methods and techniques, which facilitate handling the risks.

Many industries have become more proactive and aware of using analyses in projects. Likewise, RM has become a timely issue widely discussed across industries. However, with regard to the software/IT industry “pays more lip service to risk management than it actually performs” [11].

More software companies are starting consider RM, but most of them are not using scientific models and techniques in this field. This contradicts the fact that the industry is trying to be more cost and time efficient as well as have more control over projects. Risk is associated to any project regardless the industry and thus RM should be of interest to any project manager. Risks differ between projects because every project is unique. However, still many practitioners have not realized the importance of including risk management in the process of delivering the project. Even though there is an awareness of risks and their consequences, some organizations do not approach them with established RM methods [25].

The software industry operates in a very uncertain environment where conditions can change due to the complexity of each project [28]. The aim of each organization is to be successful and RM can facilitate it. However, it should be underlined that risk management is not a tool, which ensures success, but rather a tool, which helps to increase the probability of achieving success. Risk management is therefore a proactive rather than a reactive concept.

Many previous studies [16; 19; 34; 14] have been conducted within the field of RM but each presents a different approach to this concept. The research in this master thesis focuses on the software industry and how the subject is practiced in a project implementation. The concept of RM is presented in a systematized

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project life cycle approach to show differences between elements, aspects or issues in different project phases highlighting events that could affect the achievement of objectives [24; 15].

1.1. What are the benefits in introducing risk management principles and considerations into an early phase of a project?

Software developers tend to equate maturity in the IT with technical proficiency. They even have a fire-level scheme for measuring such maturity: the Capability Maturity Model. However, according to the English standard, the term “maturity” has nothing to do with technical proficiency. It is, rather a quality of grown-up-ness, an indication that a person or organism has reached its adult state [3; 8].

In retrospect, when project managers did not explicitly manage risks, they are acting as childlike. Considering only the rosy scenario and associate it into the project plan is real “kid stuff”. These is considered an immature approach, but this positively trumpeting the increased maturity due to improvements of the technical proficiency [11].

In a more realistic perspective, it is needed a “maturity way of thinking” by taking explicit note of the possible occur risks, and plan the projects accordingly to different scenarios of their evolution. That is what risk management consist of [11].

Experiencing risks in late phases during the projects within the company, have determined us to elaborate this article in order to support the project management team to adopt a preventive behavior and avoid waste, loses and delays during the project development.

1.2. Research context and objective

The research described in this article was conducted together with the project management members from a small and medium size company from the IT field. This organization is aware of risks, but it do not use any specific structured methods to manage them. However, the organization’s management believes that a projects performance can be improved by implementing risk management methods. At the time when research was conducted, the company was involved in a new project that includes new hardware (module and software solution for connected audio systems, which is the case study in this article). The project was chosen in order to investigate the practices of risk management across the project organization.

Furthermore, the objective of this article is to evaluate how the risk management process is used in the software industry and how the practitioners are managing risks in early stages of a project. The theory of the risk management process will be compared to the actual practice in order to investigate similarities and differences. In other words, the main idea behind the research is to see if the software industry is working with risk management as it is described in the literature regarding the methods and techniques presented.

In order to achieve the research objective, the following questions have been formulated to support the proposed approach:

1. How are risks and risk management perceived in a software project?
2. How possible events and associated risks can affect project objectives?
3. What analysis tools help to reduce risks effectively?

The operative objectives of the research are to understand the concept of RM and the RMP, investigate how the IT sector’s manages risks and facilitate the use of RM focused on the software projects.

II. ANALYSIS AND DEBATE OF THE POSSIBLE EVENTS AND ASSOCIATED RISKS THAT COULD OCCUR DURING THE PROJECT PHASES

Risks are unavoidable and as such, the key challenge in engineering risk analysis is to identify the elements of the system or facility that contribute most to risk and associated uncertainties. One of the most useful outputs of a risk assessment is the set of importance measures associated with the main elements of the risk models such as phenomena, failure events, and processes [21]. These important measures are used to rank the risk-significance of these elements in terms of their contribution to the total risk (e.g. expected loss or hazard). Importance measures are either absolute or relative [1; 30]:

- The absolute measures define the contribution of each risk element in terms of an absolute risk metric (reference level), such as the conditional frequency of a hazard exposure given a particular state of the element.
- Relative measures compare the risk contribution of each element with respect to others. In most risk analyses, it is common to conclude that importance measures of a small fraction of risk elements contribute appreciably to the total risk.

II.1. Key principles for effective and efficient risk assessment

In order to yield meaningful results with minimal burden to the organization for the risk assessments, the following key principles should be considered [1; 30; 21; 29]:

- Governance over the risk assessment process must be clearly established [26]. Oversight and accountability for the risk assessment process is critical to ensure that the necessary commitment and resources are secured, the risk assessment occurs at the right level in the organization, the full range of relevant risks is considered, these risks are evaluated through a rigorous and

ongoing process, and requisite actions are taken, as appropriate;

- Risk assessment begins and ends with specific objectives. Risks are identified and measured in relation to an organization's objectives or, more specifically, to the objectives in scope for the risk assessment [5]. Defining objectives that are specific and measurable at various levels of the organization is crucial to a successful risk assessment. Evaluating the risks relative to such objectives facilitates the reallocation of resources as necessary to manage these risks and best achieve stated objectives;
- Risk rating scales are defined in relation to organizations' objectives in scope [5]. Risks are typically measured in terms of impact and likelihood of occurrence. Impact scales of risk should mirror the units of measure used for organizational objectives, which may reflect different types of impact such as financial, people, and/or reputation. Similarly, the time horizon used to assess the likelihood of risks should be consistent with the time horizons related to objectives;
- Management forms a portfolio perspective on risks and this has to be considered for the decision making process, too. While risks are rated individually in relation to the objectives, they influence, it is also important to bring risks together in a portfolio perspective that pinpoints interrelationships between risks across the organization [14]. Correlations may exist, in which an increased exposure to one risk may cause a decrease or increase in another. Concentrations of risks may also be identified through this view. The portfolio view helps organizations understand the effect of a single event and determines where to deploy systematic responses to risks, such as the establishment of minimum standards;
- Leading indicators are used to provide insight into potential risks. Risk reports are most meaningful and relevant when they draw out not only past events but also forward-looking analysis. Historically, management has tracked Key Performance Indicators (KPIs) to help detect issues affecting the achievement of objectives. In recent years, organizations have also been developing key risk indicators (KRIs) to help signal an increased risk of future losses or an uptick in risk events. KPIs and KRIs are tactical in nature, can be collected at any time, reported on a regular basis or as requested by management (e.g., as part of a balanced scorecard), and typically include statistics and/or metrics (often financial) that provide insight into an organization's risk position. Capturing KPIs and KRIs on management dashboards remains necessary, but it is also important for

organization leaders to prompt broader consideration of market issues that could potentially create risk to the organization. Leading indicators (those data points that signal a change in the environment) are central to anticipating these types of potential risks, but they are often difficult to capture since they tend to arise from a broad set of circumstances, often in the macro-environment, that may seem remote and initially disconnected from day-to-day operations [14; 20].

II.2. Events that could affect the achievement of objectives

Events can have negative impact, positive impact, or both. Events with a negative impact represent risks, which can prevent value creation or erode existing value. Events with positive impact may offset negative impacts or represent opportunities. Opportunities are the possibility that an event will occur and positively affect the achievement of objectives, supporting value creation or preservation. Management channels opportunities back to its strategy or objective-setting processes, formulating plans to seize the opportunities [30; 1; 29; 14].

Based on the organization's objectives, the designated owners of the risk assessment should develop a preliminary inventory of events that could influence the achievement of the organization's objectives. "Events" refers to prior and potential incidents occurring within or outside the organization that can have an effect, either positive or negative, upon the achievement of the organization's stated objectives or the implementation of its strategy and objectives. Various taxonomies or libraries of common event types can help initiate the identification process [26].

A review of the external environment helps identify outside events that may have affected the organization's shareholder value in the past or may influence it in the future. Drivers to consider include economic, social, political, technological, and natural environmental events, which can be identified through external sources such as media articles, analyst and rating agency reports, and insurance broker assessments [24; 15].

A review of the organization's internal processes, people, technology, and data helps identify further events. Relevant information is often derived from internal sources such as business plans and budgets, prior risk assessments, financial performance, litigation, board and annual reports, loss-event databases (e.g., ORX and Fitch First), and policies and procedures. Both external and internal data sources should be considered. For example, an IT risk assessment should consider internal factors such as the number and length of systems failures, employee access controls, and protection of confidential data and information, as well as external factors such as the introduction of advanced software and hardware into

the industry and incidents of cyber-crime within the previous year. Such information can be obtained through interviews, workshops, surveys, process flow reviews, documentation reviews, or a combination of such data-gathering techniques [14; 6; 29]. Through facilitated workshops, management can guide line management and cross-functional staff through the process of analyzing objectives, discussing past events that affected those objectives, and identifying potential future events. A survey approach can also be used to collect relevant insights by sending a questionnaire to a cross-section of management and staff. Techniques should be selected based on fit with current management practices and the type of output required [29; 6].

The identified events should be inventoried and “translated” into opportunities (positive events) or risks (as negative events). Opportunities should flow into management’s strategy- and objective-setting processes, whereas threats should be further categorized and assessed [30; 14; 29].

Economic	Financial markets	Unemployment	Mergers & acquisition	Competition
Natural environment	Financial viability	Quality of execution	Service level agreement	
Political	Government / policy change	Law & regulations		

Figure 1. Event categories - considering internal factors

Infrastructure	Availability of assets	Capability of assets	Access to capital	Complexity
Personnel	Employee capability	Fraudulent activity	Health & safety	
Process	Capacity	Design	Execution	Suppliers & dependencies

Technology	Data integrity	Data & systems availability	Development & deployment	Maintenance
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Figure 2. Event categories - considering internal factors

Events can be categorized in a variety of ways. For example, they may be brought together in a matrix, with horizontal columns capturing categories of root risk causes and vertical rows representing lines of business or functional areas. All applicable areas of risk are then marked accordingly. Another approach consists of capturing all relevant event types and linking these to broader categories, as illustrated in Figures 1 and 2.

The identification of event types should be periodically refreshed and is only as complete as the sources of input, which should involve all relevant business lines and functional areas. Such participants vary according to the type of risk assessment being performed. For example, for a fraud risk assessment, it may be critical to gain the perspective of members of the accounting, procurement, and corporate security divisions, whereas these may not be the right parties to provide input into a market risk assessment [29; 6].

A. Change of stakeholders

A stakeholder can be broadly defined as any individual or group that either can influence or is influenced by the proposed change. These parties often reside within the organization, but can also include important external players such as key customers, suppliers, channel partners, governmental bodies, and, depending on the issue, local community groups [10]. Effectively assessing your stakeholder portfolio is not only critical to the core change roadmap, it also affects associated work streams, such as communication plans, risk management efforts, and commitment planning. Analysis of best practice research suggests accurate stakeholder identification, prioritization, and engagement are vital for completing change programs and realizing targeted benefits [31]. Therefore, before embarking on a change project, it is important to understand who is with you, who is not and why [18; 14; 29; 31].

When building a business case for change, it is important to first look at the project from an objective, organizational lens. It is important to manage stakeholders in change. In doing so, one of the things that have to be done is to segment them according to their needs, their importance and by considering their future “treatment” [12; 31].

a. Identify stakeholders

It is critical for project success to identify the stakeholders early in the project or phase and to analyze their levels of interest, their individual expectations, as well as their importance and influence [10]. This initial assessment should be reviewed and updated regularly.

Most projects will have a diverse number of stakeholders depending on their size, type, and complexity. While the project manager's time is limited and should be used as efficiently as possible, these stakeholders should be classified according to their interest, influence, and involvement in the project, taking into consideration the fact that the affect or influence of a stakeholder may not occur or become evident until later stages in the project or phase. This enables the project manager to focus on the relationships necessary to ensure the success of the project [32; 10].

Upon reviewing these results, project managers can align stakeholders to one of three categories depending on their anticipated outlook of the change event [32; 13; 10; 31].

- Champions are individuals or groups who will openly support the proposed change;
- Missionaries are folks who will roll up their sleeves and actively help you make change happen;
- Opinion Shapers or informal group leaders are individuals who have considerable informal influence on stakeholders from the other two categories. Understanding their placement in relation to the other groups is vital.

There are multiple classification models used for stakeholders analysis, power/interest grid presented in Figure 3 is grouping the stakeholders based on their level of authority ("power") and their level or concern ("interest") regarding the project outcomes [31]:

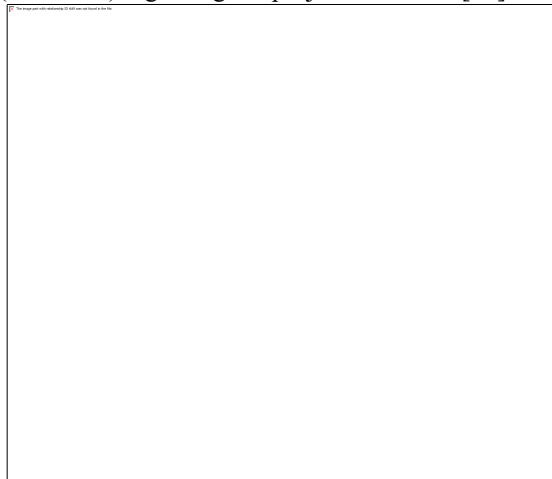


Figure 3. Example Power/Interest grid with Stakeholders

Practitioners often call out "Leadership" as a distinct forth category. While top-level buy-in is the key, it is also important to understand that people, regardless of placement within the organization, experience change events the same way, and thus will fall naturally into one of the categories noted above. Remember, you need to have champions, missionaries, and opinion shapers working with you at each level in the hierarchy that is affected by the change [13; 10; 31].

An underlying area into which you can dig when exploring and understanding stakeholders are their driving interests. Interests include general areas and

specific items that motivate people in a number of different ways. If you can identify these underlying interests of the stakeholder, you can more effectively work to address the deeper drivers that are motivating them [14; 29; 31].

Seek to find the root cause of any problems that they offer (these are sometimes called presenting problems). For any effect, there is a cause, which itself may be caused by another cause. If you can follow the chain of causes until you can go no further, and if addressing this cause will resolve the problem, then you have found the root cause. Ask "What is causing this?" or "Could you tell me more about that?" The ideal is to simply ask "why", but used, as a direct question can be rather harsh, so more indirect methods are often better [14; 29; 31].

b. Change control

PM-BOK defines change control as the process of reviewing all change requests; approving changes and managing changes to deliverables, organizational process assets, project documents, and the project management plan; and communicating their disposition. It reviews all requests for changes or modifications to project documents, deliverables, baselines, or the project management plan and approves or rejects the changes [29; 31]. The key benefit of this process is that it allows for documented changes within the project to be considered in an integrated fashion while reducing project risk, which often arises from changes made without consideration to the overall project objectives or plans [12; 31].

The change control process is conducted from project inception through completion and is the ultimate responsibility of the project manager. The project management plan, the project scope statement, and other deliverables are maintained by carefully and continuously managing changes, either by rejecting changes or by approving changes, thereby assuring that only approved changes are incorporated into a revised baseline [31; 34].

Any stakeholder involved within the project may request changes. Although changes may be initiated verbally, they should be recorded in written form and entered into the change management and/or configuration management system. Change requests are subject to the process specified in the change control and configuration control systems. Those change request processes may require information on estimated time impacts and estimated cost impacts [12; 34].

Every documented change request needs to be either approved or rejected by a responsible individual, usually the project sponsor or project manager. The responsible individual will be identified in the project management plan or by organizational procedures. When required, the change control process includes a Change Control Board (CCB), which is a formally chartered group responsible for reviewing, evaluating, approving, delaying, or rejecting changes to the project, and for recording and communicating such

decisions. Approved change requests can require new or revised cost estimates, activity sequences, schedule dates, resource requirements, and analysis of risk response alternatives. These changes can require adjustments to the project management plan and other project documents. The applied level of change control is dependent upon the application area, complexity of the specific project, contract requirements, and the context and environment in which the project is performed. Customer or sponsor approval may be required for certain change requests after CCB approval, unless they are part of the CCB [31; 34]. Configuration control is focused on the specification of both the deliverables and the processes; while change control is focused on identifying, documenting, and approving or rejecting changes to the project documents, deliverables, or baselines. Some of the configuration management activities included in the Change Control process are as follows [12; 31]:

- Configuration identification. Identification and selection of a configuration item to provide the basis for which the product configuration is defined and verified, products and documents are labelled, changes are managed, and accountability is maintained.
- Configuration status accounting. Information is recorded and reported as to when appropriate data about the configuration item should be provided. This information includes a listing of approved configuration identification, status of proposed changes to the configuration, and the implementation status of approved changes.
- Configuration verification and audit. Configuration verification and configuration audit ensure the composition of a project's configuration items is correct and that corresponding changes are registered, assessed, approved, tracked, and correctly implemented. This ensures the functional requirements defined in the configuration documentation have been met.

All of the Monitoring and Controlling processes and many of the executing processes produce change requests as an output. Change requests may include corrective action, preventive action, and defect repairs. However, corrective and preventive actions do not normally affect the project baselines - only the performance against the baselines [12; 31].

Change requests are processed according to the change control system by the project manager, CCB, or by an assigned team member. The disposition of all change requests approved or not, will be updated in the change log as part of updates to the project documents. A change log is used to document changes that occur during a project. These changes and their impact to the project in terms of time, cost, and risk, are communicated to the appropriate stakeholders. Rejected change requests are also captured in the change log [31; 34].

Changes to baselines should only show the changes from the current time forward. Past performance may not be changed. This protects the integrity of the baselines and the historical data of past performance [12].

c. IT stakeholders

"If we told the truth, our stakeholders would be too scared to do the project, so we have to lie to them" [11]. Tom DeMarco and Timothy Lister presented stakeholders in "Managing risks in software projects" book as not mature enough to face up the risk.

In the early days of the software industry, the stakeholders were often clerks and managers of clerical departments. That was because the first functions we tended to automate were clerical. These stakeholders were low-level, relatively powerless, and not informed well about automation. The typical systems analyst on such a project was usually paid a lot more than most of the stakeholders he or she interacted with. During this period, IT often affected a paternalistic, "we know best" attitude. Maybe this even worked, on occasion, to help useful systems be built.

Today stakeholders, however, are different. They are typically more powerful than their IT counterparts are, and they have been around a while. They are perceptive about automation. Most of all, they have good memories. These days, risk-taking is becoming the norm on more than just IT projects. "Your stakeholders are being encouraged to take risks of their own, completely outside the realm of IT. They know about risk. They also know about being lied to. Concealing risk from them is a pretty inconvenient tactic" [11].

B. Economic exposures

The overarching risk considerations in international business and multinational financial management has been the potential influence of changes in foreign exchange rates on future corporate cash flows and the related effects on long-term competitiveness. In addition to this, there have been frequent discussion of political, sovereign and country risk associated with international funds transfer and cross-border investments [1].

Many historical events illustrate the potential effects of fluctuations in foreign exchange rates and volatile financial market prices, in general. When companies borrow money to invest in commercial activities, they expose themselves to changes in the credit terms and conditions offered by financial market participants and at the same time fall victim to the changing returns and playback periods offered in turbulent business environments. These exposures are associated with the underlying volatility of various market prices. When corporations trade overseas and operate in the international financial markets, they become sensitive to changes in foreign exchange rates as receivables and payables are executed in other currencies than that of the home market that typically constitutes the company's currency of accounting. Changes in interest rates affect the value of corporate dues on accounts

payable and various loan obligations and cause comparable changes in the real terms for receivables, loan extensions and commercial cash flows. Similarly, the development of commodity prices can have significant influences on earnings in corporations that depend on steady supplies of productive inputs and raw materials, including agricultural products, metal, energy, etc. Given the at times extreme variance in different market price, these corporate exposures can be of high significance [1].

Many different market prices, including interest rates, foreign exchange rates, energy prices, commodity prices, consumer prices, etc. pertain to financial and commercial assets traded and exchanged between counterparts operating across numerous interacting national economies. Some of these prices trends are obviously more important than others are, in a specific corporate context. That is, it is necessary to determine the market price developments that exert the highest influence on operating profit and consider ways to manage fluctuations in these prices. When market prices vary in unpredictable directions over time, they can have significant influences on corporate earnings and may affect longer-term competitive conditions. The classical stories of Caterpillar and Volkswagen provide ample evidence of these risks factors (Caterpillar – the dollar foreign exchange rate and Volkswagen – the euro foreign exchange rate [1].

In the case of Caterpillar, major swings in the value of the US dollar during 1980s affected the margins commanded by the company when selling its products in overseas markets, as most of the manufacturing took place in the domestic US market. Hence, a strong dollar during the early 1980s made the company's products relatively costly and hence less competitive overseas, whereas the subsequent weakening dollar had the opposite effect, while causing some conspicuous accounting losses and gains. This eventually urged the corporate executives to establish a specialized group dedicated to the management of the company's currency exposures. Volkswagen gained quite comparable experiences because of periodic appreciations of Deutschmark in the early 1990s and a decade later in connection with a surge in the value of the euro that caused corporate management to adopt policies that are more conservative hedging against major currency exposures [1].

a. Foreign exchange rate exposures

Foreign exchange rate exposures arise when there is a mismatch between the currency denomination of corporate receivables and payables (Figure 4).

To the extent that such a mismatch exists, there is a high degree of uncertainty as to what the resulting net future cash flows, will be when converted to the home currency [1]. In terms of practical risk management considerations, it is important to identify, analyze and monitor the structure of the implied currency cash flows with different maturities to assess potential short- and long-term effects of changing foreign exchange rates.

This can be accomplished by developing periodic cash flow projections and calculating the currency mismatch for different future time intervals, for example. This type of monitoring system provides the basis for evaluating the size of potential loss effects from particular foreign exchange rate developments and determines appropriate gapping positions in view of expected market uncertainties and the corporate ability to withstand potential losses [1].

b. Interest rate exposures

Interest rate exposures arise when there is a mismatch between the interest rate basis of corporate assets and liabilities (Figure 5). To the extent that such a mismatch exists, there is a high degree of uncertainty as to what the resulting future cash flows from interest payments will be. In principle, the interest rate mismatches should be considered for each of the currencies in which the corporation has major assets and liabilities [1].

In practice, the organization may identify, analyze and monitor the implied periodic re-pricing gaps that exist between assets and liabilities in different currencies over alternating future time intervals. This allows corporate management to assess the potential effect of changes in the level of interest rates with different maturities. Interest rates may change across the board or there may be changes in the interest rate structure where changes in short- and long-term interest rates differ. The potential losses associated with changing interest rate scenarios can be evaluated in view of the corporate capacity to withstand external market shocks of this nature [1].

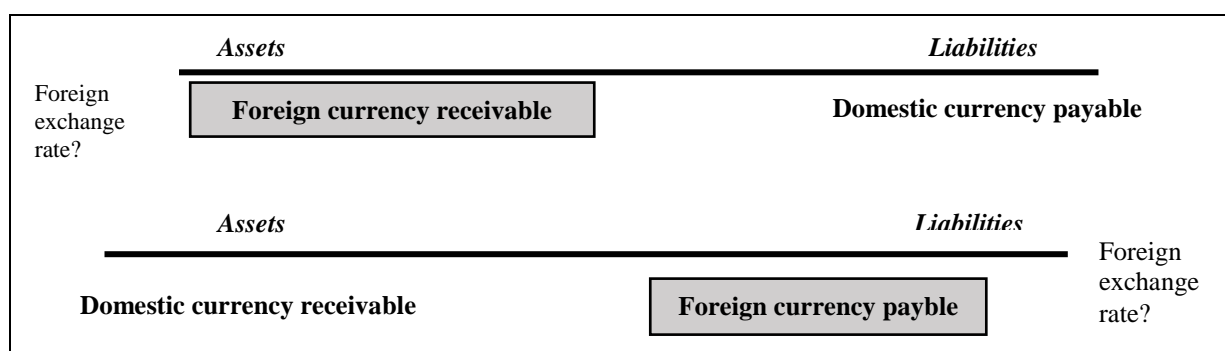


Figure 4. Foreign exchange rate exposures (adapted from [1])

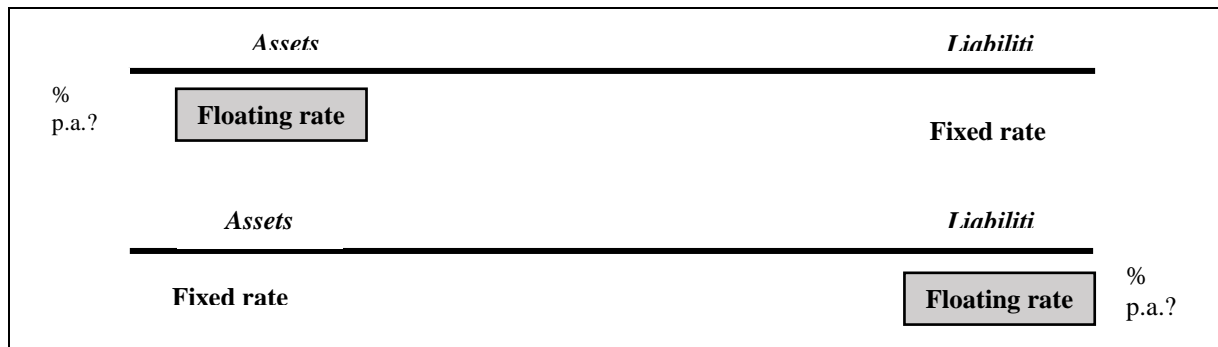


Figure 5. Interest rate risk exposures (Adapted from [1])

When interest rates changes, the net present value of future cash flows will adapt accordingly – that is, when rates go up, the value of future cash flows goes down, and vice versa. Since the future cash flows of assets and liabilities with variable rate structure are adapted more or less in accordance with changes in the interest rate level, floating-rate instruments are less price sensitive than fixed-rate instruments where future interest payment remain constant. Hence, the effect of changing interest rates in a given currency can be assessed in terms of their effects on the net present value of assets and liabilities. The concept of duration provides an indication of the relative price sensitivity of a given string of future cash flows, for example, of a security or commercial venture [1].

Looking upon corporate business activities as future earnings streams or cash in-flows and liabilities as source of funding to be repaid makes it possible to assess the interest rate sensitivity of the corporate equity position under changing economic scenarios [1].

c. Interact effects of market-related risks

The price relationships between different commercial markets are determined through a complex set of interacting supply and demand conditions across numerous intertwined industry value networks. Similarly, the relative prices between different countries are influenced by national economic policy variables as they affect economic conditions and commercial opportunities. The myriad of commercial transactions that take place among agents throughout the global economy shape the intricate relationships between different market prices as well as price relationships in one national economy affecting conditions in other economies through various cross-border transactions. Hence, the foreign exchange rates that determine the conversion between two currencies are related to the relative demand conditions, inflationary pressures and interest rate developments in the respective currency areas. Similarly, the price developments across different productive inputs, such as capital, labor, raw materials, energy, etc. and prices for different types of output, including semi-products, final goods and various services, interact in ways that link transnational price developments together. Therefore, when corporations consider the aggregate economic effects of these complex market developments, the underlying price relationships must

be taken into account. However, the implied price risks should only be aggregated if they are completely independent of each other because the market-based price risk is reduced by diversification when the price changes are interrelated [1].

Different elements of the economic conditions are intertwined. For example, when demand is increasing, inflation goes up and interest rates increase to retain real returns. As nominal interest rates change between currency areas with different economic conditions, the foreign exchange rates that determine the exchange value between the two currencies will adapt accordingly [23]. Since these changes are interrelated, all of these effects should be taken into account when assessing the corporate economic exposures.

However, the analyses of transaction exposures treat both the quantity sold and the sales price as being independent of changes in foreign rates [1]. While this may be the case over shorter periods, the likelihood of adjustment increases over time and thus becomes more important in the assessment of longer-term operational exposures that deal with extrapolations of future cash flows foreign currencies.

One consequence of this may be that it only makes sense of hedge future foreign exchange positions over times where there is a little transnational adaptation between economic conditions and financial market prices. It also means that when economic exposure are evaluated within a multinational corporate structure over longer time horizons, it is necessary to consider the interacting effect of all market-related risks at the same time [23; 1].

C. Political events

In order for a company to identify, measure, and manage its political risks, it needs to define and classify these risks. In Figure 6 presents a typology of the political risks facing organizations as being firm-specific, country-specific, or global-specific [22].

- Firm-specific risks (micro risks) are those political risks that affect the organization at the project or corporate level. Governance risk is the main political firm-specific risk.
- Country-specific risks (macro risks) are those political risks that also affect the organization at the project or corporate level but originate at the country level. The two main political risk categories at the country level are transfer risk

and cultural and institutional risks. Transfer risk concerns mainly the problem of blocked funds, but also peripherally sovereign credit risk. Cultural and institutional risks spring from ownership structure, human resource norms, religious heritage, nepotism and corruption, intellectual property rights, and protectionism.

- Global-specific risks are those political risks that affect the international organization at the project or corporate level but originate at the global level. Examples are terrorism, the anti-globalization movement, environmental concerns, poverty, and cyber-attacks.

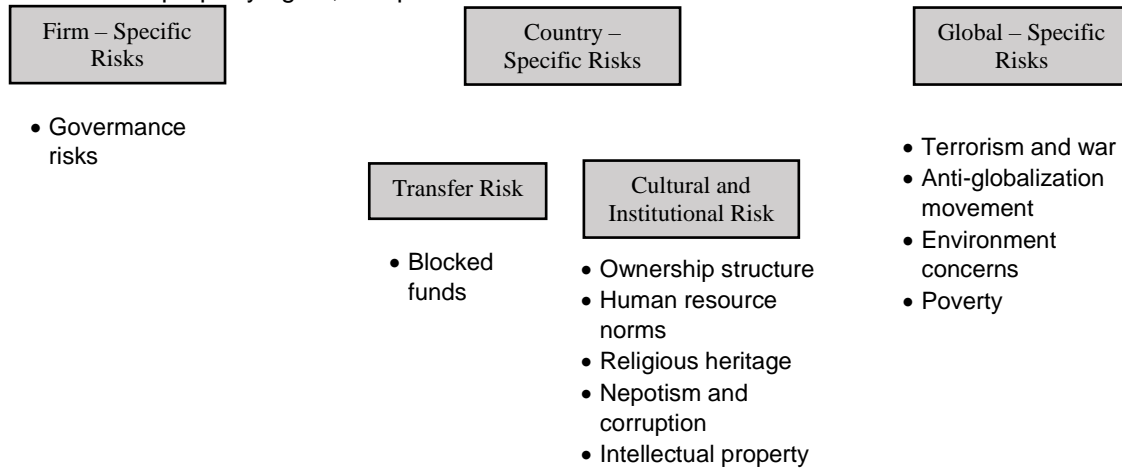


Figure 6. Classification of political risks

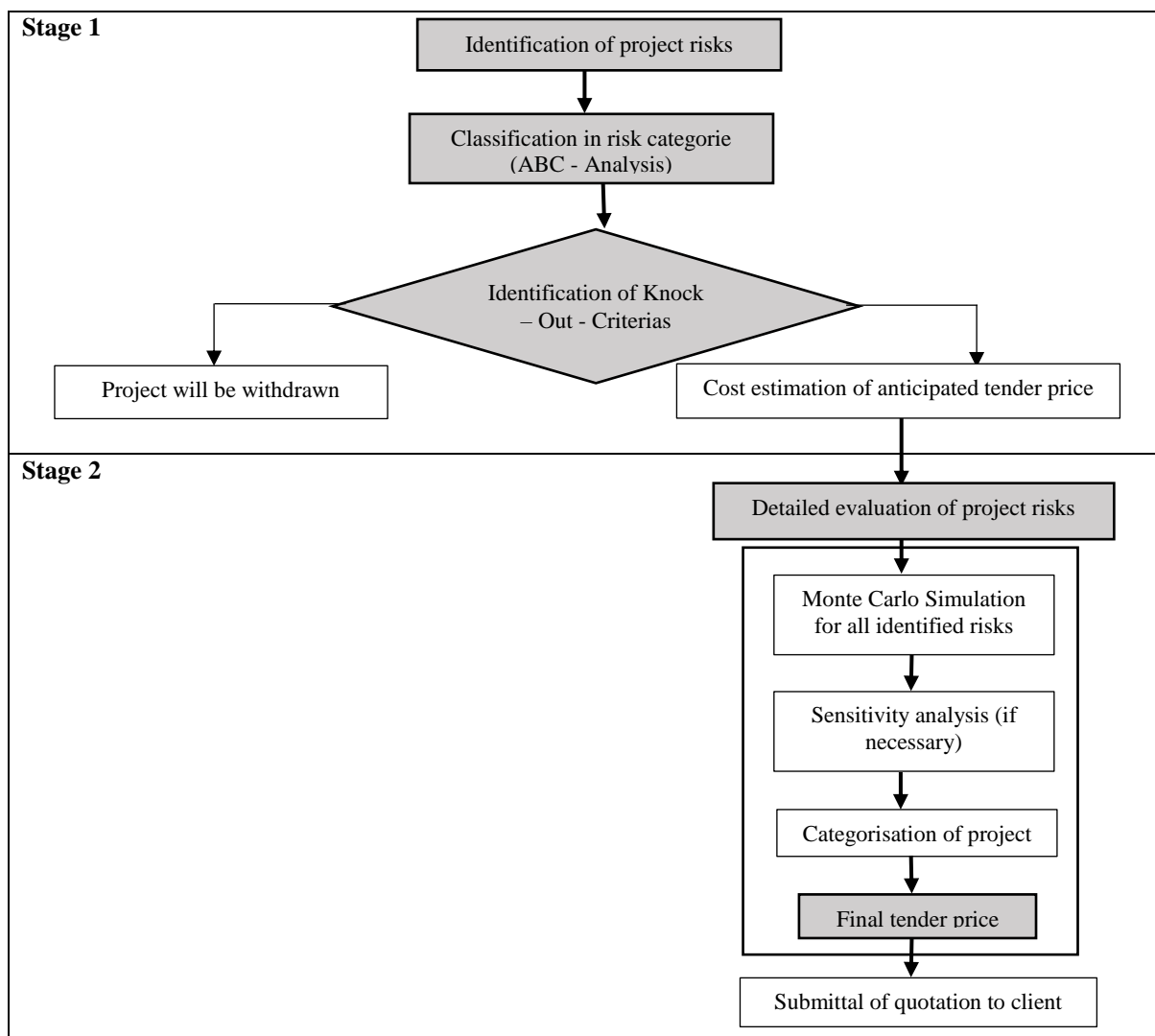


Figure 7. Practical Workflow within Cost Estimation Procedure

This method of classification differs sharply from the traditional method that classifies risks according to the disciplines of economics, finance, political science, sociology, and law. It is preferred this classification system because it is easier to relate the identified political risks to existing and recommended strategies to manage these risks [22].

How can multinational firms anticipate government regulations that, from the firm's perspective, are discriminatory or wealth depriving? Normally a twofold approach is utilized. At the macro level, firms attempt to assess a host country's political stability and attitude toward foreign investors. At the micro level, firms analyze whether their firm-specific activities are likely to conflict with host-country goals as evidenced by existing regulations. The most difficult task, however, is to anticipate changes in host-country goal priorities, new regulations to implement reordered priorities, and the likely impact of such changes on the firm's operations [22].

D. Environment concerns

Organizations have been accused of exporting their environmental problems to other countries. The accusation is that organizations frustrated by pollution controls in their home country have relocated these activities to countries with weaker pollution controls. Another accusation is that organizations contribute to the problem of global warming. However, that accusation applies to all firms in all countries. It is based on the manufacturing methods employed by specific industries and on consumers' desire, for certain products such as large automobiles and sport vehicles that are not fuel efficient [22].

Once again, solving environmental problems is dependent on governments passing legislation and implementing pollution control standards. In 2001, the Kyoto Treaty, which attempted to reduce global warming, was ratified by most nations, with the notable exception of the United States. However, the United States has promised to combat global warming using its own strategies. The United States objected to provisions in the worldwide treaty that allowed emerging nations to follow less restrictive standards, while the economic burden would fall on the most industrialized countries, particularly the United States [1].

III. IMPLEMENTATION OF RISK ASSESSMENT IN ESTIMATION PROCEDURE: CASE STUDY

III.1. Two-stage system and comprehension of Monte Carol Simulation – Methodological Aspects

The specific risks for a project are classified in categories and are respectively evaluated. Risks and their number diversify from project to project. However, a risk with knockout criteria is an important measure for assessment of each project. Therefore, a two-stage system for the aggregation of project risks is

implemented. In the first stage, all risks are analyzed. Afterwards the critical risks for the project will be evaluated in detail. The Monte Carlo Simulation (MCS) is emphasized in this evaluation process, because the results of the MCS are significant when compared to other risk analysis methods [4; 27; 35]. In this context and in regards to the risk management circle the stages are defined as follows (Figure 7): Stage 1 = Phase 1 + 2 (identify and analyze the project risks) and Stage 2 = Phase 3 (evaluate the risks with MCS) and preparation for Phase 4 (monitoring). The risk monitoring (Phase 4 of risk management circle) will be done within construction process. The results of the preliminary work within the tender process will be used therefore. The practical workflow within the cost estimation procedure is shown in Figure 3. The following example shows a model that explains the procedure and the two-stage system as described in above capture. There are several complex software tools for simulating cost estimation. The results of the cost estimation have to be evaluated with a dynamic simulation tool. The simplest version is Microsoft Excel. The steps according stage 1 to find and classify the risks have to be done in advance. In regards of a simplification and to comprehend the procedure, the example evaluates the subcontractor risk only. In normal cases, all risks within the different cost elements would be evaluated in detail and would be therefore part of the model.

A. Application on Risk Evaluation

a. Stage 1 = Cost Estimation of Anticipated Tender Price

Table 1 shows the result of the cost estimation of the anticipated tender price because of Stage 1 ("Scenario 0" = Base Estimate). This estimation is based on the daily market prices and no dynamic effects are included.

Table 1. Cost Analysis for Scenario 0 = Base Estimate [Euro]

Scenario 0 Baes Estimate	
Direct (Site Costs)	
K.1 EMPLOYEE WAGES	2000000
K.2 MATERIAL	500000
K.3 INDIRECT MATERIAL (Trainings, ETC.)	50000
K.4 SUBCONTRACTORS	13250000
SC1	2200000
SC2	1800000
SC3	6000000
SC4	5000000
SC5	2000000
SC6	1500000
SC7	2000000
K.5 EQUIPMENT	100000
K.6 FREIGHT	50000
K.7 CUSTOM	300000
Sub-Total Directs:	23700000
Indirect (Site Costs)	
Management, Yards, etc.	1500000
Direct + Indirect	25200000
Company Overhead + Risk & Profit	
Z.1 F.E. (8%) = eff. 8.70 % V.A.	2142600
Total:	27342600

Impact CO + Risk & Profit:	8.00%
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b. Stage 2 = Risk Evaluation with MCS

After the cost estimation (Scenario zero), every risk will be discussed in detail by the project team. For regular and practical cases, the triangular distribution with the threshold values Minimum, Mean and Maximum is useful. Other continuous distributions, for instance rectangular distribution, beta distribution,

normal distribution or uniform distribution, could be used in this context too.

Following the definition of the threshold values (Scenario 1) the MCS starts with the input values according Table 2. Table 3 shows the summary information in regards of the MCS procedure. A number of 10.000 iterations are useful and practicable.

Table 2. Threshold values as basis for MCS (Scenario 1)

Direct (Site Costs)	Scenario 1 - Risk Evaluation of Subcontractor Cost			
	Minimum	Mean(Base Est,)	Maximum	
K.1 EMPLOYEE WAGES				2000000
K.2 MATERIAL				500000
K.3 INDIRECT MATERIAL				50000
K.4 SUBCONTRACTORS				
SC 1	2000000	2200000	2500000	2233333
SC 2	1780000	1800000	1825000	1801667
SC 3	5950000	6000000	6500000	6150000
SC 4	4800000	5000000	5300000	5033333
SC 5	1950000	2000000	2100000	2016667
SC 6	1400000	1500000	1650000	1516667
SC 7	1980000	2000000	2050000	2010000
Total	19860000	20500000	21925000	
K.5 EQUIPMENT				100000
K.6 FREIGHT				50000
K.7 CUSTOM				300000
Sub-Total Directs:				23961667
Indirect (Site Costs)				
Management, Yards, etc.				1500000
Direct + Indirect				25461000
Company Overhead + Risk & Profit				2321733
Z.1 (Factory of Influence)				
Total:				26783400
Mean CO + Risk & Profit:				8.66%

Table 3. General simulation information

Number of Simulations	1
Number of Iterations	10000
Number of Inputs	7
Number of Outputs	1
Sampling Type	Monte Carlo

Note that it was used the function STDEVP, which calculates the standard deviation of the entire population, in this case only two values. Expected project cost will be the average of the "Total" column:

$$\text{Expected cost} = \text{AVERAGE (I4:I10004)} = 20892423.28 \text{ Euro} \quad (2)$$

B. Interpretation of the Results achieved after the MCS

The results of the simulation process are displayed in Figure 8. The total error (E) is calculated according to the relation $E = 3b/\sqrt{N}$, where b is the standard deviation of the random variable, and N is the number of iterations. We can estimate an upper bound of b by calculating the standard deviation between the maximum, the minimum and average values of the random variable:

$$b = \text{STDEVP (I2:I3, AVERAGE (I2:I3))} = 843032.7198 \quad (1)$$

Given that the variable is normally distributed, the median should be very close to the mean:

$$\text{MEDIAN (I4:I10004)} = 20896419.52 \text{ Euro} \quad (3)$$

Other useful information is the Kurtosis and the Skewness of the distribution. The Kurtosis is relative measure of the shape compared with the shape of a normal distribution. The normal distribution has a Kurtosis of zero.

$$\text{KURT (I4:I10004)} = -1.209018727 \quad (4)$$

This indicates that the distribution is somewhat flatter than a normal distribution. Skewness is a measure of asymmetry. The normal distribution has a Skewness of 0.

Calculations done (formula 5) indicates that the tail of the distribution extends towards the right. The results can also be represented as probability distribution. Figure 9 shows the density for the example.

$$\text{SKEW (I4:I10004)} = -0.006966892$$

(5)

Activity	SC1	SC2	SC3	SC4	SC5	SC6	SC7	Total
Minimum	2000000	1780000	5950000	4800000	1950000	1400000	1980000	19860000
Maximum	2500000	1825000	6500000	5300000	2100000	1650000	2050000	21925000

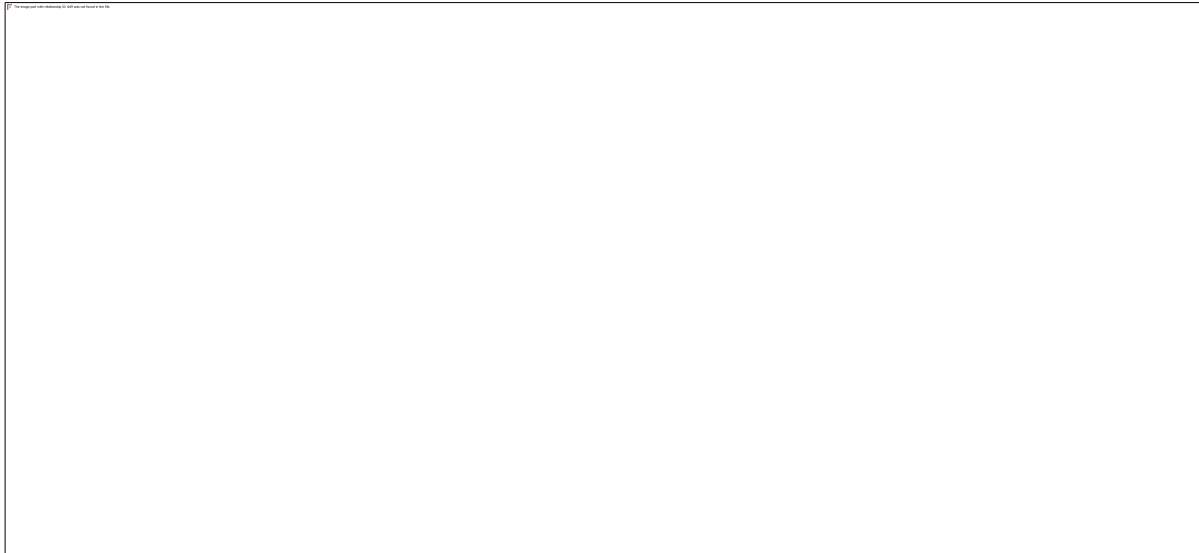


Figure 8. Costs values for Monte Carlo Simulation

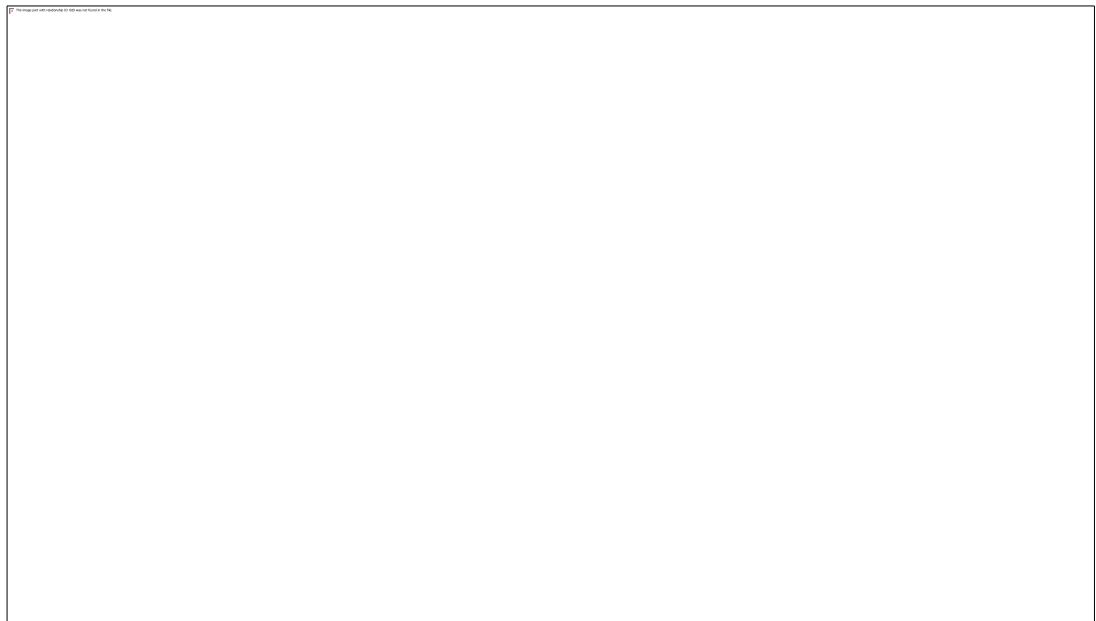


Figure 9. Density Graph



Figure 10. Regression Value (Impact CO + Risk & Profit / Risk Evaluation of Subcontractor Cost)

The maximum figure for company overhead and risk + profit will be 9.84 %, but this figure is the upper limit and will only be achieved if all positive circumstances would occur. Therefore, the implementation of Value at Risk (VaR) is also necessary under this point of view. The result for VaR95% is 8.26%. That means with a probability of 95 %, the figure for company overhead and risk + profit will not exceed 8.26%. In other words, only with a probability of 5%, the figure for company overhead and risk + profit will exceed 8.26%.

After the first simulation, additional MCS are possible and the input values could be analyzed via sensitivity analysis according stage 2. That means, every input value has to be changed, for example in 10% steps, and the MCS will be started successively with different input values. The results of the sensitivity analysis are interpretable and showing the influences of the alteration of every individual input value.

Another evaluation is possible to show which individual risk has a main influence of the result for company overhead and risk + profit. Figure 10 shows the result of these evaluations as regression coefficients. That means, that Subcontractor 3, 1 and 4 have a huge influence of the company overhead and risk + profit. Therefore, these subcontractors have to be monitored very carefully within the succeeding construction phase after potential contract award.

C. Preliminary conclusions on the risk evaluation of new project starting situation

The introduced procedure shows that risks for IT projects are analyzable and evaluable. The procedure gives the management the possibility of a better overview of project risks and explains consequences of a too rash risk acceptance. An IT project and its risks will be more transparent. After a contract award, the identified and evaluated main risks are monitorable and controllable. Therefore, a consequent concentration of the main risk items of a project is possible. This

procedure places the management in a better position for understanding and assessment of a project and its risks. Furthermore is it possible to filter high risk projects in a very early stage and monitor these projects separate.

IV. VALUE-AT-RISK FOR PROJECT EVALUATION: CASE STUDY

IV.1. Calculations and results

For illustrative purposes, a first simple project will be considered. Over its projected length of one year, this project will necessitate cost of about 100 monetary units (Euro), and is projected to generate positive cash flows of 140 Euro with probability:

- $p_1 = 0.4$, of 1.400.000 Euro,
- $p_2 = 0.2$, of 1.200.000 Euro,
- $p_3 = 0.2$, of 1.000.000 Euro,
- $p_4 = 0.1$, of 800.000 Euro,
- $p_5 = 0.0$, of 0 Euro.

No embedded options are considered at this stage. The resulting probability distribution for project value after one year therefore is discrete and is easily constructed. Setting a confidence level of 95% allows to easily determining the cut-off point in this distribution, leading to an absolute value-at-risk below zero of 1.000.000 Euro, or a relative value-at-risk to the mean of 1.080.000 Euro. While this seems straightforward and trivial in this simple case, stating these figures already offers additional information regarding risk for the project, and might serve as an important complement to reporting only mean project value, or a measure like discounted cash flows [17].

Next, it will be considered the case of a software growth option, implementing a web-based e-commerce system, embedded into a platform change from “Venice” to “Concert”.

Given the spot price: $S_0 = 880.000 \text{ Euro}$
Volatility is $\sigma = 0.8$

Using Black-Scholes formula [9] we have a 514.000 Euro as result, with $\Delta = 0.7756$.

Using Delta-normal valuation and 95% confidence level (corresponding to $\alpha = 1.645$ in equation:

$$\text{VAR} = |\Delta_0| \times |\text{VAR}_S| = |\Delta_0| \times (\alpha \sigma S_0) \quad (6)$$

Results in a value-at risk of 898,207 Euro.

For illustration, we it will be expanded on treatment of the option presented above complemented with the main platform project. Again, data are taken from [33], although a volatility for the main project of $\sigma_{\text{project}} = 0.2$ is introduced. Data for the web-based e-commerce system remain unchanged from last section. Furthermore, we presume the presence of two risk factors, with each position exposed to one of them, the option according to delta-normal method with delta 0.7756, and the platform project with its full value at 416,500 Euro. Last, a correlation of 0.3 is assumed between the risk factors.

Using $\text{VAR} = \alpha \sqrt{X' \Sigma X}$ at confidence level 95% corresponding to $\alpha = 1.645$ gives.

$$\text{VAR}_{\text{div}} = 1.645 \sqrt{[-416,500 \quad 0.7756 \times 880,000] \times \begin{bmatrix} 0.2^2 & 0.3^2 \\ 0.3^2 & 0.8^2 \end{bmatrix} \begin{bmatrix} -416,500 \\ 0.7756 \times 880,000 \end{bmatrix}} = 828,907 \text{ Euro}$$

The portfolio value-at-risk therefore is 828,907 Euro, due to diversification smaller than the sum of individual value-at-risks (the undiversified value-at-risk) of:

$$\begin{aligned} \text{VAR}_{\text{undiv}} &= \text{VAR}_{\text{project}} + \text{VAR}_{\text{option}} \\ (7) \\ \text{VAR}_{\text{undiv}} &= (1.645 \times 0.2 \times |-416,500|) + 898,207 = \\ &= 137,028 + 898,207 = 1,035,235 \text{ Euro.} \end{aligned}$$

Analyzing the portfolio value-at-risk, the change in value-at-risk due to addition of a new position can also be computed, termed incremental value-at-risk, as well as component value-at-risk, giving the reduction of the portfolio value-at-risk resulting from removal of a position. Due to diversification, both measures would in most cases be different from the individual value-at-risk of the position. This allows for in-depth analysis of components in a portfolio, or could even be used as a constraint for portfolio optimization [17].

IV.2. Preliminary conclusions on value-at-risk for project evaluation

This sub-chapter has presented and argued for adopting the value-at-risk approach in the evaluation of single project and also portfolios constructed from these projects and/or related real options. As has been

detailed, value-at-risk is a common and accepted measure in the finance sector, and offers several advantages in the area of IT projects. While several approaches for computing value-at-risk exist, not all of these might be applicable for IT projects, as large historical samples will mostly be absent. On the other hand, both Monte Carlo simulation and an analytical approach seem feasible.

Using small, illustrative example, it has been shown that value-at-risk can indeed offer additional information in evaluating single IT projects or real options on such projects, offering an easy to interpret way of quantifying and comparing associated risks, and especially in evaluating IT project and/or option portfolios, as this method explicitly accounts for diversification effects. In addition, the changes in risk due to changes in the portfolio, both from eliminating and adding new elements, can easily be determined, making value-at-risk a useful tool for risk management, complementing and extending the real options approach.

If value-at-risk is indeed adopted, many further enhancements are possible, including the introduction of risk adjusted performance evaluation of business units or project managers, using profit over value-at-risk for assessment. Naturally, many further issues still need to be investigated in the context of value-at-risk for IT projects, especially the definition of primitive risk factors, the mapping of positions to these and others. Nevertheless, adopting value-at-risk might provide important additional information for IT decision makers, and might constitute a necessary step towards IT risk management.

V. EVALUATION AND CONCLUSION

The study was set out to explore the concept of managing risks on projects, process that includes risk assessment and a mitigation strategy for those risks designed to eliminate or minimize the impact of the risk events – occurrences that have a negative impact on the project. The study has argued for adopting whether the value-at-risk approach in the evaluation of single project and portfolios constructed or implementing the risk assessment in cost estimation in order to verify MCS model, also. The study sought to answer three of these questions:

1. How are risks and risk management perceived in a software project?
2. How possible events and associated risks can affect project objectives?
3. What analysis tools help to reduce risks effectively?

As per content of this paper, risk management can be considered as Project Manager's friend. Done well, it helps to ensure that the 'appetite for risk' is appropriately understood at the start, that all the risks are agreed upon, prioritized, assessed, communicated and understood in alignment with this 'risk appetite'. There is always the potential of 'unknown' impacting a project, but the more it can be assessed reasonable

risks from the start of the project and actively manage them throughout, the better placed we will be as a team that realize a positive outcome for the project.

When speaking about risk management we understand that it means we are dealing with a complex activity, which involves, among others, a strong relationship between members of the project team in terms of project information sharing or applying some complex RM models in the project plan. All these arguments, but not exclusively, justify the use of the specialized tools that can assist the risk management activities. The great benefit is provided by speed of work. Once the data are collected and filled into the system, any operations (budget sheets, schedules, plans etc.) can be done in minutes. Moreover, with Intranet/Internet technologies all these can be done from outside the decisional office.

Another major benefit is economy. In most of the cases, the computer is providing important advantages in terms of cost comparing with the manual system. Supposing that the data were filled in correctly, the possibility to make mistakes in processing them are reduced to minimum and updating them can be done with low cost.

There are many software solutions for project risk management, tools for identifying and evaluating risks in IT projects and not only. There are numerous software solutions available to model MCS. @Risk® is an add-in for Microsoft® Office Excel, which mostly handles cost risks and risk drivers. ORACLE® Primavera Risk Analysis is a standalone application that will model risks, costs, and schedule.

The key to successful contingency planning based on MCS lies in whether the project manages risk continuously versus a discrete or even a periodic risk management approach. In the past, document and information management challenged, even taxed, projects in ways that made disciplined, continuous risk management too costly. The investment of time and resources to build the model for a MCS was prohibitive for medium and small projects; only large projects could afford the overhead for such an undertaking.

Today, with electronic information storage and transfer within the project as well as outside the project, capturing the data needed to build and simulate project risks and cost estimates via a MCS is considerably less costly and less difficult than before. With sophisticated software tools that operate on a desktop, rather than a multi-floor, computer, MCS run faster and provide a more comprehensive suite of analysis tools. Now that MCS are easier and faster to prepare, the benefit of this analysis is more readily available for medium-sized and smaller projects.

Managing uncertainty, incorporating contingency based on risk drivers with consideration of cost and risk correlations, demonstrating the cost benefit of risk management and reducing cost capital are easily achievable. Care must be given when running MCS. There are many ways to create difficulties when it comes to this complex process. Although benefits are

real and important, only the skillful use of MCS can yield powerful results.

The scale of this debate is therefore extensive even at the level of cost estimation. To generate achievable policy strategies and development targets concerning an accurate analysis of risks, there is need for more case studies to allow further assessment of dimension of the subject. Exploring duration estimates as future research strategies can facilitate the attainment of this goal.

Although widely accepted and used, MCS methods and so the @Risk for Project has some weakness because is a unidirectional model and does not offer some interactive link between data and parameters.

Despite of what is often reported about software industry that pays more lip service to risk management than it actually performs, the study has shown that running toward risk rather than away from it is an indication that the organization has reached it adult state.

The limitation of the presented research is because it focuses on the software industry and is based on theories of risk management described in limited references that were considered. The research was complemented by a study of a software project implementation in a small and medium size enterprise that operate in software development industry, but in cooperation with some of the stakeholders (related to the enterprise and the considered project). Other research limitation is related to time dimension: the considered case study project was investigated during the planning and design phases only, focusing on costs estimation analysis.

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Change Management Aspects in Developing the International Airport “Avram Iancu” Cluj-Napoca, Romania

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Abstract – The International Airport “Avram Iancu” in Cluj-Napoca, Romania (AIAI) is a public organization, the second important international, and the first important regional airport in the country. This position must be preserved in the competition with the national and international airports but also as regional airport having “around” other five regional airports at a radius of 180 km. To implement goals and a change management process, an agreement was made to be conducted a PhD research activity to identify the pillar elements together with the possibility to identify new financial support. This paper presents the first steps on this demarche. The identified directions and “resources” and the target (3 million passengers) might be fulfilled by listening the “master voice”, the passengers. As long as the success criteria are typically unidentified, the performance measurement must start with an imposed reference (needs or wishes) that becomes a critical factor for success. The implementation progress must be monitored and the end-users feed-back to be consider for the project recalibration (synthetic), by redefining the success criteria and for the project effective control of objectives (analytic). The change triggering factors (CTF) and critical success factors (CFS) for identifying the need of change and the right moment for action within the change management are very important to achieve the established goal.

Keywords: change management, project management, public organizations, critical success factors (CSF), change triggering factors (CTF).

I. INTRODUCTION

The International Airport “Avram Iancu” in Cluj-Napoca (AIAI) is a public organization. During the last 10 years, AIAI suffered multiple changes in order to provide the public (passengers and accompanying

persons) with adequate and sufficient services in a continuous evolving environment and within a highly competitive situation. In Romania, AIAI is the second important international, and the first important regional airport. This position must be preserved in the competition with the national and international airports, but also as regional airport having “around” other five regional airports at a radius of 180 km: Sibiu (SBZ, 45.4709°N – 24.0508°E/ 460m) at 170 km and with a runway of 2630m; Tg-Mures, (TGM, 46.4674°N, 24.4238°E/ 294m), at 90 km, with a runway of 2000m; Baia-Mare (BAY, 47.3930N, 23.2759E/ 184m), at 150 km and with a runway of 2150m; Satu-Mare (SUJ, 47.4212°N, 22.5308°E/ 126m), at 180 km and with a runway of 2500m; Oradea (OMR, 47.0131°N, 21.5409°E/ 142m), at 150 km and with a runway of 2100m.

The changes were necessary so the number of passengers rises from about 30.000 to nearly 3.000.000, as presented in Figure 1. Only in the first quarter (Q1) of 2017, the passenger traffic increased with almost 60% (over 516,000 passengers), compared with the same period of 2016, in the condition that aircraft’s movements increased only with 55% (over 5,000), with new operators and charter destinations.

For the first time in the history of Cluj airport, in 2010 it was registered the passenger heaving the number 1,000,000. In 2011, Cluj Avram Iancu International Airport reached once again the number of 1,000,000 passengers. In 2012, there was a decrease in the airport traffic, due to the economic crisis, the bankruptcy of the airline industry and the competition with the neighboring airports.

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In these circumstances, it was achieved a 24% traffic increase comparing with 2008, the beginning year of the economic crisis. The year 2013 meant for Cluj Airport an increase of 11% of the total number of passengers, comparing with 2012, exceeding the number of 1,000,000 passengers by the end of 2013. Continuing the positive trend of increasing the number of passengers who choose to fly from Cluj Avram Iancu International Airport, in 2014 the threshold of 1,000,000 passengers was reached since November. The new destinations and the continuous concern for high quality services have created premises for an increase of 14% in passenger traffic in 2014, comparing with 2013 when there were registered 1.18 million.

In 2016, Cluj Avram Iancu International Airport exceeded 1 million passengers registered during the entire year, celebrating passenger with the number 1,000,000 in August, due to the strategy of development of infrastructure airport and due to extension of route network, reaching about 1,880,319 passengers until the end of the year. For 2017, it is estimated a record traffic between 2.7 and 3 millions passengers. From 1996 until 2016, Cluj Avram Iancu International Airport registered high growth rates of passenger air traffic. This increase was determined by an effective and efficient management, by the adoption of marketing strategies that generated the development of air traffic and attracted new air operators on Cluj market (Tarom, Wizz Air, Lufthansa, Vueling, Lot Polish, Blue Air, Turkish Airlines). In addition, at the Cluj Avram Iancu International Airport there are three airlines that operate international cargo transport: Silver Air, ASL Airlines Switzerland and RAF- Avia.

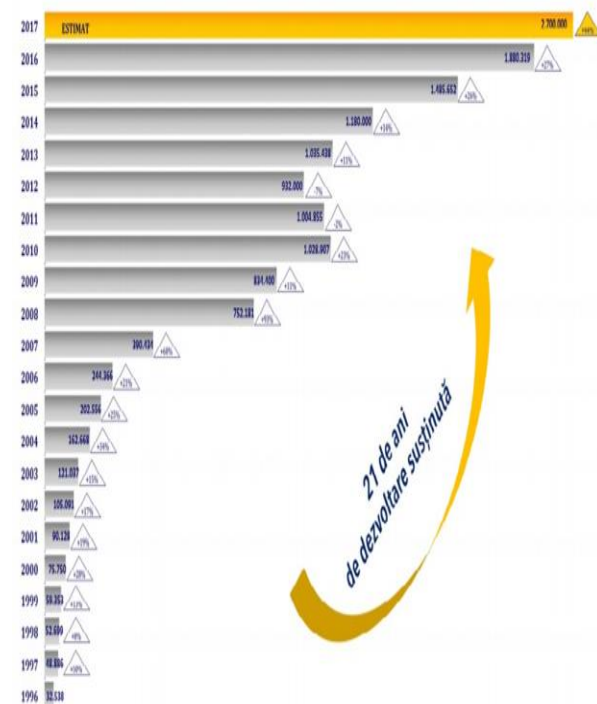


Figure 1. Sustained development by the passengers' traffic evolution [1]

But the most significant increase is recorded at the cargo transport, where the data shows an increase by 79% at over 825,000 tones.

Situated in the middle of Transylvania (about 7,000,000 inhabitants), Cluj-Napoca International Airport, is one of the Europe modern regional airport, the second one in the country, regarding the number of passengers embarked/disembarked, after Bucharest "Henri Coandă" International Airport, and therefore comparable with similar cities like Geneva (12 mil. passengers) or Stuttgart (9 mil. passengers).

The AIAI recorded the first 1 million passengers / year in 2010 (Figure 2).



Figure 2. Passengers traffic evolution on AIAI (2000-2016) [1]

The destinations offered by the Cluj Avram Iancu International Airport to passengers are varied, given fact that there are up to 43 domestic and international destinations to 20 countries of destination in Europe and the Middle East, operated by Tarom, Wizz Air, Lufthansa, Lot Polish Airlines, Blue Air, Turkish Airlines and Vueling. Passengers can fly around the world, because the airport is connected to major European hubs. Therefore, from Cluj-Napoca can currently fly to Brussels South Charleroi (Belgium), Dubai (UAE), Basel Mulhouse Freiburg (Switzerland), Paris-Beauvais, Nice (France), Munich, Dortmund, Cologne, Nuremberg, Memmingen, Berlin Schonefeld, Frankfurt Hahn, Karlsruhe-Baden-Baden, Hamburg (Germany), Budapest (Hungary), Tel Aviv (Israel), Venice - Treviso, Rome - Ciampino, Bologna, Milan - Bergamo, Bari (Italy), London - Luton, Liverpool, Doncaster Sheffield, Birmingham (UK), Dublin (Ireland), Eindhoven (Netherlands), Zaragoza, Valencia, Madrid, Barcelona, Alicante, Malaga (Spain), Malmo, Stockholm Skavsta (Sweden), Warsaw (Poland), Billund (Denmark), Istanbul (Turkey), Bucharest, Timisoara and Iasi (Romania), Bratislava (Slovakia), Malta (Malta) and Larnaca (Cyprus). To all these destinations a series of holiday

destinations are added, operated by Aegean Airlines, Air Bucharest, AtlasGlobal, Blue Air, Corendon Airlines, Ellinair, Freebird Airlines, Pegasus and Tarom. Therefore, charter flights on 2017 are as follow: Rhodes, Heraklion, Corfu, Zakynthos, Thessaloniki, Chania, Santorini, Skiathos (Greece) and Antalya (Turkey).

The next necessary changes are related to the local possibilities (revealed by studies) and the digitalization requirements (implementation of information systems - IS).

As part of a larger study, the aim of this paper is, to identify change triggering factors (CTF) and critical success factors (CFS) for the Change Management (CM) in the Cluj-Napoca International Airport development IS projects.

The starting point is the developing plans that until now achieved no investments approval:

- A new cargo terminal, more justified after the recent increase by 79% of the cargo transport;
- Extension of the embarking and disembarking platform, imposed by the increasing number of passengers;
- Achievement of the Bravo runway, after Alpha, imposed by the number of take off and landings (over 8/hour) and the necessities for aircrafts parking;
- Extend the actual runway from 2,100m to 3,500m, to support also transcontinental flights;
- A new control tower;
- Extend the cars parking capacity;
- A modern access to E576 road.

It may be seen that all proposals regards the infrastructure. When such a public organization (institution), that for 20 years is under direct coordination of the County Council, is faced with changes and change management (CM) decisions, contemporary change management theories should be investigated, being sometimes contradictory.

In this process, the academic expertise is combined with decision maker's opinion, technical specialists' capabilities, and marketing representatives, in order to compensate the lack empirical evidence and politically promoted unchallenged hypotheses.

This is an ideal case; currently public organizations are confronted with the need to implement changes to existing processes, often connected with transformation that takes place in public management and infrastructure, together with staff training and management. In the literature are more often consider the failures ([2] as Roy Ashekenas state ([3]): "As you are sure to have noticed, change has become a "way of life", with "change management" being a recognized discipline for 30 years now. Despite significant investment and literature on the subject, most studies still show how 60-70% failure rate for organizational change projects – a statistic that has stayed constant from the 1970s to present."

In the AIAI usual Change Management activities the focus is on what topics (activities) will be accepted by

the County Council to be implemented, how to plan better for the implementation of changes, how to bust the efficiency of the selected activities and how to overcome employee resistance.

Strengthening its position as one of the most important airports in the Eastern Europe, providing air links worldwide through safe and quality services it is the mission of AIAI.

II. EVOLUTION

The external, academic expertise is, and will be, focused on the Change Management (CM) modelling and simulation tools and structures that intends to keep any declared change effort under control, having as primary goals: (i) to identify how new carriers may start to operate from Cluj-Napoca in attractive economical conditions for both partners; (ii) how the public services (in the first stage Public Food Services – PFS) can be extend and made more profitable and last but not least the profitable maintenance and service activity. The efficiency, opportunity and employee resistance overcoming will be treated considering the balance between CTF (change triggering factors) as elements that alarms about a request and CFS (critical success factors) as elements that must be implemented for leading to the problem solving.

In order to achieve this goal, different scientific methods and techniques have been considered, especially a critical and quantitative analysis, digital and IT numerical solutions for control, optimization, statistic evaluation, and decision making.

The extensive practical experience, combined with case studies and the literature analysis where essential for the semi-structured interviews and questionnaire generation and for the scenarios elaboration. Change requires significant investments. From the triad Quick – Good – Cheap, we have to decide which 2 out of 3 we would like to offer and which 2 out of 3 we would like to use in our approach.

Chinese have over 30 signs and sign combination for change, mostly as a group of two signs combining the:

Danger & Opportunity

改變 standard

改变 simplified

Danger and opportunities are not matter that are considered first. Even "ignoring" for the moment the safety and the crisis management within the AIAI areal, it is god to know that a successful change requires context sensitive approach and therefore the imagined Projects for AIAI are planned to guide the

research in order to guide the organization readiness to deal with changes:

- New players as fly companies
- Attractivity of AIAI for fly companies
- New player as Services deliverer

Nowadays, the change and the change management are designed in form of a Project. Planning a project, as a change, involves selected methods in managing resources. A clearly documented change management may better project the process map and the resources allocation decisions and monitoring.

The managers creates a representation of the situation that they identify with the change and creates their “capability” to manage their time, their resources and their subordinates using an effective communication ([4]), (crucial, as the powerful leverage in building consensus) through the IT instrumentation & Information System.

By creating and planning the research activity in smaller shares an incremental framework is created to better ensure the management and the success of the research activity and to benefit in early stages from any positive result, regardless if the activity is driven by a single person or by cross-functional teams.

Once defined the business goal the mathematical and modeling methods are to be selected and this will indicate how to figure out the work and what obstacles may stay (or are staying) in the way. This is an established framework that defines also (implicitly) the responsibilities for each level of participants.

The project will be a clear solution provider based on: a necessity, a method and validate measurable result. The project can be used a self standing component or as a scalable and/ or incremental component in a larger project.

In order to be validated and used the project development and implementation needs a complete collaboration of the end-users. The clear needs definition and redefinition, the elaboration of the roadmaps and methodology requires the end-users consultancy and participation. A blindly follow of an initial plan or theoretical methodology will not create the value that embrace the required change and lead to the goal. Therefore, this is the value of the research by offering support in the change management process to start from less information in the early stage but being able to consider the critical success factors to select the most convenient methodology and, during the process, to continue with new data gathering and use the right change triggering factors to support the processes adaptivity according with the goals.

III.START UP PHASE

As long as the success criteria are typically unidentified, the performance measurement should start with an imposed reference (needs or wishes) that becomes a critical factor for success. The implementation progress must be monitored and the end-users feed-back to be consider for the project recalibration (synthetic) by redefining the success

criteria and for the project effective control of objectives (analytic) and here are important the change triggering factors (CTF) and critical success factors (CFS) for identifying the need of change and the right moment for action within the change management. Unfortunately, the literature is not very generous in providing examples in identifying or adapting these factors.

The starting point of defining critical success factors are the organization already identified critical factors. To reach the first horizon desire (3,000,000 passengers), we should consider little or none infrastructure investments, or employees training. The only available measures are the area of logistics management. Therefore, the change management must be oriented on this type of change.

The identified direction and “resources”, the target may be fulfilled by listening the “master voice”, namely the passengers. The end users satisfaction is not only a precondition for successful change definition, but also as a condition for the change implementation in form of projects.

The projects forms is easier to be understand by the end-users and in the same time are easier to be planned, proposed and financed.

The end-user satisfaction is not fully felt until they see (in a convenient horizon of time) that their opinion matters. That could be considered as a training process for all the involved participants in research and lead to a methodology that may enables a quickly overcome the communications bottlenecks, diminishing the resistance and offering the enhancement of a real and useful information flow.

A better access to consistent, timely, and accurate data, in the initial phase, improves the organization ability to be informed about the necessity of a project and latter, if any changes in data occurred, about the project evolution.

This is a crucial point where digitalization may be integrated, the lack of integration made impossible to have quick access to information indispensable for functioning and monitoring of operations and caused an ineffective flow of information between the public organizations, researchers, financing institutions and the end-users. Uncooperative systems add difficulties in monitoring expenditures and fund allocation, finally to have an objective view over the results.

The academic expertise conducted to a concurrent change management as applied parallel engineering for the project implementation. As a must, is the AIAI representatives and the end-users participation in a series of activities that promote the clear definition of each project goal and, successively lead to the accomplishment of the main goal of this research.

Started as a PhD stage, this research is looking for a proper funding in a coherently worked-out schedule, as an important study that contribute to the AIAI and the Cluj-Napoca city development in three ways by the identification of CSFs and CTFs; definition of the project topics to work on; and assisting the AIAI representatives in the change management process.

Up to now, the research process gathered primary rough responses at questionnaire initiate for the: (i) identification of the CFS; (ii) selection of the CTFs domains; and (iii) start of four projects for the modeling, optimization and decision making process. The aim of the four projects is to indicate the practical issues and the consequently effect for the project success, and the foreseen evolution after the change implementation and exploitation with a possible 'best practices' dissemination and the elements that may be considered for future works. Next are presented some preliminary data from the started projects.

A. New players as fly companies

Project No. 1, used volunteer students to distribute over 200 questionnaires in the AIAI public area, within a preselected aircrafts movement interval. The gathered data are now in a data processing phase. The data collection was made in parallel with an optimization model elaboration. In this scenario is consider that an important increase in the number of passengers in 2017:Q1 (60%) was made also based on increasing number of the aircraft's movements (55%). To continue the increasing trend there are two options: (i) the operating companies will bring more aircraft in connection with AIAI, or (ii) attracting (in profitable conditions) new carries.

New carriers on AIAI?

Considering the estimated gain and knowing how much AIAI must pay for a license operation cost it is a matter to optimize the change conditions for having a new operator.

As simple as it seems, there are actually five different possibilities that actually leads to a risk management based on estimated profit.

The most risky situation is that having the 3 million passengers target to avoid the opportunity analysis and to invest in new operation licenses to increase the passenger number in any conditions. A second scenario is to hire an analyst that will estimate the success chances with a certain lower investment risk (the academic expertise may enter in this category). Third, based on the AIAI evolution history to make a self estimation of the success chances for a minimum profit (or, no gain but no loss either) still having as result the increase of passenger number. Fourth, consider the opinion of partner airports regarding the investment and the gain opportunities. Finally, a last option is to avoid to attract any new flight carrier, remaining at the existing transporters increase interest, but having no economic loss.

For the second scenario, a mathematical model was made where variables adjust the results at actual existing conditions.

At the given data for 2017:Q1, the result in running the elaborated model, offers three solutions showing first in which situation the loss is ensured 100% and for

gaining situation how much could be the gain in respect with the risk (lowest risk and higher risk), but having a gain in both situations.

B. Attractivity of AIAI for fly companies

Project No. 2, derives and complete Project No 1.

How attractive is the AIAI?

If no efforts are made to attract new operators, how attractive is AIAI for them to invest and how much are willing the existing ones to remain?

These two questions make the core of Project No. 2. Considering that pool of passenger is the similar for all fly companies, three major elements are selected to put into evidence the attractivity of AIAI, having an important impact over the fly companies' profit: the landing costs, the services costs, and the advertising costs.

These three components are chosen because they represent permanent and most important expenditures on the airport and nevertheless they are negotiable with the airport management.

Therefore, each of the three costs may vary between a minim and a maxim. One end is the limit of profitability for the airport the other one for the fly companies, each one being willing to reach the other limit. As expected, the result is in between.

Using a combination of different mathematical methods, a digital model was elaborated. This model is using the Nobel Prized Leonard Hurwicz optimality rule, the Laplace balanced optimism rule, and the Savage rule combined with statistics results.

The result depends on which side of the barricade you are. In our case the AIAI interest are served, and the obtained results are interesting showing that if AIAI is made attractive for the operating fly companies, the gain will be greater than having a new fly company attract to operate from Cluj-Napoca and with very low risks. Otherwise (no attractive airport and no new attracted fly companies) the gain will decrease with 2/3 of the actual value, in one year.

C. New player as services deliverer

Project No. 3, is address to the services companies that would like to operate on AIAI. In this project, again there are two groups of different advantages and a group of negotiable elements.

On one side a services provider have the access to 3,000,000 passengers in a very concentrated area, so is a different type of business management that must be consider in order to access as many clients as possible and on multiple segments of interest.

On the other side is AIAI that wants on optimum management of public spaces to have a larger profit from rent and event organizations, and better services for passengers and accompanying persons (as consumers and potential passengers).

The AIAI mission is to strengthening its position, as one of the most important airports in the Eastern Europe, and providing as many as possible air links worldwide through safe and quality services. Moreover is the vision for AIAI to become from far the most important regional airport in the country, with multiple high standard services for airlines, for passengers and for other users of services.

Again, the academic expertise may lead to mixed conclusions. Like in any research approach, the client (the funding body) interests must be served through the expertise. One research model is dedicated to the public spaces management and attractivity for services providers. In the providers' attractivity chapter, we consider services from the "AIAI part" that forms a different modeling approach that includes parameter of service activities, legislation, certification and energy management. An additional business plan support must be also included.

The Project No 3 is actually under construction; the entire research program is no more than six month old. For this project a deeper analysis in the Public Food Providers Services industry was made and will continue, considering: classifications, required facilities, provided quality, type of products, supply regulations, staff selection, cleaning, water, energy and electricity supply, consumption and supply cycles, opening hours and preparatory elements regarding safe and security, with opening for services and facilities in emergency cases.

IV. CONCLUSIONS

At this very moment, the research achievements start to be reflected in the AIAI activity. In October 2017, Lufthansa celebrated 50 years of presence in Romania and nine successful years in Cluj-Napoca (the Cluj-Napoca - München connection opens the connection with the largest Lufthansa Hub, Frankfurt).

A discussion over the research findings is necessary and concludes, considering the actual study's contributions and limitations that the research work starts well.

Definitory for the research activity is the need to split and distribute different task in the projects. That ensures already a better tasks control and results valorization.

The concurrent change management enable the single members and/or cross-functional teams' activities.

The parallel engineering of the projects enables the activities modeling and the implementation of the available IT capabilities.

The AIAI representative's involvement together with the end-users participation; as well as the stream of future work will be based on the research funding identification.

Acknowledgement

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Formal or Informal Marketing Planning? A Small Insight from Maltese SMEs Managers

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Abstract – A subject that concerns different scholars and practitioners is what approach to marketing planning is best for Small and Medium Sized Enterprises (SMEs)? Depending on the manager's style/ability and business domain, there are examples in which marketing plans are neither explicitly stated, nor written, while others are noted down, have clear objectives, specific actions and perceivable budgets. Either way, each approach (formal or informal) shows a profitable enterprise. Our research objective is to shed some light upon Maltese SMEs manager's approach to marketing planning, by investigating the relationship between marketing activities, firm size and field of business.

Keywords: formal and informal planning, marketing activity, SMEs, Kendall's tau-b

I. INTRODUCTION

To start investigating if managers of Small and Medium Sized Enterprises (SMEs) create and implement marketing plans in a formal or informal approach, one must take into considerations earlier investigations results, that show the tendency for a simple and instinctive marketing planning process encountered in SMEs [3; 4; 9].

From this point of view, formal planning is considered by SMEs managers to be an activity for larger organizations with a complex business environment. Secondly, SMEs managers are aware of the formal planning benefits that they can gain in turbulent business conditions.

The present research is not addressing the issue of linking the SMEs managers' approach to planning with business environment conditions, but encountered results show that formal or informal marketing planning depends on the organization's size (micro, small and medium) and field of business.

Further research is needed to identify the full range of benefits that a SMEs manager encountered in the planning process (formal or informal) and linking them

with business environment conditions under which planning was made.

Although, under these circumstances, the present research based on literature review and responses gathered from 47 Maltese SMEs regarding marketing planning, pinpoint some interesting findings upon the approach of formal and informal marketing planning within their enterprise.

II. LITERATURE REVIEW

The subject of marketing planning approach is broadly researched in organizational theory literature. For example, the research approach described in [14] shows evidences that strategic planning firms achieve better performance than other firms do. However, the same authors identified cases in which strategic planning often fails due to problems encountered at the implementation stage.

As far as SMEs are concerned, some researchers show that small business managers have product and service knowledge of what is being offered to customers but are not experts in the field of marketing and therefore struggle with implementing strategic planning [10]. On the other hand, other researchers show that small business managers struggle due to lack of marketing knowledge [2].

The key findings of a research described in [18], shows that: "organizations that used strategic planning to make critical decisions were better able to pursue growth opportunities during the crisis; and organizations that relied on strategic planning during the crisis are more confident about their prospects for near-term growth".

Another study concluded that: "SMEs lack marketing organizational activities, namely in planning and implementation of marketing strategy. Moreover, SMEs with better performance check that their objectives are reached but do not compare their strategy with that of competitors. Hence, they could

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miss opportunities to keep up to date with market development” [8].

Research conducted by Cronin-Glimore (2012), provides recommendations on how to raise the awareness on the need of educating small business managers on the importance of marketing [6]. In other words, the importance of formal marketing planning for creating strong, clear and innovative strategies for increasing the market share. Moreover, in the same study, most of the questioned managers mentioned that they are formulating a strategy for a period of six months or less. Thus, showing a short-term approach to marketing planning, probably not that formal and more project based (i.e. helping the sale force throughout marketing activities).

A case study, described in [7], shows the approach of three SMEs to marketing, being considerably different:

- The first SME has a structured and active approach;
- The second one has a flexible and explorative approach oriented towards the search for visibility of the company;
- The third one does not have a very active approach and it is mainly oriented towards sales boosting.

The three analyzed SMEs are engaged in organizing marketing activities with different degrees of complexity, effort and investment, some of them formal while other informal.

The research conducted by Morgan et al. (2009), examines how specific marketing capabilities can influence a firm's profit growth. Their results suggest that business owners should have a detailed route for building, maintaining and using marketing capabilities, to seek and achieve profit growth [13].

Other researchers (Maziriri & Chinomona, 2016) analyze the relationship between specific marketing practices (relationship marketing, green marketing and innovative marketing) and SMEs business performance, thus indicating a formal planning activity [12].

Pérez-Cabañero et al. (2012) report two management capabilities that positively influence the enterprise's financial performance, namely: marketing planning and pricing capabilities. Among others, by marketing planning capabilities, the authors refer to segmentation and targeting, resources allocation to the marketing department, coordination of marketing activities, effectiveness of the planning process, evaluation and control. In addition, pricing capabilities refer to firms making accurate sales forecasts and implementing effective pricing policies for increasing their sales and profits [16]. In other words, all lead to a strong formal planning.

Four study cases presented by Bettiol et al. (2012), pinpoint that marketing strategy in SMEs is all business-owner driven, nonsystematic, unstructured and a reaction response towards business environment changes [1]. Parry et al (2012) present a case study comparing two software SMEs in which, under similar business conditions, one failed and the other

succeeded, thus showing the business owner mentality of marketing for survival [15].

From a different point of view, Kutkut (2012) focuses on small business ventures, and encounters that their target market selections employ a combination of formal and informal procedure [11]. From our point of view, this shows a possible correlation between business field, enterprise size and marketing activity planning.

We can conclude that authors and practitioners generally agree that formal marketing planning is necessary, although some authors contend that it may be more appropriate in certain situations than others may. Moreover, examples of the benefits that formal planning can provide exist, although few SMEs engage in formal planning.

From this point of view, we question ourselves if there is a correlation between the approach of small business owners to pursue marketing planning activities in their business field and regarding its enterprise size (in terms of turnover and employees number).

III. METHODOLOGY

The method of research consisted of an exploratory qualitative study, obtaining information from 47 Maltese SMEs. An online structured questionnaire (containing 20 questions) was designed to discover the managers' approach and perceptions when pursuing marketing activities. Due to the relative low online response rate (aproximative 9%), some of the respondents were interviewed offline during and after the MFCC's - Malta Trade Fare 2013.

After a response preanalysis we created a research framework (Figure 1), taking into consideration the following variables: planning marketing activities, turnover, number of employees and field of business, thus, creating three research hypotheses:

- H01 – There is no relationship between firm size, in terms of turnover and marketing activity planning;
- H02 – There is no relationship between firm size, in terms of employee number and marketing activity planning;
- H303– There is a significant relationship between the firm's field of business and marketing activity planning.

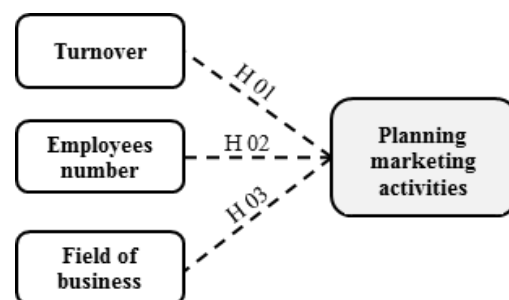


Figure 1. Research framework

To test our assumptions and to understand whether there is an association (in terms of strength and direction) between our variables, we computed Kendall's tau-b correlation coefficient (T_b) in IBM SPSS Statistics.

IV. RESULTS

Firstly, Figure 2 to 5 show the descriptive statistics of our SMEs research sample, for the following variables: turnover, number of employees, field of business and planning marketing activities.

From Figure 2, we can observe that most of our SMEs responses (61.7%) are concentrated in the first two-turnover category: less than 100,000 Euros (34%), respectively between 100,000 – 500,000 Euros (27.7%). Thus, we can conclude that in terms of turnover, our sample contains micro and small size enterprises.

Figure 3, also shows, that in terms of employee number, our SMEs sample contains a great number of micro enterprises (48.9%) with up to 9 employees, respectively small enterprises (40.5%) with a number between 10 – 49 employees.

Regarding the field of business of our sample, presented in Figure 4, we pay attention to our three “spikes”: services (36.2%), commerce (25.5%) and manufacturing for end users (27.7%).

As an empiric conclusion, our sample results are in line with the Maltese economy characteristic presented in PwC's (Price Waterhouse Coopers) guide: small family-run companies involved in accommodation, food services (and related activities), agriculture, fishery, wholesale/retail, a full range of services

(financial, insurance, real estate, shipping, IT&C and not only) and a manufacturing industry dominated by many small firms with less than 10 employees [17].

Analyzing SMEs responses for the planning of marketing activities (Figure 5.), we encountered that 25.5% do not create or have a marketing plan, while 46.9% have a sort of formal marketing activity planning (not objectives orientated and sporadic).

From this point of view, we can conclude that business-owners of Maltese micro and small enterprises tend to have an interest upon marketing planning even though they set up "hasty" marketing plans. In this line of reasoning, we can consider that the firm size and its field of business could influence these “hasty” marketing plans.

At this stage, based of empirical literature findings and results from our research sample, we can only assume that this approach of informal marketing activities, probably reactive to market opportunities or threats and based of financial performance, is a specific SMEs business-owner manifest, that differ from the conventional and structured form typical for large organizations.

For our hypotheses, regarding the relationship of turnover, number of employees and field of business, upon planning marketing activities, we used Kendall's correlation coefficient (T_b) to measure and understand the strength and direction of their association. Kendall's tau correlation coefficient (T_b) can take values between -1 and $+1$, thus a positive correlation indicates that both variables increase together, while a negative correlation indicates that as one variable increases the other one decreases [5].

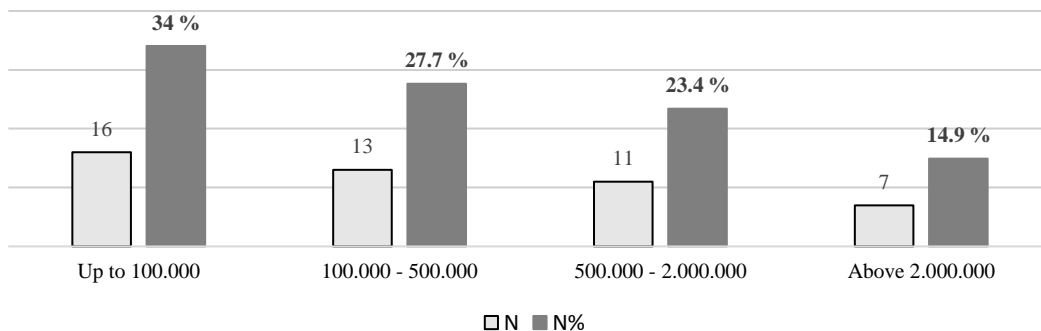


Figure 2. Descriptive statistics for turnover (Euros)

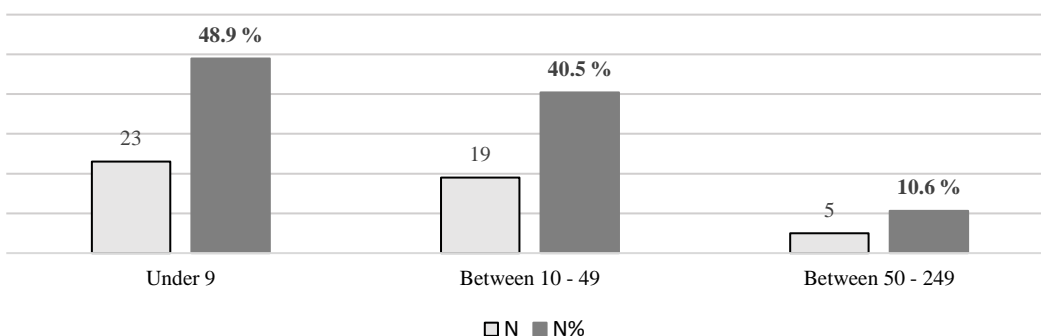


Figure 3. Descriptive statistics for number of employees

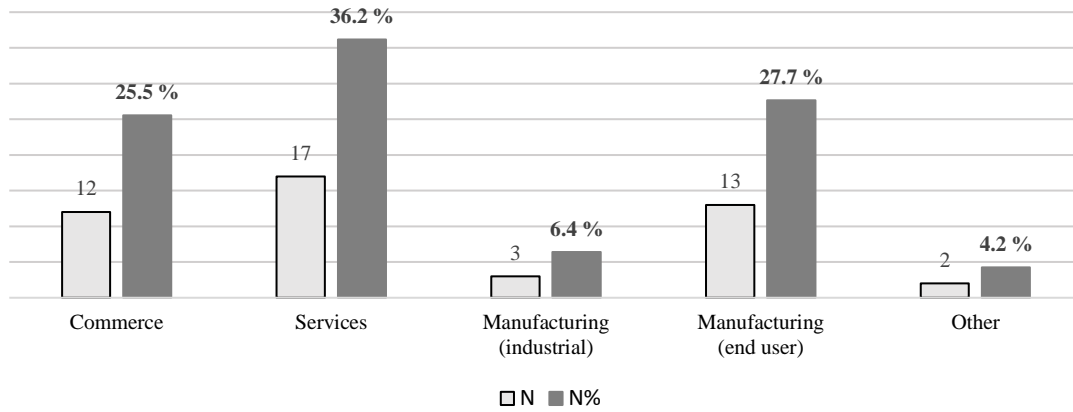


Figure 4. Descriptive statistics for field of business

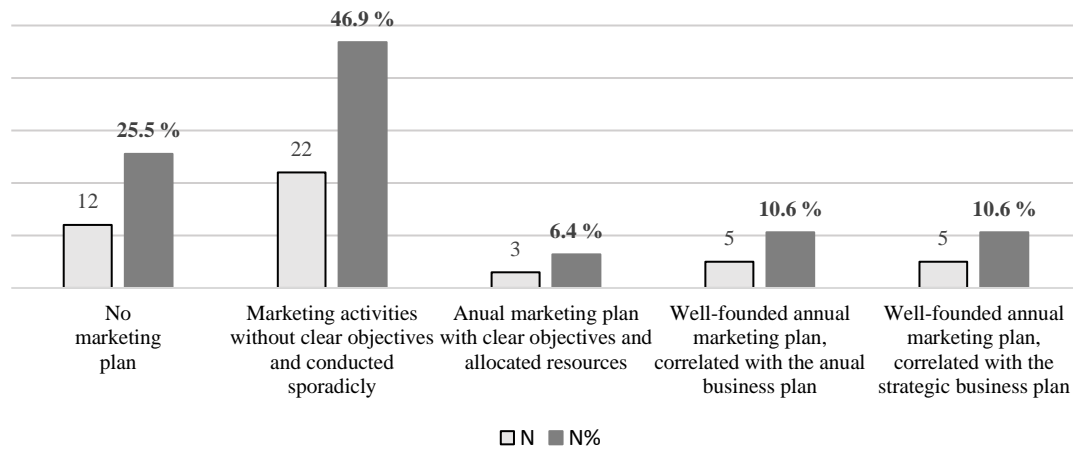


Figure 5. Descriptive statistics for planning marketing activities

Table 1 Kendall's correlation test results

Variables		T	NoE	FoB
PMA	Kendall's tau-b	0.260*	0.301*	-0.083
	Sig. (2-tailed)	0.037	0.022	0.504
	N	47	47	47

*. Correlation is significant at the 0.05 level (2-tailed).

Our results regarding the relationship of turnover (T), number of employees (NoE) and field of business (FoB), upon planning marketing activities (MPA) are presented in Table 1.

For our first hypothesis, we can observe a weak relationship between firm's turnover and marketing activity planning ($T_b = 0.260$), not statistically significant ($p = 0.037$) for our sample. Our hypothesis is rejected; thus, we can conclude that Maltese SMEs managers, take into consideration their financial resources (generated by their turnover) in planning marketing activities, but do not depend on it.

The second hypothesis is also rejected, observing a weak relationship between firm's employee number and marketing activity planning ($T_b = 0.301$), not statistically significant ($p = 0.022$) for our sample. In the same line of reasoning, we can conclude that Maltese SMEs managers, take into consideration their

human resources in planning marketing activities, but are not built upon their number.

Finally, an interesting result is occurred for our last hypothesis, that of a negative relationship between the firm's field of business and marketing activity planning ($T_b = -0.083$). Although, not statistically significant ($p = 0.504$) for our sample, we can assume that our results may be influenced by other factors, like the business environment conditions at the time of data collection. Possibly, a non-turbulent business environment (or an economic stability) caused a relaxation in pursuing market advantages.

V. CONCLUSIONS

From our literature review, we can support the general proposition that tangible and intangible benefits can be identified in organizations that have done some sort of formal marketing planning.

On one hand, our results show a weak, but a positive relationship between firm size (in terms of turnover and employees number) and marketing planning activities, suggesting that formal marketing planning is influenced to a certain extent by the firm's size. On the other hand, the negative relationship between the firm's field of

business and marketing activity planning is reactive to market conditions.

Sure enough, our research has some limitations, firstly due to the relatively small SME sample and secondly since Kendall's Test enables a one by one variables comparison.

For future research we consider creating a generalized statistical model to examine the influence of different factor groups upon marketing activity, with the purpose of determining the minimal conditions level from which SMEs owners have the predisposition to undertake formal marketing activities.

As a personal note, we believe that the business owner's openness towards the understanding of marketing orientation and research principles is essential for successful formal marketing plans.

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Strategic management of a Public Administration Unit Using Balanced Scorecard Method

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Abstract – The strategic planning, finalized in a Development Strategy (DS), is becoming an important tool of the strategic management of an Administrative Territorial Unit (ATU, commune, municipality and county). The performance management through the performance management systems (PMS) is becoming absolute necessary and the used tools are in an on-going process. Balanced Scorecard (BSC) is a strategic planning and management tool that align the internal activities of an administrative or economic entity to its vision and strategy, improve the internal and external communications and monitor the entity's performance. The objectives of this study are: (1) to develop a BSC model designed for the public administration, and (2) to show how to implement such a tool for a medium sized commune. Consequently, the research approach was developed in two phases. First, the identification of strategic objectives using Delphi technique, and second, the development of a tailored model for a commune, Dudeştii Noi located in the Timiş Country (West Region of Romania). Based on the proposed approach, the commune's strategic priorities (Infrastructure, Culture/Tourism/Leisure time, Environment and Social/Health/Education) and the strategic objectives were mapped and introduced in a strategy map using BSC. Lead indicators and lag indicators were defined. Finally, the research conclusions indicate some BSC model's possible developments for larger ATUs (municipalities, counties).

Keywords: Balanced Scorecard, public administration, development, implementation, case study, Dudeştii Noi

I. INTRODUCTION

The public administration authorities from Romania are in a large modernization process in order to attend the objectives of efficiency, effectiveness and

economy. Therefore, the strategic planning requires the existence of development strategies and a correct performance management. In the public sector, the main purpose is not to create *profit* but to create *value* for their communities [1], [2]. The citizens become clients, beneficiaries of strategy. In this context, the strategy's development and implementation become critical and complex processes and requires new methodologies.

Such a methodology is Balanced Scorecard (BSC), also known as an extension of “*dashboard*” concept. One of the main reason for introduction of BSC is “*the translation of corporate strategic priorities in directions and statements oriented on actions related to what must be done for strategy's execution*” [15].

Considering that in public administration the citizen's satisfaction is on the first place, the implementation of BSC requires to amend its original architecture. There are specific differences between *profit-oriented* organizations (industrial, business or financial enterprises) and the others that are *mission-oriented* (public administration authorities or NGOs). These differences act, in some circumstances, as barriers against the transfer of management techniques from the private to the public sector [1]. In Romanian public administration context, there is a scarcity of budgetary resources at communal level and, in the same time, a rising demand of services for citizens and community. The adoption of efficient strategies allowing the public administration's objectives fulfilment and the transparency of results, is becoming a strong priority [1]. The performance measurement acquiring a necessary leading role.

In this paper the authors propose the following items: to develop a BSC model designed for local public administration, to show a successful implementation for the Dudeştii Noi city hall (a medium sized commune in Timiş county, Romania), to propose new developments and implementations for larger ATUs.

The paper's content is structured as follow: Section II describes generally the BSC method and tool, adapted

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to public sector. As well, the role of KPIs (Key Performance Indicators and Key Result Indicators) in performance evaluation is emphasized. Section III describes the research methodology and design of the adopted BSC model. Section IV is dedicated to the case study research (the strategic management of Dudești Noi commune). Section V includes the conclusions of the presented research and future researches that have been associated with the development directions for the BSC method.

II. THE BSC METHOD AND TOOL

The Balance Scorecard (BSC, Figure 1) is a strategic planning and management system that is used extensively in business and industry, government, and nonprofit organizations to align business activities to the vision and strategy of the organization, to improve

internal and external communications and to monitor organization performance against strategic goals. BSC has evolved from a simple performance measurement frame to a full strategic planning and system. The BSC innovation is describes as follows [3]: *“The balanced scorecard retains traditional financial measures. However, financial measures tell the story of past events, an adequate story for industrial age companies for which investments in long-term capabilities and customer relationships were not critical for success. These financial measures are inadequate, however, for guiding and evaluating the journey that information age companies must make to create future value through investment in customers, suppliers, employees, processes, technology, and innovation.”*

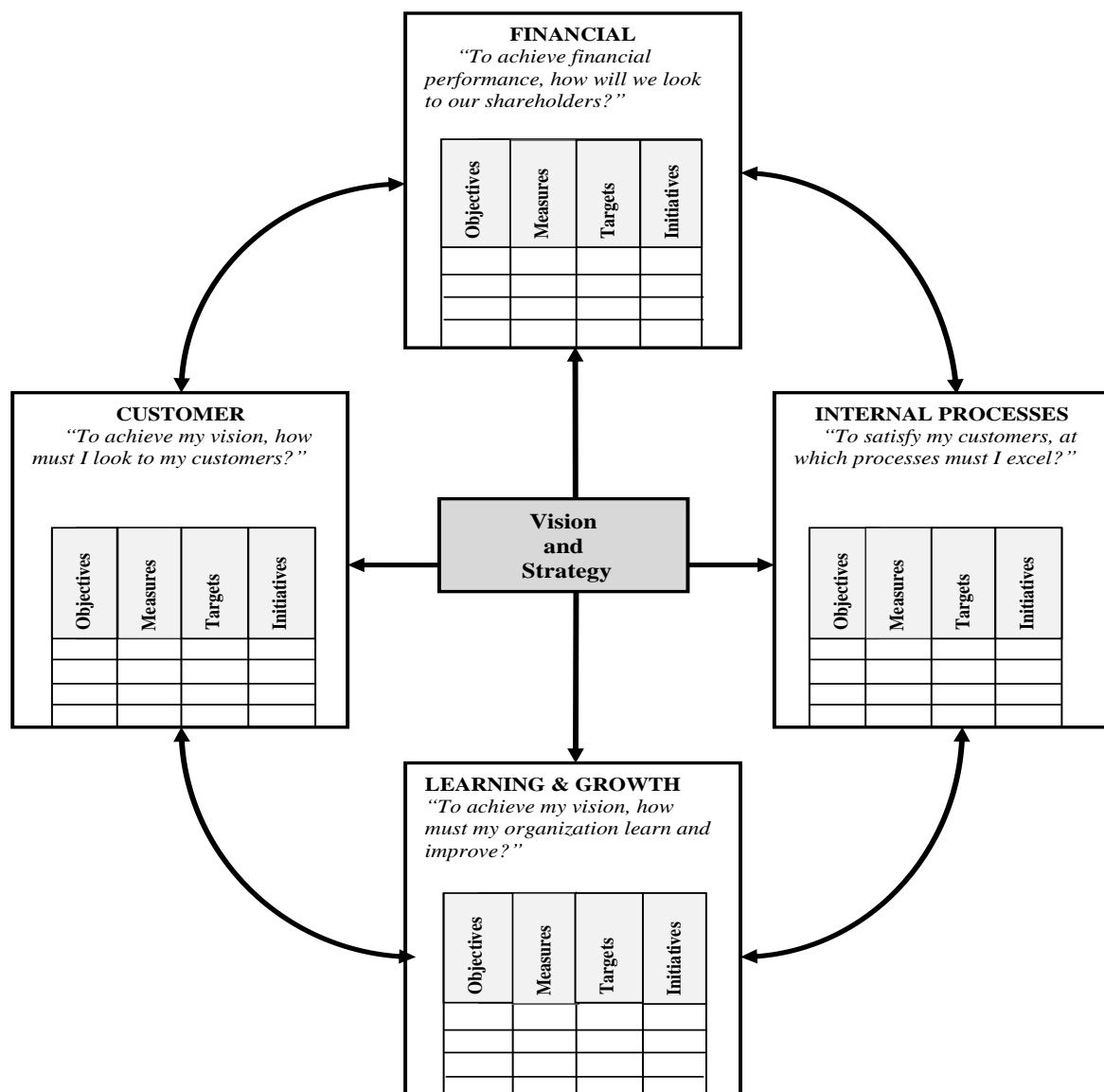


Figure 1. The four perspectives of the BSC model [5]

In the early version, Kaplan and Norton [3] propose a frame that permits the performance measurement of an

organization by analyzing this from four standpoints, called perspectives, and to develop metrics, collect data

and analyze it relative to each of these perspectives. These perspectives are (Figure 2):

- The “Financial Perspective”: it represents the long-term strategic objectives of the organization, by incorporating tangible outcomes of the strategy in traditional financial terms. This perspective examines whether the implementation and execution of company’s strategy are contributing to the bottom-line improvement of the company;
- The “Customer Perspective”: it defines the value proposition that the organization will apply to satisfy customers, that is to generate more sales to most profitable customer groups;
- The “Internal business processes Perspective”: it refers to the process of creating and delivering the customer value proposition, by focusing on all activities required to reach excellence in efficiently providing the value expected by the customers;
- The “Learning and Growth Perspective”: this perspective focuses on the intangible assets of an organization, mainly in terms of the internal skills and capabilities required to support the internal processes of value creation. The Learning and Growth perspective covers jobs (human capital), systems (information capital), and climate (organization capital) of the enterprise. Kaplan and Norton [3] emphasizes upon the difference between “learning” and “training”. The “learning” is more complex than “training”.

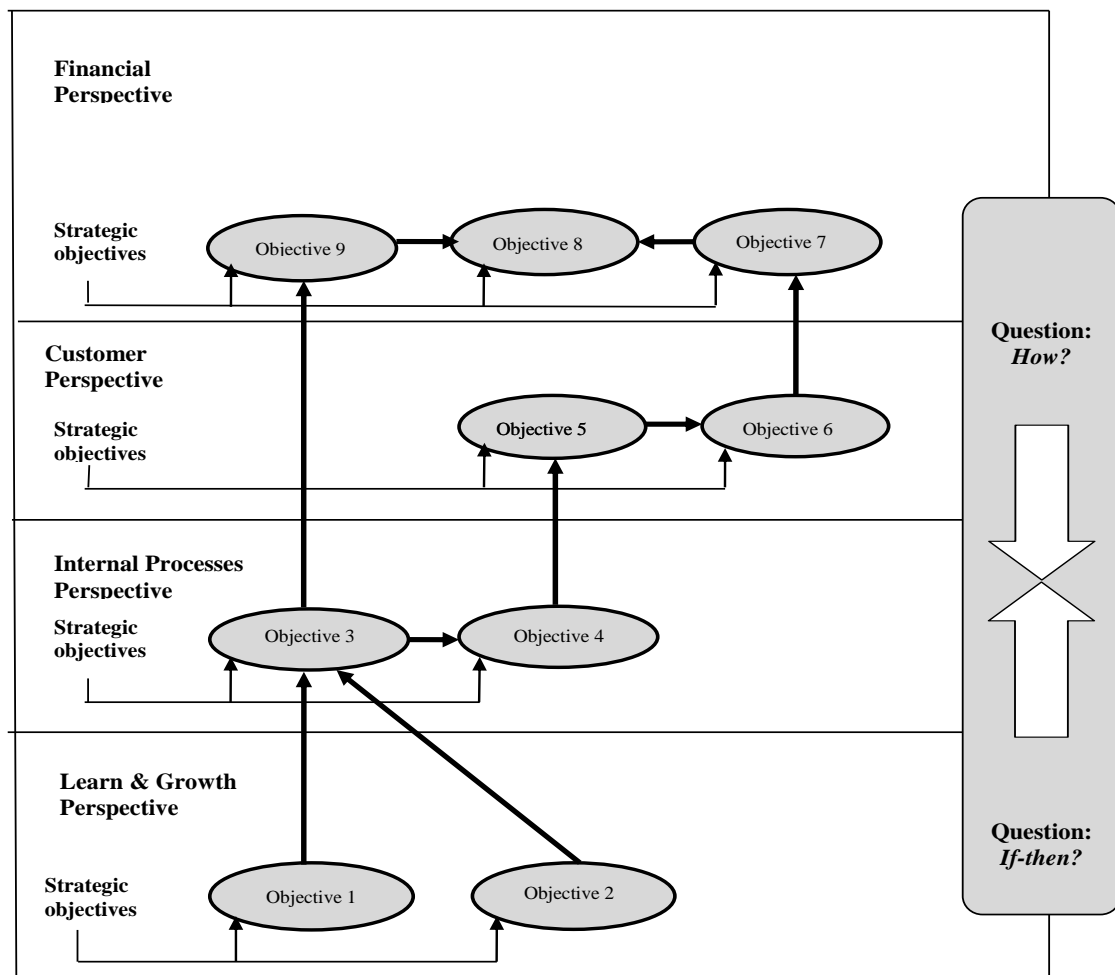


Figure 2. The strategy mapping (adapted from [6])

Each perspective is related to the other three, meaning that the performance obtained in one perspective may influence the performance obtained in the remaining. These relationships are schematically represented in the so called “strategy map”.

Thus, for each of the four perspectives, an *objective* should be defined (the aim of the perspective measurement), the *measures* (performance indicators for the objectives), the *target values* for each measure (the value that the organization aims to reach) and

finally the *initiatives* (the actions that must be implemented to reach the above-mentioned target values).

A schematic representation of a general model for BSC is depicted in Figure 1. The objectives are evaluated by their performances, the measures contain *key performances indicators* (KPI) and *key results indicators* (KRI). These indicators, also known as *lead indicators* and *lag indicators*, are target values for

every measure. The initiatives are referring to the actions that must be done to achieve these values.

The Strategy Maps are communication tools used to tell a story of how value is created for the organization. They show a logical, step-by-step connection between strategic objectives in the form of a cause-and-effect chain.

In Figure 2, a theoretical example of a cause-and-effect between nine objectives located in different perspectives is shown.

Generally speaking, improving performance in the objectives found in the Learning & Growth perspective (the bottom row) enables the organization to improve its Internal Process Perspective Objectives (the next row up), which in turn enables the organization to create desirable results in the Customer and Financial perspectives (the top two rows).

By translating their strategy into the logical architecture of a strategy map and the BSC, organizations create a common and understandable point of reference for all organizational units and employees [8].

Organizations build strategy maps from the top down, starting with the destination and then charting the routes that lead there. Corporate executives first review

their mission statement, why their company believes in. From that information, they develop their strategic vision, what their company wants to become.

This vision creates a clear picture of the company's overall goal, which could be to become a top-quartile performer. The strategy identifies the path intended to reach that destination [8], [9].

There are significant differences between the BSC's perspectives for private organizations and public administration. Because the last is mission-oriented, past studies have proposed "mission perspective". In Table 1 are shown these differences.

Table 1. The different perspectives of BSC for private organizations and public administrations

Private organizations	Public administration
Focus on the financial perspective	Focus on the mission
	Citizen
Client	Internal processes
Internal processes	Learning and development
Learning and development	Financial

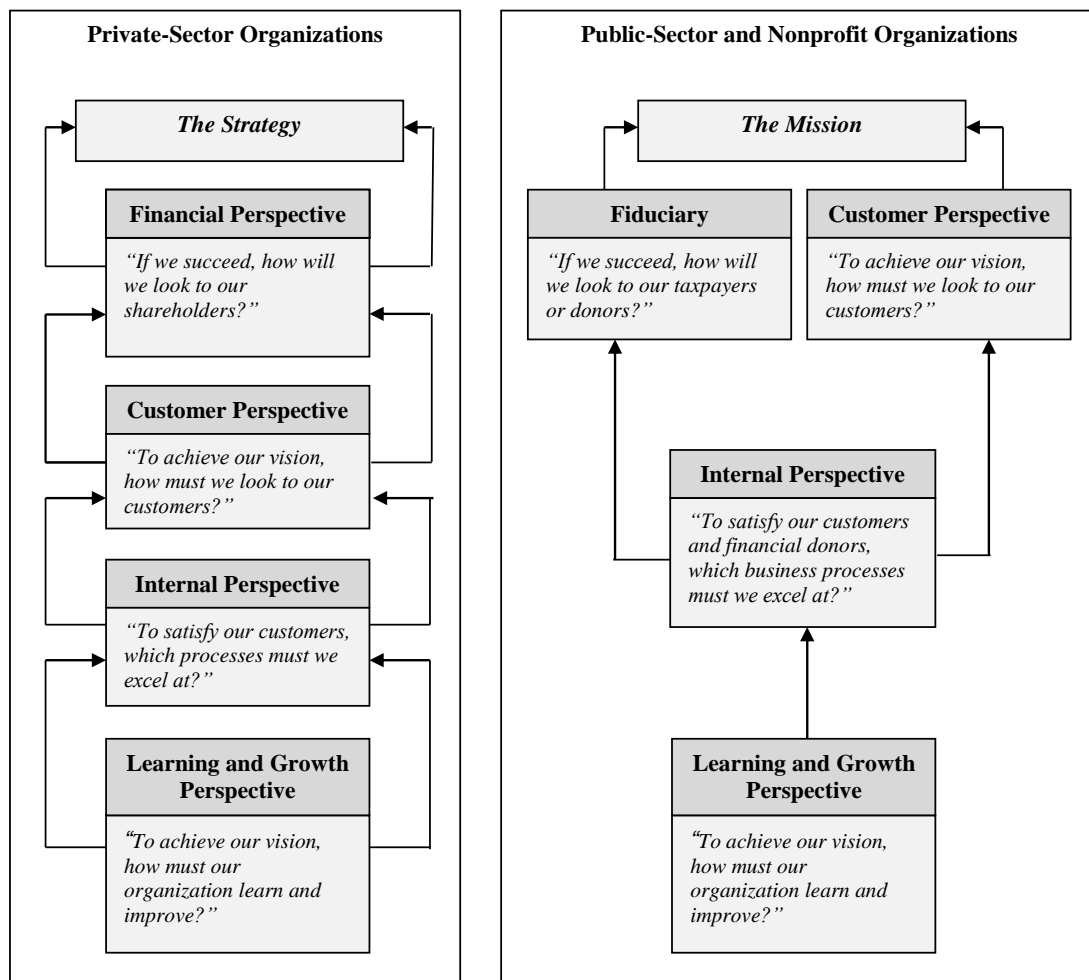


Figure 3. The transformation of Financial Perspective into Fiduciary Perspective (adapted from [8; 17])

In Figure 3 is shown how the “Financial Perspective” become “Fiduciary Perspective” in public administration. In [17] the authors analyze the relevance of the perspective labels and propose to relabel some of them considering the activities’ specificities from public administration.

Thus, a general recognized architecture for the BSC for public organization must take into account the relationship existing between communities and public organizations.

III. RESEARCH METODOLOGY

The aim of this paper is to report about the implementation of BSC method, on the basis of knowledge about strategic management, at the Dudeștii Noi commune. There were many reasons for selection this commune: the dynamic of the socio-economic development, the growth potential, the existence of a modern and motivated local administration. But the most important reason is the existence of an elaborated strategic plan of development, namely “*The development strategy of the Dudeștii Noi for 2014-2020 period*” and, too, of an Action Plan associated to the strategy’s implementation. These documents allow to build up a Strategy Map and to implement a performance evaluation system. All the necessary information for this study were extracted from the city hall website (www.primariadudestiinoi.ro) and from the interviews with mayor and local councilors.

The Dudeștii Noi commune is located in the Western Plain of the Banat – a region of Romania – at a distance of 13.5 km from Timișoara, the main municipality in region. The neighboring communes are Becicherecul Mic, Hodoni, Sânandrei and Săcălaz. Dudeștii Noi belongs to the “*Polul de Crestere Timișoara*” – an intercommunal development association of the Timișoara’s surrounding communes. It has 3310 inhabitants with a multiethnic composition: Romanians, Magyars, Germans, Serbians, Ukrainians, Roms. There are 12 commercial companies.

There are many methods to adopt development strategies and to evaluate their implementation’s performances. In Europe, many local administrations, in different countries, have successfully implemented strategies and performance evaluation systems using BSC method [1], [2]. Generally, to implement the BSC framework the following steps were undertaken [1]:

1. Definition of the local administration’s (mayor and local council) vision and mission;
2. Definition of the organizational level at which BSC should be implemented;
3. Determination of specific strategies that should be formulated and implemented to achieve this vision;
4. Creation of “Strategy Map” that offers a macro view of public administration’s strategy;
5. Determination, for each perspective, of the critical success factors (CSF) that contribute to the strategy’s development;

6. Selection and choice of key performance indicators (KPI) – lead and lag indicators;
7. Definition of KPIs and their target values for each perspective;
8. Representation of KPIs with their actual values in a sort of “executive dashboard” in the order to help the strategy’s responsible to supervise their actions and targets.
9. Development of the “executive dashboard”;
10. Implementation of the BSC model, monitoring and updating the results obtained over the time.

The Dudeștii Noi commune’s Development Strategy for 2014-2020 represents the basic instrument for the local administration’s actions to accomplish the proposed Vision for 2020. This strategy was drafted by the civil servants of the specialized compartments from the city hall in accordance with the Law’s no. 215/2001 provisions.

With reference to step 1 the declared Vision is: “*Harmonious and well-proportioned sustainable development of the Dudeștii Noi commune in all its sectors and functions in order to assure for citizens the best living conditions in a quality of environmental and cultural surroundings*”.

As for the second step – the definition of the organizational level at which the BSC has to be implemented - the introduction of this method has begun at the top-management and operational level.

As regarding the step 3 – the choice of the specific strategies to implement the Vision – a two-round Delphi method was adopted. This technique is a systematic, interactive forecasting method, which allows obtaining forecasts from an appropriate panel of experts [1], [14]. In the first round it was identified the strategic priorities and the KPIs. A multidisciplinary panel composed by the local council executives, the county council’s councilors with expertise and experts from ADETIM – Development Agency of Timiș County – was set up. The used KPIs are a combination between lead indicators and lag indicators. Regarding the performance measurement, the lead indicators represent predictive actions in comparison with lag indicators that represents an after-the-event measurement. When a BSC method is applied, the balance between the lead indicators and lag indicators is necessary in order to assure that the measured activities are these that offer correct results.

The couples lead indicators (IP) and lag indicators (IR) have different meanings in the four perspectives [1]. Thus, as for the indicators of the “Community Perspective”, they aim at ensuring that the strategy is implemented. As far as the “Internal processes Perspectives”, it identifies what are the processes they must excel at in order to get desired outcomes for community. The “Financial Perspectives” entails all the resources as either enables of organization’s success or constraints within which the organization must operate. The “Learning and Growth Perspective’s objectives are related to the drivers of performances in other perspectives and are generally “the intangible

infrastructure” that the organization use to pursue the objectives for internal processes [1].

The panel of experts has identified four strategic priorities and nineteen strategic objectives. The four priorities are:

1. Infrastructure;
2. Culture, leisure time and tourism;
3. Environment;
4. Social domain, health and education.

The priorities are described and an analysis of the functionality in order to be known by the local councilors and executives was made. The mapping of strategic objectives for the four priorities is shown in Figure 4. In Figure 5 the Strategy Map (step 4) is shown and in Table 2 the dynamic of the lag indicators is presented (steps 5, 6 and 7).

Strategic objectives	Strategic priorities			
	Infrastructure	Culture, leisure time and tourism	Environment	Social domain, health and education
A –Development of tourism services for relaxation and leisure time				
B – Support of new social services foundation at local level				
C –Foundation of social enterprises for qualification and employment of young people				
D –Stimulation of local agriproducts capitalization				
E –Support of pomiculture network foundation and improvement of poor wooden areas				
F –Growth of educational services and increase the number of people involved in learning systems				
G –Development of local transportation in connection with Timisoara municipality				
H – Development of local infrastructure				
I – Urbanization of commune in a healthy environment				
J – Development of cultural offers.				
K - Obtaining financial resources				
L – Effective financing of objectives				
M - Preparation and implementation of investments				
N – Support for clubs and associations				
O –Improvement the quality management of the local authority and public services				
P –Updating the Inner Management and Control system				
Q –Increasing inter commune co-operation in Metropolitan Zone				
R –Support of innovations and new IT technologies utilization				
S –Development of public servants’ skills and knowledge				

Figure 4. The strategic objectives’ mapping as a function of priorities

There are many software applications for the BSC method’s implementation, from simple ones Excel-based or Microsoft Office Power Point, to more sophisticated applications based on Enterprise Resources Planning (ERP) platforms or Customer Relationship Management (CRM) that are developed under different operating systems. The most developed use Business Intelligence (BI) based engines.

As an example, the Microsoft Dynamics platform is developed under Microsoft Windows operating system. It is a software application line for ERP and CRM. In MS Dynamics ERP, a software application is

MS Dynamics AS 2009 (AX 5.0) where BSC is a module.

In this study there were used applications developed in Microsoft Excel 2007 and PowerPoint available in MS Office.

The Strategy Map, shown in Figure 6, was drawn in PowerPoint. The tables contained KPIs and the Dashboard were developed in MS Excel and shown in Figure 7. For a better visualization, a Dashboard’s window is shown in Figure 8. In literature [16] are presented the Excel utilization’s advantages for dashboards’ development and implementation in the

case of SMEs. It is the case of Dudeștii Noi, a medium sized commune.

The main advantages are:

- Less time for application's development;
- Low costs or non-existent licensing fees;
- An established, knowledgeable user data base;
- An easy accessible user training;

- Good extensibility that allows easy up-grading with additional features;

As regarding the scalability and data integrity issues, the solution might be using Excel as the analysis and presentation layer and storing all data in a relational database or OLAP cube, then linking in the Excel scorecards or dashboards [14].

Vision

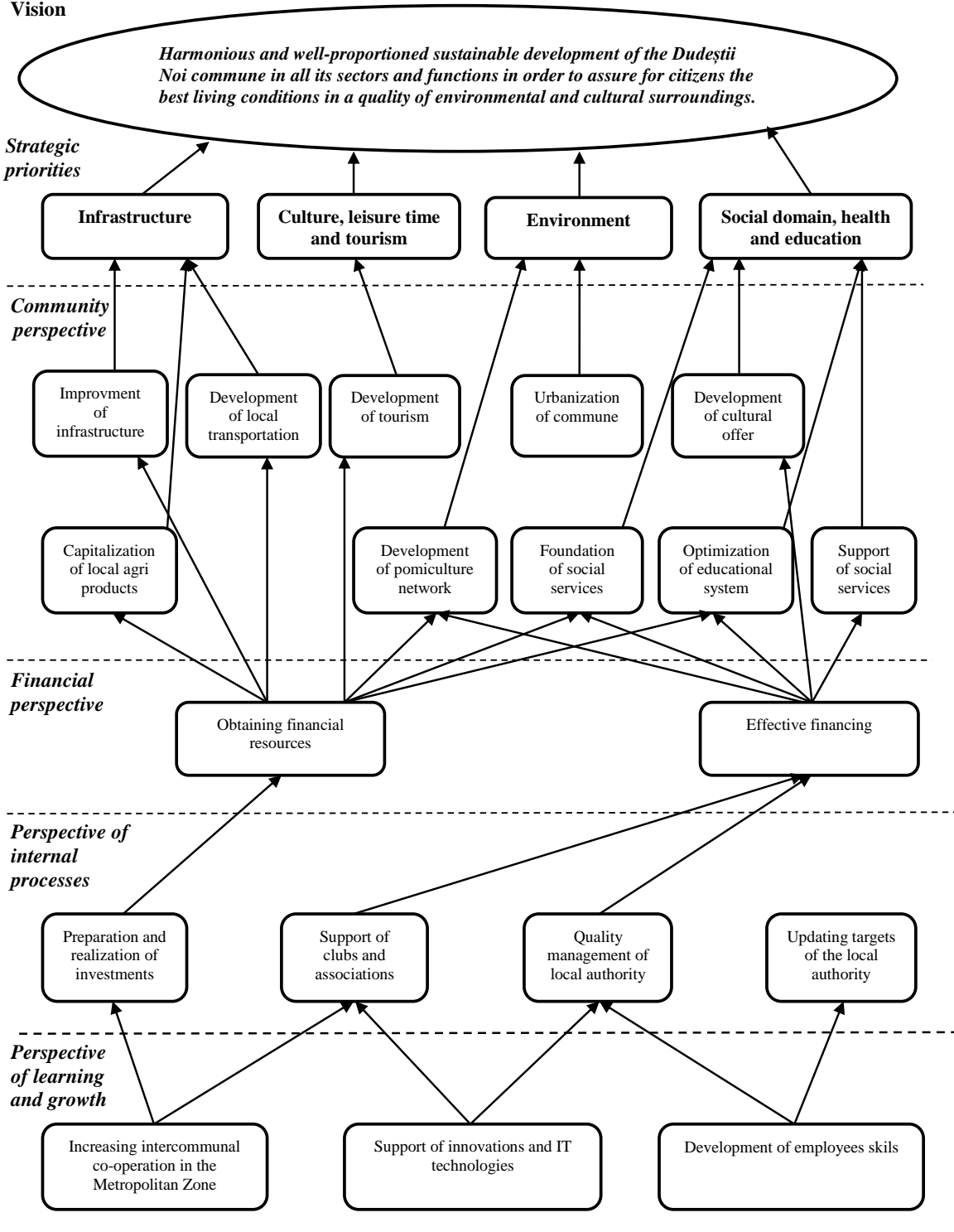


Figure 5. The Strategy Map of Dudeștii Noi commune

Table 2. The dynamic of the lag indicators

Reference month: August 2017				
Strategic objectives				
	Objective	Lag indicator	Actual	Target
Community Perspective	C1 –Development of tourism services for relaxation and leisure time	• IRC11 - no. of created locations;	2	10
		• IRC12 - no. of capacity of housing;	17	250
		• IRC13 - no. of eating places;	2	15
		• IRC14 - no. of certified tour operators;	0	2
	C2 – Support of new social services foundation at local level	• IRC21 - no. of assisted elders;	0	50
		• IRC22 - no. of beneficiaries of social canteen;	0	100
		• IRC23 - share allocated from the local budget;	0.1%	2%
	C3 –Foundation of social enterprises for qualification and employment of young people	• IRC31 - no. of created microenterprises;	2	3
		• IRC32 - no. of qualified young people and employees;	2	5
	C4 –Stimulation of local agriproducts capitalization	• IRC41 - no. of places in the food market;	3	20
		• IRC42 - percentage of bio food;	90%	80%
		• IRC43 - no. of producers/providers associations;	2	3
	C5 –Support of fruits network foundation and improvement of poor wooden areas	• IRC51 - density of wooden areas;	0.8%	5%
		• IRC52 - no. of wooden hectares;	45	270
		• IRC53 - no. of specialists in the field;	0	3
		• IRC54 - no. of deposited projects;	1	1
		• IRC55 - no. of gained projects;	1	1
		• IRC56 - no. of terrain owners that are grants/facilities beneficiaries for establishment of wooden areas/orchards;	0	20
	C6 –Growth of educational services and increase the number of people involved in learning systems	• IRC61 - no. of citizens completing primary, secondary and tertiary education;	2,450	2,500
		• IRC62 - no. of post-secondary courses;	0	0
		• IRC63 - no. of projects from European funds dedicated to school;	2	2
		• IRC64 - no. of resident teachers;	10	20
		• IRC65 - school drop-out rate;	1%	0
	C7 –Development of local transportation in connection with Timisoara municipality	• IRC71 - no. of bus stations;	3	3
		• IRC72 - no. of passengers;	200	500
		• IRC73 - no. of trips to/from Timisoara;	6	10
	C8 – Development of local infrastructure	• IRC81 - length of drinking water distribution network [km];	25	35
		• IRC82 - length of rain water drainage network [km];	20	25
		• IRC83 - no. of utilities connected houses;	720	900
		• IRC84 - length of public roads [km];	70	70
		• IRC85 - no. of new or reconstructed housing units;	250	500
		• IRC86 - no. of specialists that are beneficiaries of housing units;	0	10
	C9 – Urbanization of commune in a healthy environment	• IRC91 - volume of sorted waste per year [tone];	69	90
		• IRC92 - air pollution level;	0	0
	C10 – Development of cultural offers.	• IRC101 - no. of identified cultural objectives;	3	5
		• IRC102 - no. of existing choral and other artistic assemblies;	4	5
		• IRC103 - no. of deposited financing projects;	15	15
		• IRC104 - no. of cultural projects;	5	5
		• IRC105 - no. of cultural activities;	27	27
Financial Perspective	F1 - Obtaining financial resources	• IRF11 - volume of external financial resources [M Euro];	2	21
		• IRF12 - no. of grants;	5	7
		• IRF13 - no. of attracted investment;	2	3
	F2 – Effective financing of objectives	• IRF21 - commune's level of indebtedness [M Euro];	0	10
		• IRF22 - budgetary reserve [M Euro];	4	1
		• IRF23 - level of collection of budgetary debts [%];	75	100
Internal Perspective	I1 - Preparation and implementation of investments	• IRI11 – no. of created business incubators;	0	0
		• IRI12 - usability;	0	0
		• IRI13 - no. of new created investment;	3	5
		• IRI14 - value of new created investment [M Euro];	30	100
		• IRI15 - coverage of investments;	50	60
	I2 – Support for clubs and associations	• IRI21 - no. of new created clubs and associations;	2	5
		• IRI22 - percentage of allocated budget for associations;	0.10%	0.50%

Learning & Growth Perspective		• IRI23 - no. of participants;	50	100
		• IRI24 - share allocated from the local budget;	0	0.10%
	I3 –Improvement the quality management of the local authority and public services	• IRI31 - no. of annual audiences;	200	200
		• IRI32 - no. of annual internal audits;	3	3
		• IRI33 - no. of solved complaints;	22	22
		• IRI34 - no. of new offered facilities;	2	2
	I4 –Updating the Inner Management and Control system	• IRI41 - no. of procedures in use;	92	92
		• IRI42 - degree of the Strategic Plan upgrading;	90%	100%
	L1 –Increasing inter commune co-operation in Metropolitan Zone	• ILI11 - no. of projects elaborated in partnership with neighboring communes;	5	7
		• ILI12 - no. of mentions in mass-media;	3	5
	L2 –Support of innovations and new IT technologies utilization	• ILI21 - no. of new methods and technologies used in public administration;	2	5
		• ILI22 - no. of specific IT applications in use;	8	10
		• ILI23 - no. of installed IT applications;	14	18
	L3 –Development of public servants’ skills and knowledge	• ILI31 - no. of refresher trainings;	39	42
		• ILI32 – no. of certifications granted;	39	42

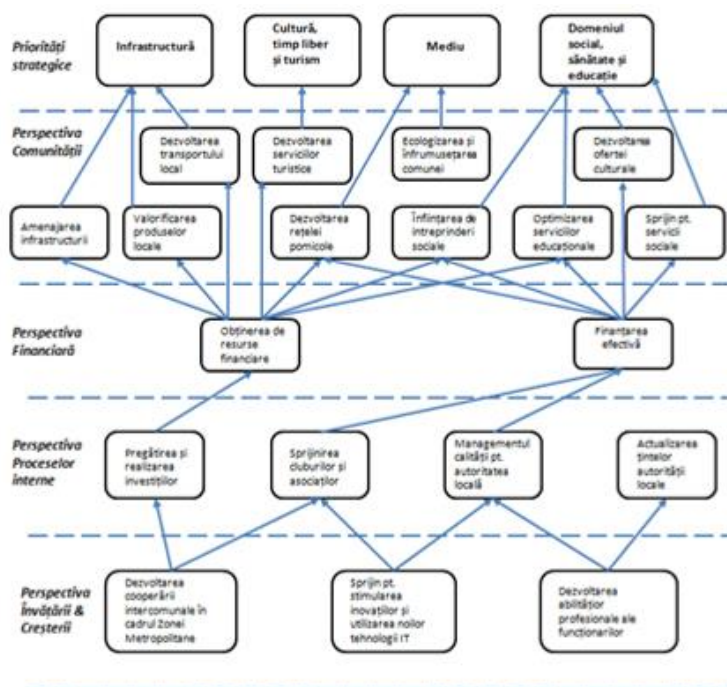


Figure 6. The Strategy Map screen shot (details are given in Figure 5)

The use of BSC allows a continuous monitoring and performance evaluation during the Strategic Plan's execution. It permits to the identification of the efficiency level in city hall's internal processes management. BSC helps to the declared mission's identification in all the four perspectives, the actions that must be done – including the KPIs – to accomplish the implementation. Because the public services, compared with the private companies, needs a high degree of consensus between the local authority and the citizens, some strategy objectives with the actions aligning is absolute necessary. By summarizing, it is possible to identify the following main results from our study.

The first one, by using the BSC model a strategic performance management mechanism was developed, thus allowing to report on the basis of strategic measures. On the basis of the planned targets, expressed through measures, the local government administrators highlighted the results concerning the strategic objectives. Then the local councilors, including the mayor, were able to take correct decisions. The second finding is that the dashboard may be incorporated in an integrated IT system at the County Council level. Finally, this study is a pilot one that may be extended to others local administration in the county.

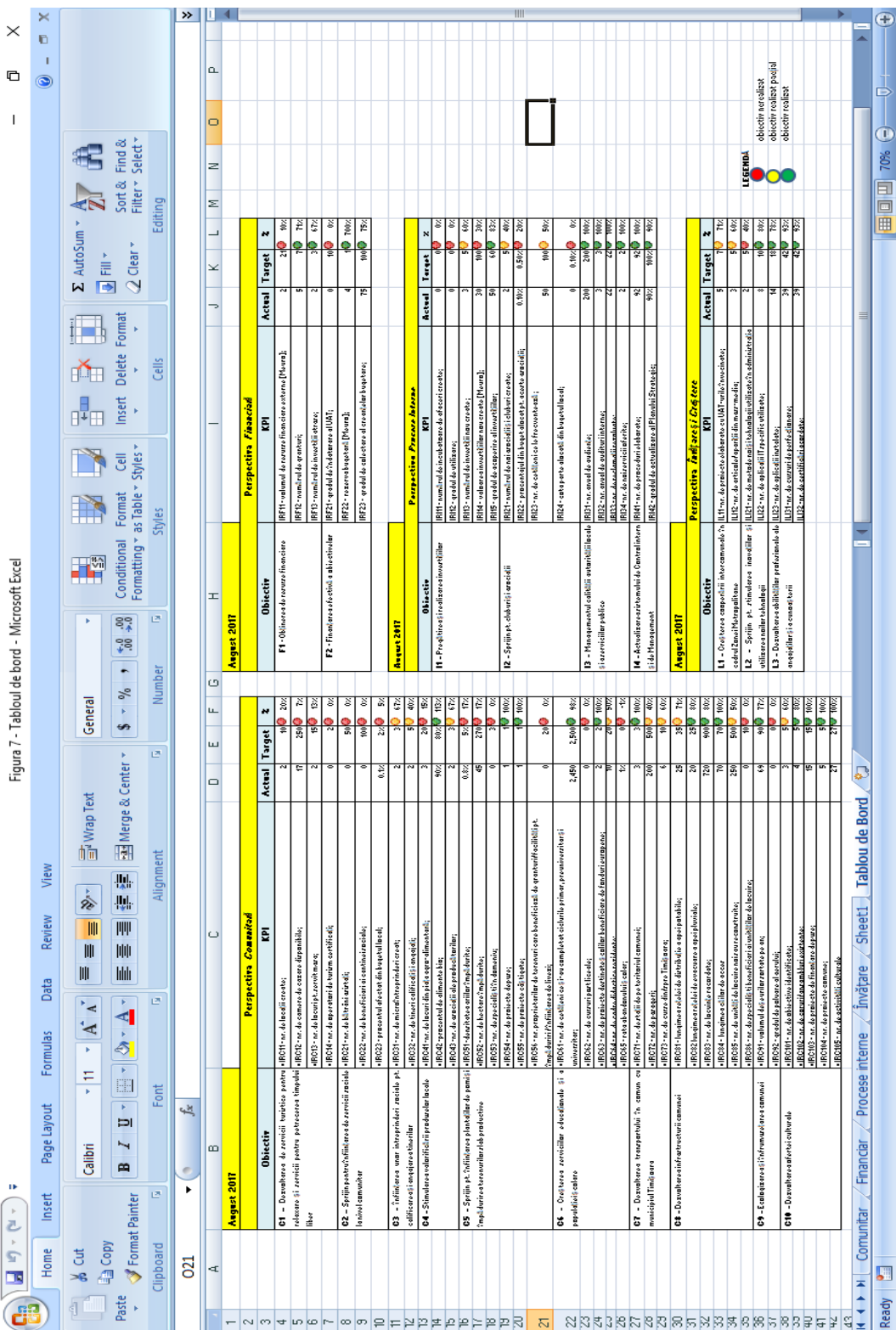


Figure 7. The dashboard (screen shot, authors own development)

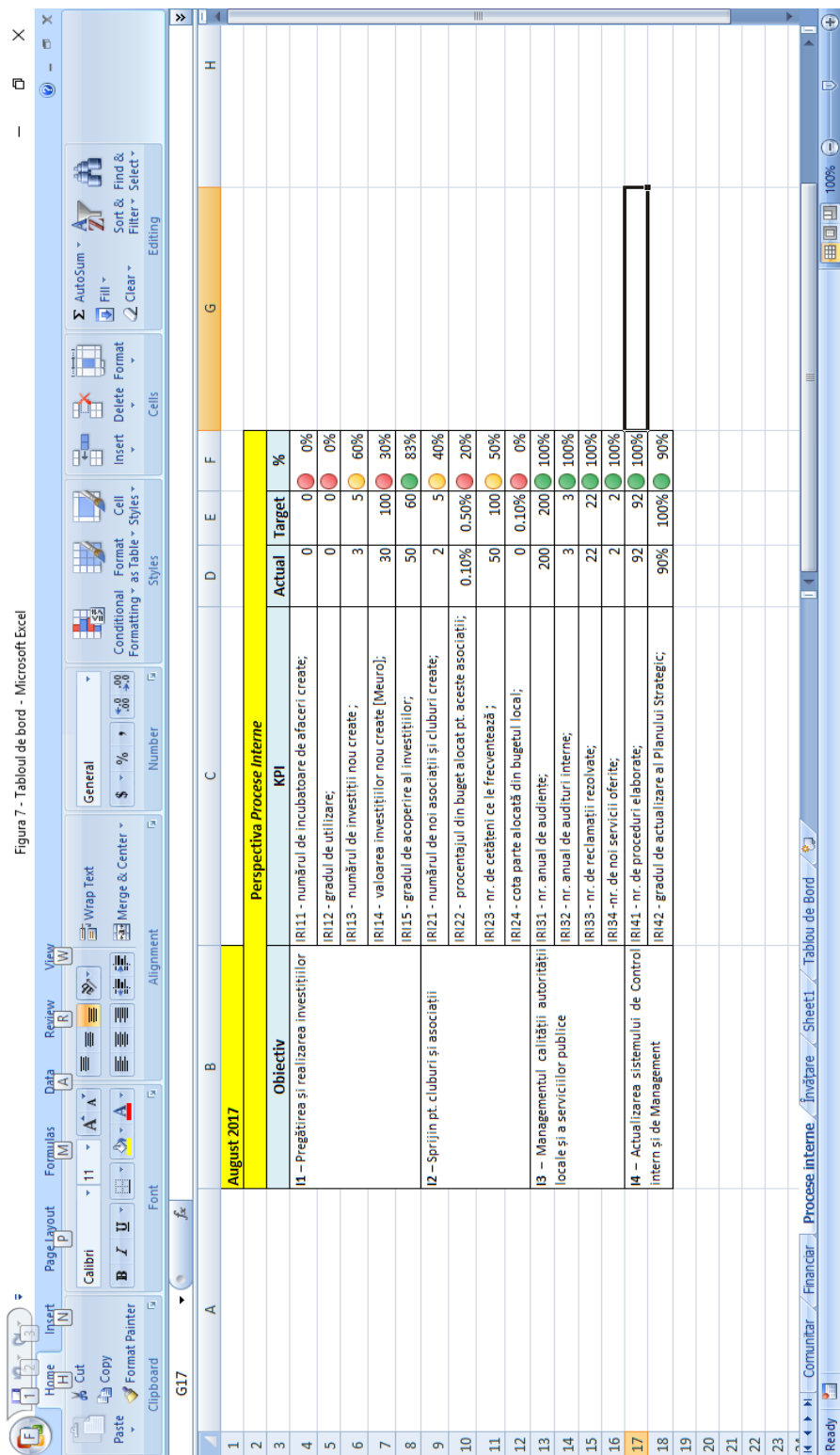


Figure 8. A window in the dashboard (screen shot, authors own development)

IV. CONCLUSIONS AND FUTURE RESEARCH

The main purpose of this paper is to present the development and implementation of the BSC model within a local public administration, namely in the case of Dudeștii Noi, a medium-sized commune located in the West region of Romania. It was stressed upon the fact that BSC is a framework expressing an organization's strategy as a set of measurable goals from different perspectives. It is shown that classic financial measurement made posteriori, if these are accompanied by the operational measurements made during the strategy's evolution, can improve and growth the performances. While literature offers numerous studies about theory as well as application of BSC in private organizations, still little attention has been paid to BSC application in the public ones [1]. For this reason, in order to identify KPIs – lead indicators and lag indicators – it was mandatory to develop questionnaires that were analyzed and discussed with an appropriate panel of experts in accordance with Delphi method. As a result, it was obtained an exhaustive and accepted list of KPIs. The majority of KPIs is in the Community Perspective.

The implementation of the BSC model was a difficult process due to the fact that the participants' majority have had no knowledge in the field. One of the main benefits highlighted by this study refers to the fact that the implementation team's cohesion leads to a better understanding of the true nature of this experiment: the BSC is seen as a performance measurement system, but also as a strategic measurement system.

As concerning the IT application developed on a Microsoft platform, using instruments from Microsoft Office, it functions acceptable for small-sized administrative structures, but become inefficient larger structure. The databases that provide information to the dashboard must belong to the OLAP category, which offers multiple facilities for search, analysis/synthesis of multiple data and report.

The purchasing of such IT systems can be expansive but after their utilization the ratio cost vs benefice is favorable to the user. Consequently, for larger local administrations – municipalities, county councils – such a choice will be a recommendable option.

Finally, we consider that the implementation of such performance analysis systems but in the same time, strategic managements systems, should be a main priority for the modernization process of the Romanian public administration.

V. ACKNOWLEDGEMENTS

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