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THE CONTRIBUTION OF DECISION MAKING METHODS TO BUSINESS SUCCESS

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List of Abbreviations

EFA	Exploratory Factor Analysis
CFA	Confirmatory Factor Analysis
SPSS	Statistical Package for the Social Sciences
OLS	Ordinary Least Squares
DEA	Data Envelopment Analysis
SEM	Structural Equation Modeling
ANOVA	Analysis of Variance
CR	Composite Reliability
AVE	Average Variance Extracted
DF	Degress of Freedom
CFI	Comperative Fit Index
ROA	Return on Assets
GDP	Gross Domestic Product
VAT	Value-Added Tax
RMSEA	Root Mean Square Error of Approximation
ALL	Albanian currency
ARMA	Autoregressive – Moving - Average

Abstract

The late changes of last century brought about uncommon experiences, not encountered before to the Western Balkan countries on the political, economic, technological, social, ethical perspective and furthermore. Hence these countries left behind their past in an attempt to achieve better living standards. These changes dictated new approaches on doing business. Thereon a serious intellectual engagement is indispensable concerning the undertaking of studies on various problems or aspects of this change. At the time, businesses as a result of the radical transformation operated in a permanently complex and competitive environment, another reconfirming evidence on the necessity of a continuous adaptation to this environment. In this context, an important issue to be addressed is the decision-making process and the decision-making quality. The decision-making quality is depicted as a competitive advantage, which creates the due conditions for protection against the risk and ensures a successful business development. The study aims to analyze the impact of factors orienting the manager in determining the decision-making method to be used and the influence of these methods on the business performance. Thereupon a conceptual model is composed and presented. Functional to the model, primary and secondary data are collected. To the argumentation and interpretation of the data various statistical methods are used, as the non-parametric analysis, the descriptive statistical analysis, the Exploratory Factor Analysis (EFA) and the Confirmatory Factor Analysis (CFA).

The findings resulting from this research study will serve the businesses mangers in Albania and in the regional countries regarding the decision-making issues, will serve as a guiding tool to other researchers who aim to get engaged in future research in the field, and will likewise serve to the policymakers.

Key words: decision-making, intuitive decision-making methods, analytical decision-making methods, business performance, EFA, CFA.

Thesis structure

The scientific study is organized in five distinctive sections, each addressing various problems. Namely:

First section -Introduction. This part outlines a preview on the importance of decision-making and its extension on three levels micro, mezzo and macro. The arguments are presented on the historical perspective of decision-making from its origins until nowadays. In this context, an essential part of the section is the outlaying of the reasons and reasoning behind the undertaking of this scientific research as a claim to enrich mainly the Albanian literature, but not only, with studies of this scientific character and level. Also, in this section are presented the main research question and hypotheses.

Second section -Theoretical aspects of the decision-making issues. In this section are taken into consideration the theoretical problems of decision-making referring to the most conspicuous researchers in the field. Influenced by the preliminary research are covered: decision-making cycle with the necessary details to each of the decision-making stages, decision-making as a managerial commitment, decision-making as a process led by judgment, the three "C" of decision-making.

The preliminary research resulting from literature review on decision-making, made possible the composition of the conceptual model, an imperative requirement to guide the structured approach of the decision-making problems. Given the importance of decision-making and the complexity of issues comprising it, the conceptual model of the study is presented in two phases. In the first phase of the model are presented those constituents which represent at the same time the factors influencing the decision-making methods. Among these factors are: the environment in which the business operates, the type of decision, the business features and the characteristics of the key factor of the decision-making process, the decision makers. The theoretical problems of decision-making methods are analyzed in two respective groups: analytical and intuitive. The second phase considers the theoretical approach to the decision-making problems referring their impact onto the business performance, specifically in the financial and non-financial performance.

Third section -Methodology. The methodological approaches of a diverse range of researchers in the field are outlined in this section. This basis has served as the supporting ground to the preparation of the methodology according to which the scientific study was conducted. For this reason, in the section are reflected numerous methodological problems. Initially is addressed the context of the study regarding the causes that make it indispensable

and the diagnosis of the present situation related to decision-making in Albania and in the region. Following are delineated the parts of the study as table-work and field-work. Table-work refers to the study of literature and objectives. Of interest is the approach regarding the method of preparing the interview and drafting the questionnaire as a measuring instrument. Moreover, part of the section is the sampling performed on two levels: at the expert's level and at the manager's level. The data collected from the field-work are of primary and secondary character. Methodology also envisioned the approaches to the data operationalization.

Fourth section -Result analysis. Due to its importance this section may be considered as the major section of the research. In this section are reflected the results of the analysis of the gathered data through the interviews and questionnaires. The data is analyzed by various statistical methods depending on their type. Thus, the data collected from the in-depth interviews with the experts are operationalized through the non-parametric statistical methods. The data collected from the questionnaires have been operationalized with various statistical programs in accordance to their character. In this context are used the descriptive analysis, SPSS and AMOS-SEM. softwares. In each case the results are interpreted with regard to the statistical significance among the independent and the dependent variables.

Fifth section -Conclusions and recommendations. This section contains the conclusions and recommendations of the study derived from the results of the data analysis. The conclusions based on the interpretation of the result's analysis enable a better understanding. While the recommendations presented in this section amount to a considerable opportunity for the managers, helping them in improving the performance of the business they work in and to the policymakers they will be an instrument to create the due conditions for improving the business climate. Parts of the section are the novelties, the limitations and contribution of the study.

1. Introduction

"Our doubts are traitors,
and make us lose the good we oft might
win,
by fearing to attempt"

William Shakespeare, Measure for Measure, 1603

Business development brings to light numerous problems challenging the managers into finding the most effective ways to ensure the success of their businesses. It intensifies the interest of scholars to engage and contribute in theoretical and practical studies aimed at the successful development of businesses.

1.1 The background of the study

Any individual alone or in a society, in any aspect of his life, is inevitably involved in an ongoing decision-making process. According to Mullen and Roth (1991): "We make decision for our families, our children, our clients, employers, the stockholders, our patients, students, elderly parents, club members, in addition to ourselves". Whereas according to Hammond, Keeney and Raiffa (1999): "Highly flexible, it is applicable to business and professional decisions, to personal decisions, to family decisions-to any decision you need to make". The researchers throughout their studies have considered and still do consider decision-making to be an important commitment. Garvin and Roberto (2001) and Rosanas (2013) are of the opinion that decision-making is permanently present in the life of people. In this regard, Rosanas (2013) shares the opinion that decision-making is an ongoing activity as he states: "Decisions are an everyday fact of life". In line with the above statement, Garvin and Roberto (2001) see and handle the ubiquity of decision-making from the point of view of numerous meeting points of the individual with the decision-making process. In relation to this they emphasize: "The fact is, decision-making is not an event. It's a process, one that unfolds over weeks, months, or even years; one that's fraught with power plays and politics and is replete with personal nuances and institutional history; one that's rife with discussion and debate; and one that requires support at all levels of the organization when it comes the time for execution" Garvin and Roberto (2001). The meeting points of the individual with the decision-making provide to the process the characteristics of an ongoing process. The presence of the individual in the process is to the extent that it may be

claimed: "Decision-making is an integral part of our daily lives. It ranges in scope from the individual to the largest groups and societies, including nations and ultimately, organizations at the global level" (Chankong and Hiames, 1983).

On the above reasoning, decision-making is a very broad activity and includes all the social and economic organizations. Considering the socio-economic organizations, Jeurissen (1997) presents them in three levels. Specifically he differs - the macro, the mezzo and the micro economic and social organizations, about which he says: "The micro-level is the level of the individual in the organization. Mezzo is the level of the organization, its structure and culture. Macro is the level of institutions, the market, government, cultural traditions and the like" (Jeurissen, 1997). Furthermore, Enderle (2003) presents the three levels of socio-economic organizations as a factor in order to identify responsibility. To this Enderle (2003) states: "In order to identify the subjects of responsibility as concretely as possible, three different levels of acting are proposed, each of which includes actors with their respective objectives, interests and motivations: the micro-level, mezzo-level and macro-level".

Micro level – individual decision-making refers to both social and economic aspects of the individual. This opinion is expressed by Enderle (2003), who defines: "At the micro-level the focus is on the individual, that is, what actors, as employers, colleague or manager, consumer, supplier or investors, do, can do and ought to do in order to perceive and assume their ethical responsibility". This opinion is also supported by Keeney (1992) when he admits that: "Personal decisions required by the normal course of events include: what employment to seek and accept, where to live, whether to marry, how many children to have, and when to retire". Individual decisions can be immediate decisions or well thought ones. This is conditioned by the importance of decisions. Individual decisions are affected by personal interest, passion and emotion.

Mezzo level – considers the decision-making within a social group and in this context even decision-making in a business organization. "At the mezzo-level we consider the decision-making and the action of economic organizations, chiefly business firm, but also trade unions, consumer organizations and professional associations" (Enderle, 2003). The group is engaged in a decision-making process because of the need for cooperation to meet the social needs of the group members. The decision-making of the group considers problems related to a particular case and problems focused on shared interests. In this line, decision-making of the group is characterized generally by the routine and in several occasions even by a preliminary brainstorming. It is because of the confrontation of opinions of the group members that decision-making of the group considers generally the voting process. On the

other hand, decision-making in the business environment focuses on the business management issues which concern the type of business to be developed, the definition of the types of products or services to be produced, the definition of the market share of the enterprise, the definition of the number of employees, quantity of input, business organization culture, definition of its management structure, etc. While the problems on the focus of decision-making in a business environment fall under this level of decision-making, they present specifics and as such they must be handled specifically.

Macro level - refers to decisions taken by the state authorities who are represented by the local and central government bodies. Decisions at macro level focus on political, economic or diplomatic problems and they are very important. They refer to problems including allocation of funds to different sectors of economy, investments, type and size of administrative institutions, quality of interstate relations etc. Consequently, decision-making at macro level is decisive for the destiny of the state. Thereupon, Enderle (2003) emphasizes that: " at the macro-level we consider the economic system as such and the shaping of the overall economic conditions of business: the economic order with its multiple institutions and the economic, financial and social policies".

Decision-making represents a certain individual position in relation to the problem which is on the focus of the decision. According to Das (2008) "A decision problem (or recognition problem) is one that takes the form of a question with a "yes" or "no" answer." On the other hand, Grünig and Kühn (2005) consider that "A decision problem is present when the discrepancy between the current situation and the target situation can be reduced and/or overcome through different courses of action".

Research regarding the decision-making process highlight the fact that decision-making is a very ancient activity. Therefore, Koksalan, Wallenius and Zoints (2011) state: "The practice of decision-making is ancient". The concept and the problems of decision-making are elaborated by the researchers throughout the years. The theories of decision-making are enriched further nowadays. Theoretical enrichment is a consequence of the ongoing evolution, which starts with the embryonic theoretical forms and end with the modern theories of decision-making. Buchanan and O'Connell (2006) through an historical perspective on the decision-making problems, considering the views of various authors, have made a presentation of the development of theories and decision-making related concepts. The "journey" of decision- making presented by Buchanan and O'Connell (2006) dates back to pre-history and it stretches to the years 2000. They focus on the exceptional achievements of this important process. Generally, each achievement is linked to

personalities of different areas such as Aristotle, Confucius, the Nobel Prize Winner, Herbert Simon, Kahneman, etc.

The evolution of decision-making as presented, by Buchanan and O' Connell (2006) is a witness of the unavoidable presence of decision-making throughout the centuries. As such, the study of Buchanan and O' Connell (2006) constitutes, undoubtedly, an important achievement for the scholars in the decision- making area. However, several problems may be identified:

    a. The division into timely stages of this journey (evolution) considers different treatment of special decision-making problems. Therefore, equal time periods may not be considered.

    b. The study of Buchanan and O'Connell (2006) handles the achievements in the field of decision-making without considering the factors which lead to the development of decision-making throughout the years.

    c. This "journey" of decision-making does not identify the researchers who used for the first time the concept "decisions theory" and the period to which this refers.

The concept "decisions theory" is introduced in the mid of 20th century. In relation to this concept, Goodwin & Wright (2010) identifies the period when the decisions theory is introduced and the respective authors: "Ever since decision theory was introduced in 1961 by Howard Raiffa and Robert Schlaifer of Harvard University's School". Decisions are not a goal in themselves, they are taken to fulfill certain aims of the decision-makers. From this perspective, decisions are borne with responsibility.

Generally, decisions concern:

- Setting of objectives or priorities which direct development problems in the future.
- Problems of handling of procedures in the performance of a certain activity.
- Implementation of development programs.
- Timely reflection in relation to the frequent social-economic environmental changes etc.

The entirety of the above-mentioned problems makes the decision-making a central problem for each activity; it is a wide-spread problem; it is an intellectual commitment with responsibility to be protected from the risks. As such decision-making is a difficult commitment. Hammond, Keeney, Raiffa (1999) emphasize: "Most of the important decisions you'll face in life are tough and complex, with no easy or obvious solutions".

From this perspective, businesses are quite sensitive to decision-making because "Decisions are the coin of the realm in business. Every success, every mishap, every opportunity seized

or missed is the result of a decision that someone made or failed to make" (Rogers and Blenko, 2006). Taking into account the considerations of Rogers and Blenko (2006), decision- making is of concern for both groups of interest, specifically the management business structure on one hand and the employees on the other hand. The reason for this is because each business represents an intertwining of individual interests, various group interests within the business and the business itself. Such interconnection of interests must be focused on the business success alone. On the other hand the business success can not be considered merely a result of an interplay of interests but also a completion of other conditional factors such as the timing of decision-making.

The decision-making process may be carried out in different time-frames. By analyzing different decision-making processes, it results that the most frequent time limits in decision-making may be presented as follows:

- Normal time frame- refers to acceptable time limits for the decision-making.

- Quick time frame- concerns shorter possible limits for the overall decision- making or separate phases. Decision-making within these time limits, in many cases is limited by the influence of the macro-environment factors. This includes urgent decisions which as a rule identify managerial professionalism.

- Delayed time limits represent the longest time-frame to take the decision. The delayed time limit argues the effectiveness of decisions. This is the case of a critical time limit which affects the result of the decision because it fades away the value of the decision or/and makes the decision totally invalid.

In a decision-making process, time should be perceived in two aspects:

a. The time required to prepare the decision in all the phases which it goes through.
b. The time of the application of the decision.

Specifics of the processes of production in a business are differently sensitive towards the time limits of production. This is reflected even in decision-making. Quite sensitive to the observation of the time limits is the production process in which the economic factor of production is intertwined with the natural factor of production. Of such nature are mainly the processes of production of agriculture, food industry and wood industry. In these production processes the observation of time limits derives from the objective nature of the biology laws.

Therefore, it may be concluded that the time factor is important for all decisions. Consideration of time in decision-making is mostly identified in the cases wherein decision-making directs the introduction of the business into markets with its own products. In this

case, observation of the time factor has an evident impact on the increase of competition and profitability of the business making the utmost use of the external environment factors compared to the competitors.

Business decision-making is followed by a variety of aspects. This study does not consider decision-making in general. Instead, it is focused on the aspects of the managerial decision-making methods, as a factor which limits the quality of decisions. The method is a support and presents argumentative factors for the quality of decision-making. It is built on the basis of knowledge of the nature of the problems which is object of decision-making in order to change it in line with the requirements of the decision-makers. These attributes give a very important role to the decision-making method. It is considered the fact that the method which is used for decision- making must be built on the theoretical principles, in order to formulate a qualitative decision.

As a permanent, wide-spread and decisive impact on the performance of an economic agent activity, the decision-making has been on the focus of the researchers who in different time-period have been committed to the study of decision-making in general or special problems of this very important process. The study of one of the decision-making aspects -and more concretely, the role of methods of decision-making, is the focus of the study.

We deem that the decision-making problems are similarly as complex, as important. Complexity concerns the entirety of problems which make up the decision-making process, the particularity of each problems and the interconnection between them. Importance refers to the fact that on the one hand any decision is important for the business and on the other hand the decision-making process in Albania and the regional countries is not properly studied. In this regard, I would like to make a contribution in the field through this scientific study.

1.2 Purpose of the study

The environment in which businesses operate makes the role of decision-making in business success even more substantial. Although decision-making is generally a studied field, comprehensive or partial scientific studies undertaken capture the interest to both managers and academics likewise. Decision-making is a complex process that requires commitment, co-ordination and cooperation of all the involved actors.

In the entirety of issues comprised in decision-making, some have obviously been studied; hence there is an ample literature to approach them. Otherwise there are also studies focusing

on specific aspects of decision-making, explicitly the impact of decision-making methods on business success is one of them and the studies on the subject are not considerably frequent. Meanwhile a complete lack of in-depth studies in the field of decision-making is especially observed in Albania and in the regional countries, thus being in focus as the object of study in this research. The study aims to provide a comprehensive understanding of the impact of decision-making methods on business success by identifying some of the factors that lead to the choice of decision-making method and to furthermore identify the impact of decision-making methods on business success. As such, this scientific research provides a contribution to the decision making field, enabling the completion of previous research shortages in relation to decision-making in general and in the area of decision-making methods in particular. Decision-making methods reflect considerably on the success, obstruction or failure of the business activity. Thereof the methods of decision making constitute a critical point of permanent managerial engagement. The study assumes the existence of a chain relationship between the factors and the methods of decision-making, as well as the latter correlated to business performance. To this reason, the conceptual model of the study is conceived as a two-phase hierarchical model.

The scientific work retains both, the philosophical and the economic aspects. The philosophical aspect concerns the confidence degree that managers invest in the decision-making methods. Meanwhile the economic aspect refers to the benefits ratio costs, resulting from the use of various decision-making methods.

The value of the study lies in the capacity to provide an effective response to the potential and still unresolved questions the research is focusing. "The formulation of a general topic into a specific research problem, thus, constitutes the first step in a scientific enquiry" Kothari (2004). Moreover the author points out that: "Research methodology is a way to systematically solve the research problem….. Research methods or techniques, thus, refer to the methods the researchers use in performing research operations" Kothari (2004). In support to the decision-making problems discussed above, naturally flows the research problem. "A research problem, in general, refers to some difficulty which a researcher experiences in the context of either a theoretical or practical situation and wants to obtain a solution for the same" (Kothari 2004). In the upcoming years, the researchers (Gupta and Gupta, 2011) expressed the same opinion with respect to the research question. Whereas Kumar (2014) says: "The first is to decide what you want to find out about, or in other words, what research question you want to find answer to".

However, as the first study in the region, having these standards and dimensions, the research is aiming to be as much contributing and original as possible to a slightly studied field. Therefore, in the research context, the below research questions are developed.

The managerial, business decision-making generally involves a wide range of exploration. Of the entirety of the unstudied problems, this scientific research is committed to studying and answering a paramount problematic. In this context, the main question the study aims to approach is formulated as:

Which are the factors influencing the manager's approach towards the decision-making methods and the manner this approach is reflected in the business performance?

The key question includes several factors influencing the decision-making methods as well as their respective links to business success. Hence numerous ulterior questions derive from the main question. In order to provide answers to these questions it is necessary to raise the relevant hypotheses, Given their importance, the hypotheses have captured the attention of many researchers. Apparently, the hypotheses are the constructions to which regard Coolican (2013) says: "Hypotheses are statements about the world that are derived from more general theories". To Bryman (2012): "The researcher might be viewed as engaging in some theoretical reflections out in which a hypothesis in formulated and then subsequently tested". According to Kumar (2011): "A hypothesis is a hunch, assumption, suspicion, assertion or an idea about phenomenon, relationship or situation, the reality or truth of which you do not know and you set up your study to find this truth". Meanwhile to Privitera (2014): "The research hypothesis is a specific, testable claim or prediction about what you expect to observe given a set of circumstances". Gupta and Gupta (2011) define hypothesis as such: "The truth of hypothesis involves observation, imaginative thinking, anticipation and deductive verification". To Sheskin (2004): "A research hypothesis is a general statement of what a researcher predicts".

Based on the theorically addressed problems, the hypotheses of the study are specifically formulated for the experts on one side, and for the managers on the other, in order to test their respective perceptions regarding decision-making, specifically on the decision-making methods. To this aim, the hypothesis raised at the expert's level intends to analyze the expert's opinion on the impact of decision-making methods in business success and is thus formulated:

H$_1$:   *If the manager used the analytical methods in decision making, the business is expected to be successful.*

The questions deriving from the main research question and the respective hypotheses are depicted as follows:

1. Is the business environment and its characteristics a factor affecting the decision-making methods?

To answer this question, the below hypotheses have been raised, formulated as follows:

H₂: *The environmental uncertainty brings a low possibility in the use of intuitive methods in decision-making.*

H₃: *A hostility environment eliminates the possibilities to use intuitive methods in decision-making.*

H₄: *The business activity in an uncertainty environment is an opportunity to use the analytical methods in decision-making.*

H₅: *The more hostility the external environment presents, the more the manager tends to use the analytical methods in decision-making.*

Hypotheses of this nature have also been studied by other scholars as: Goll and Rasheed (1997), Dane and Pratt (2007) and Elbanna, Child and Dayan (2013).

2. Does the type of decision affects the method used in decision-making?

To this intent the following hypothesis is raised:

H₆: *The possibilities in using the analytical methods are influenced by the type of decision –the strategic, tactical and operative decisions.*

The problematic that this hypothesis considers is also supported by researchers as: Elbanna, Child and Dayan (2013), Fredrickson (1985) and Elbana and Child (2007).

3. How is perceived the impact of business characteristics on decision making methods?

H₇: *The bigger the business, the higher the manager's interest in the use of analytical methods in decision-making.*

H₈: *The small and medium size business, managers are expected to use more the intuitive methods in decision-making.*

H₉: *The business legal status affects the choise of the decision-making method.*

H₁₀: *The centralized organization culture is expected to positively affect the use of intuitive methods in decision-making.*

H₁₁: *The centralized organization culture offers few opportunities for the use of analytical methods in decision-making.*

H₁₂: *The collective culture enables the use of analytical methods in decision-making.*

H₁₃: *The activity of a collective culture organization adversely affects the use of analytical methods in decision-making.*

In the decision-making field there are prominent scholars that support the impact of various business characteristics on decision-making methods as: Child (1997), Elbanna, Child and Dayan (2013) and Child and Mansfield (1972).

4. Are the demographic characteristics of the manager a determining factor to the decision-making method? The question mainly refers to the following hypothesis.

H₁₄. *The manager's demographic characteristics are expected to influence his/her decision-making methods.*

Given the importance of the manager's role in the method used in decision-making, researchers have focused their attention on the demographic characteristics of the manager as an influencing factor. To this regard, researchers as Worthy, Gorlick; Pacheco; Schnyer and Maddox, (2011), Connella and Monroe(1997), etj. are noted.

5. Is the financial and non-financial performance influenced by the decision-making method?

As a focal point of any decision-making process, performance is studied according to the below hypotheses:

H₁₅: *The use of intuitive methods in decision-making is expected to negatively influence the non- financial business performance.*

H₁₆: *The non–financial business performance is expected to be positively influenced by the use of analytical methods in decision-making.*

2. Theoretical aspects of decision-making issues

Decision-making is an historic, complex and onerous process. The manager is required to focus a particular attention on the quality of the decision. The quality of the decision is conditioned by abiding to the requirements referred to as "the decision-making cycle". Knowledge of the decision-making cycle is of high importance since decision-making is a ubiquitous activity affecting the degree of the business economic development.

2.1 The decision-making cycle

Decision-making as a challenging process which imparts consequences to the business performance undergoes several stages. Each stage aims at problem solving, responding to the requirements needed for a qualitative decision-making. Thus, each stage of the problem recognition has drawn the researchers' attention. The researchers do not provide a uniform introduction of the outline of decision-making process. Jones (2004) labels the stages of decision-making altogether, referring to Earl, as the "decision-making cycle" which consist in several stages and introduce it as follows:

"Choice is therefore seen as a process of problem solving that involves the decision-maker going through a decision cycle. A decision might involve some of the following stages that involve gathering and processing information in a number of stages:

1. Recognition of the need to make a choice.

2. Search for possible solutions to the problem.

3. Evaluation of rival alternative courses of action.

4. Choice by ranking alternatives in order of preference.

5. Implementation of a chosen course of action.

6. Hindsight by examining the outcome to see whether outcome matched perception".

Krajewski, Ritzman and Malhotra (2013), Adair (2007) and Anderson, Sweeney, Williams, Camm & Martin (2011) use the term "steps" instead of stages applied by Earl (1995). They include non-uniform issues within each step. Thus, Krajewski, Ritzman and Malhotra (2013) summarize three basic steps as integral part of the decision-making activity, specifically:

1. Recognize and clearly define the problem,

2. Collect the information needed to analyze possible alternatives and,

3. Choose and implement the most feasible alternative.

Furthermore, Adair (2007) considers the decision-making activity as a spiraling activity. He uses the double term of step or phases. "In decision-making there is such a simple framework of five steps or phases. Think of it more as a spiraling process, like this":

Define objective

Collect information

Sense effects

Develop options

Monitor consequence

Evaluate and decide
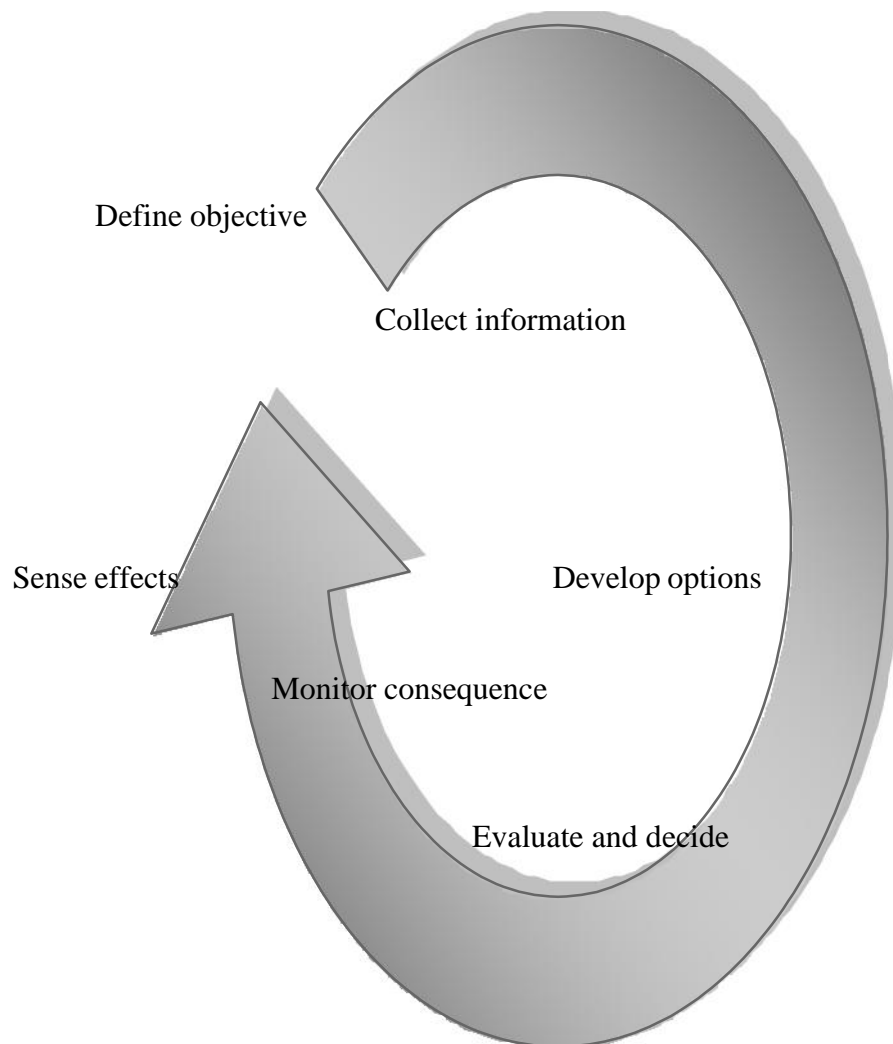
Figure 1: Decision-making steps or phases, (Source: Adair, 2007)

Considering that decision-making is introduced as a comprehensive integral activity, the manager shall take care of the proper accomplishment of each step of the decision-making activity, due to the link existing among the decision-making components. The decision-making components are not only interconnected, but also interdependent among each-other. Introduction of the spiraling decision-making activity as recommended by Adair (2007) shall not be merely considered as the researcher's preference. It is based on the very content of the decision-making integrity. The spiraling decision-making proposed by Adair (2007)

focuses on the basic unit of the spiral-cycle. This form represents a justifiable presentation from several perspectives:

- From the logical perspective: referring only to a specific decision, the cyclic form of decision-making represents the compulsory logical scheme followed by the human reasoning into taking a decision. Such a thing is also observed through critical examination of the decision-making cycle.

- From the manager's perspective: cyclical presentation of the decision-making refers to the specifics of the manager's profession, who is continuously involved in the decision-making process. Accordingly, by the end of a decision-making process the manager gets involved into another decision-making process and so on and so forth.

- From the philosophical perspective: the cyclical presentation of the decision-making process refers to the fact that decision-making possesses a developmental character. Development itself has the form of a spiral. The spiral in its entirety represents a repetition in each case of the cycle, but at a higher development level.

Anderson, Sweeney, Williams, Camm and Martin (2011) recommend a more complete scheme for the decision-making process. They suggest: "For problems important enough to justify the time and effort of careful analysis, the problem solving process involves the follow seven steps:

1. Identify and define problem
2. Determine the set of alternative solutions
3. Determine the criterion or criteria that will be used to evaluate the alternatives
4. Evaluate the alternatives
5. Choose on the alternatives
6. Implement the selected alternative
7. Evaluate the results to determine whether a satisfactory solution has been obtained".

Although Anderson, Sweeney, Williams, Camm and Martin (2011) define that decision-making undergoes seven steps, they further consent that the first five steps are associated with the decision-making process. In addition, Kourdi (2003) introduces a slightly more different decision-making framework. He highlights: "This rational route is seen as providing a framework for reaching an effective decision-making and involves the following:

- Assessing the situation
- Defining the critical issues
- Specifying the decision

- Making the decision
- Implementing the decision
- Monitoring the decision and making adjustments as events unfold".

For Hammond, Keeney and Raiffa (1999) decision-making is a process. Referring to this process they suggest that: "An effective decision-making process fulfills these six criteria:

- It focuses on what is important
- It is logical and consistent
- It acknowledges both subjective and objective factors and blends analytical with intuitive thinking
- It requires only as much information and analysis, as is necessary to resolve a particular dilemma
- It encourages and guides the gathering of relevant information and informed opinion
- It is straightforward, reliable, easy to use and flexible".

All the above approaches, regardless of the name used, commonly underline as fundamental to the course of actions constituting the decision-making cycle. These actions are interconnected and interdependent and aim at the final goal –making a decision. Recognition of problems approached at each phase of the decision-making is a prerequisite considering the importance and consequences accompanying the decision-making in business.

Furtheron, according to Rogers and Blenko (2006) good decision-making is conditioned upon some specific roles, which the authors summarize into a single term - RAPID. They refer to the decision-making phases specified in roles to be performed by the decision-making individual or individuals who in group are involved in decision-making for a particular issue. "The five letters in RAPID correspond to the five critical decision-making roles: recommend, agree, perform, input and decide" (Rogers and Blenko, 2006). According to these authors, the five critical decision-making roles refer to the following approaches:

1. *Recommend* - refers to the individuals charged with the responsibility of making proposals, collecting and analyzing data and preparing the decision in due time.
2. *Agree* - is a role attributed to the individuals possessing the discretion (authority) to have a positive or negative opinion about the decision during its preparation period. They may be participants or experts in the decision-making process. This is a role that may be associated with discussions and proposals about the decision.
3. *Input* - refers to the individuals providing consultancy on the decision.

4. *Decide* - is the role to be played by the responsible person, who has the authority to decide.

5. *Perform* - This role charges with responsibility the group/individual for decision implementation.

The above researches of Rogers and Blenko (2006) highlight the fact that decision-making accounts for the commitment of a group of professionals having special assigned roles. However, the same person may probably perform more than one role. This is conditioned upon the decision's importance; the decision's focusing objectives, the business size, the available human capacities and timing.

Every decision is a physical product of a decision-making process. Decisions differ from each-other, however they share the fact that they materialize on the basis of a decision-making process, considering the comprehensive constituting stages. Regarding the above and considering the specific problems resolved in every phase of the decision-making process, the decision-making process generally consists of the following phases:

- **First phase** – This phase is also identified as **the Preparatory work**. The preparation of any decision is guided by the preliminary activities, necessary to be applied. These are the grounds for improving quality and increasing certainty of decision. The first phase of decision-making is constituted by defining the objectives. Vincke (1992) states that: "The decision problems represented as a hierarchy in which the top vertex is the main objective of the problem, the bottom vertices are the actions and the intermediary vertices represent the criteria (which are more and more aggregated as one goes higher in the hierarchy) which should to be taken into account". Besides Vincke (1992), other researchers have pointed out the fact that the preparatory work in the decision-making process refers to the identification of the available target or targets the decision is focused on. The term *available* refers to all targets for which there are acceptable natural, economic and human conditions, conditioning their implementation. Taking into account the economic business activity, it is understandable that business objectives can be numerous, therefore the manager shall ordain their hierarchy. According to Galtung (2007): "targets are not randomly selected from a targets' catalog, but something rooted in the foundation of their organization". This significantly stresses the necessity of hierarchical goal ranking. However, any decision generally focuses on specific targets. This is posed as a requirement on the manager's part in order to carefully proceed to identifying the objectives. Therefore, having the objective's resolution the decision focuses on is a highly substantial stage of decision-making, which requires an intellectual standard by the manager's part. "Economics

has traditionally assumed, when building models that decision-makers possess, clear objectives, perfect knowledge and perfect foresight; as a consequence, rational and fully informed decision-makers never make mistakes" (Jones, 2004).

Objective selection may be even oriented by the four dimensions recommended by Grünig and Kühn (2005), determining the importance of objectives: "From a practical viewpoint, four dimensions are essential in distinguishing between different types of goals:

- *Importance*: Goals can be divided into categories, such as very important, important and others. Typically, however only two categories are used - main goals and additional goals.

- *Scope*: It is useful to differentiate between overall goals of the company and individual goals of separate units, such as product divisions, regional units or functional units.

- *Time*: Goals can be divided into long-term (often until further notice), medium-term (2 to 5 years), and short-term goals (one year or less).

- *Degree of attainment*: This distinguishes between optimizing and satisfying goals".

On the above reasoning, the definition of objectives is a crucial moment of the decision-making process. To this Keeney (1992) orientates: "The process of identifying objectives requires significant creativity and hard thinking about a decision situation". Goal setting is a serious managerial commitment. In some cases, it may be noted that decisions aim at several objectives. In this framework, Simon (1959) states that: "A real-life decision involves some goals or values, some facts about the environment, and some inferences drawn from the values and facts. The goals and values may be simple or complex, consistent or contradictory; the facts may be real or supposed, based on observation or the reports of others; the inferences may be valid or spurious". Including various objectives into a decision makes the manager's job more difficult on the objectives' prioritarization. This has sensitized the researchers' attention leading to the definition of the important and necessary recommendations into determining the hierarchy of objectives, as a condition for the good decision preparation. Thus, from the whole recommendations, we can mention the use of two vital recommendations, specifically - **A**nalytical **H**ierarchy **P**rocess (AHP) and **M**easuring **A**ttractiveness by a **C**ategorical **B**ased **E**valuation **T**echnique (MACBETH).

According to Goodwin and Wright (2010) recommendation AHP: "The AHP which was developed by Thomas Saaty". While Bhushan and Rai (2004) present AHP as a broader development of the decision-making theory, as it takes into consideration the analytical hierarchy.

Goodwin and Wright (2010) have also approached the MACBETH recommendation, developed by Carlos Bana e Costa and Jean-Claude Vansnick. It is similar to the AHP recommendation and supports the comparison of differences in attractiveness, by using the LIKERT scale. "The decision-makers would be asked to decide whether the difference in their attractiveness was 'Very Weak', 'Weak', 'Moderately Strong', 'Strong', Very Strong' or 'Extreme'" (Goodwin and Wright, 2010). However, Goodwin and Wright (2010), besides the evaluation, emphasize the fact that: " AHP and MACBETH allow decision-makers to express their preferences using words rather than numbers".

Objective determination, as the first stage of decision-making, has also engaged other researchers, who have focused on the attention assigned to the objectives' quality. In this manner, the definition of good objectives (potential) is a prerequisite to effective decision-making, because "if we very effectively pursue the wrong goal, we will hardly be making good decisions" (Gilboa, 2011). Gilboa's considerations on the link exists between the quality of objectives and the efficiency of decision, highlights the professional and cautious work required to determine the objectives. The objectives must be properly defined in order to have a successful decision. Accurate determination of objectives is possible to be achieved. To attain it is substantial that the manager shall consider all the limiting factors. Generally, the business objectives are measurable variables, allowing a significant accuracy degree, based on the statistical methods, as the average, the mode, the median, the trend, etc. Meanwhile the quality of decision-making process is assumed to be of high value if all the process phases are rigorously applied. The linkage existing between the objective quality and the business performance evidences the managerial commitment into selecting the objectives. "Indeed, making good decisions and making them happen quickly are the hallmarks of high-performing organizations" (Paul and Blenko, 2006).

The whole decision-making process is a creative activity of the manager. It requires that he/she (the manager) possesses the due preparation and knowledge from a range of areas. This makes the managerial engagement valuable regarding decision-making as a decisive activity from the very outset. Thus, the managers "have found different specific solutions, all have made essentially the same fundamental changes to their planning and strategy development processes in order to produce more, better, and faster decisions" (Mankins and Steele, 2006).

- **Data collection**

Complexity and size of the decision-making process require the use of indispensable resources which for the case are the accumulated data. In order to take the right decision for

a particular objective, the manager's interest to collect, process and analyze data is understandable. "All management decision processes require information or data" (Wang, 2002). The data is an important resource, because if it lacks the business cannot run efficiently. In this context, Wickham (2004) states that: "Information is valuable to a business". Furthermore, according to Kourdi (2003) "Data collection requires a sophisticated approach". This is why this phase it highly important. "When you make a tentative decision (to buy a new car, to hire a particular employee, to start research and development on a new product line etc.), do you search for data that support your decision before making the final commitment?" (Bazerman and Moore, 2009). The manager's task to collect data is important because "The tools used to solve these problems depend largely on the type of the available data (deterministic, probabilistic, or uncertain)" (Taha, 2007). The data technically represent 'goods' necessary for the decision-making process. They must be processed in order to be converted into information. The data processing considers their statistical processing, thus information becomes a powerful support to the decision-makers. "Decision-makers must be well informed if they are to make the right decision" (Kourdi, 2003). The type and amount of data needed is determined based upon the problem (target) context where the decision is focused. According to Buchanan and O'Connell (2006), "Simon suggests that people would make economically rational decisions if only they could gather enough information". The data required for decision-making must be characterized by the appropriate amount, the respective quality and the necessary time for their collection. Data collection constitutes a prominent managerial commitment. To ensure the quality needed, the manager shall consider some important prerequisites for the data selection process. Some of these requirements can be summarized as follows:

- The data must have a direct relation to the problem in the focus (target) of the decision

- The data must be obtained from reliable sources. The reliability of the source of data is a precondition to avoid reality deviation

- The data must have spatial and temporal suitability, as a direct reflection of the phenomenon they characterize

In addition to data quality, attention shall be given to the appropriate time, when the manager needs the required data. Researchers have permanently made evident the importance of time in the data collection process, as an important factor contributing to success. The time observance in this phase of the decision-making process is conditioned upon the amount of the information needed. Therefore, "It's important to note that bounded

awareness differs from information overload, or having to make decisions with too much information and too little time" (Bazerman and Chugh, 2006). The data conditions the extraction of partial or full, expected or unexpected results. In this regard, the decision maker must be careful about choosing the desirable data, excluding the ones that do not satisfy the parameters and therefore may cause problems in decision-making. Bazerman and Moore (2009) believe that: "Some theories of decision-making assume that decision makers can always ignore extraneous information or excessive options".

Data collection is a prerequisite to forecasting the economic phenomenon in focus of the decision. According to Pownall (2012), Hyndman states: "Forecasting should be an integral part of decision-making activities of management, as it can play an important role in many areas of a company". Data collection shall not constitute a managerial commitment conditioned by the request to gather data in support to a particular decision. As a rule, businesses have to continuously collect data for each business problem. Concerning the above, Adair (2007) ponders that, businesses must possess considerable information available, in order to utilize it according to various business scenarios. Specifically, he classifies the entirety of information into: required information and available information.

Data management entails that data quality is highly important. Despite the attention the data collection deserves, the alleged quality cannot be attained in all cases. Experience in decision-making has proved that the decision-making process has encountered data caused problems (being quantitative or qualitative). The most frequent data scenarios in decision-making can be summarized as follows:

- Available, incomplete statistical data.
- Timely and quantity sufficient available data.
- Preliminary data calculations errors, ex. errors in calculating the input required amount.
- Measurement errors.
- Influence of business activity independent factors, ex. natural conditions etc.

Even when it can be claimed that the above factors impact can be avoided, in various cases the inaccuracies are similarly inevitable. Thus, although the statistical data are measurable and therefore amounting to quantitative indicators, they are based and dependent upon the achievements of previous periods. As such, they justify the organizational deficiencies existing in the given time-period. Also, the information transfer via the transmission channels can lead to misinterpretation. Accordingly, the manager's objective shall be focusing not only on reliable source data collection, but also ensuring that the data

demonstrates a sufficient economic logic.

- **Designing the alternatives**

Modeling of alternatives represents another crucial phase and obviously deserves the due attention. Designing alternatives relates to the outline of the opportunities in order to obtain the future decision-making set targets. The projected alternatives will serve as a discussion basis to the following stage. Designing alternatives is a process completed through analyzing the objectives to be achieved, their respective costs and the entailed risks of each alternative. Thus, planning the alternatives shall take into consideration the economic, social and environmental issues. The projected alternatives can be numerous. In order for this stage to result successful, the unacceptable alternatives for the referred period are to be previously avoided. The unacceptable alternatives are generally considered the alternatives conflicting with the effective legal provisions or the second ranking alternatives. Hence, the decision-makers focus on projecting the potential alternatives, which serve as the basis for decision-making. Designing alternatives is a laborious engagement for the following reasons:

- Businesses are increasingly faced with competition, a ubiquitous challenge in their economic life. In facing competition, the necessity of recognizing the decision-making problems and improving their quality by the directors and/or managers is highly valued. This results into a precondition to confronting challenges, which in part must be analytically recognized and studied. The analysis of the challenges must be based on a realistic assessment of the existing situations.

- The decision-making process is approached simultaneously from various fields. Thus, having the due know-how on a wide range of disciplines is essential for designing the alternatives. In this context, designing alternatives only by the manager poses clear cut difficulties. Consequently, the alternatives' designing is generally advisable to be performed by a group of professionals. In this framework, the alternative projection assumes brainstorming alternatives. "The best-known and most widely used creative thinking technique is brainstorming. Brainstorming was introduced in the 1930s, so it has been around a long time – a sign of its usefulness" (Adair, 2007). According to Mullins (2010): "A brainstorming approach (sometimes now referred to as 'thought showers')". Brainstorming serves as a condition to generate new ideas. From this point of view, brainstorming serves as a tool to motivate participants into developing their thoughts during the decision-making process. Brainstorming is not easily doable, thus engaging in brainstorming requires time and professional preparation by the decision-makers. This is due to the fact that

we are disintegrating an existing course of action and instituting another viable method in conformity with the current requisitions. Brainstorming requires a systematic discussion.

- Modeling the qualitative alternatives requires not only knowledge but further analysis. The analysis is generally related to the processing of data collected in the previous phase of the decision-making cycle. It can be implemented through experience or the use of statistical methods and techniques, whether these methods are simple or complicated depends on the available data. Thus, the analysis of variance (ANOVA) is generally used in the regressive analysis. To analyze the composition of variables that go together in relation to the factors is used EFA with the SPSS program. To a better argumentation of the modeled alternatives, the factual validity of models is important and to this purpose CFA and AMOS are used, which is a statistical software. It is especially used for Structural Equation Modeling-SEM. While the data collected by the interview are processed through the non-parametric methods.

The number and quality of alternatives is conditioned by the manager's approach during the decision-making process, resulting in a problem that deserves particular handling.

- **Choosing the best option** is an activity of great responsibility. According to Das (2008): "A decision is a choice between several alternative courses of risky or uncertain action". Bhushan and Rai (2004) point out: "Decision-making can be considered as the choice, on some basis or criteria, of one alternative among a set of alternatives". In this context, the decision stands for the partition of one alternative from the bulk of all the projected alternatives. The alternative selection shall not be considered a random choice, but an act of parting the best alternative. In order to avert a routine choice among alternatives, Keeney (1992) orientates the selection of alternatives based on thought. "Selecting among alternatives, however, is constrained thinking", as, he continues, "The thinking process may suggest further creative alternatives" Keeney (1992). Thereby, "In making a decision, one tries to choose "the best" available alternative" (Chankong and Hiames, 1983). The selection is obtained through a detailed analysis of each option separately. "For each alternative, ask yourself what is its best feature and what is its worst feature" (Anderson, 2002). Selection does not represent an easily feasible process, as in some cases the alternatives can be of similar nature and possess questionable advantages and disadvantages. According to Adair (2007): "It is worth dividing them into different levels of priority". For this, Adair (2007) recommends the following scheme (figure 2).
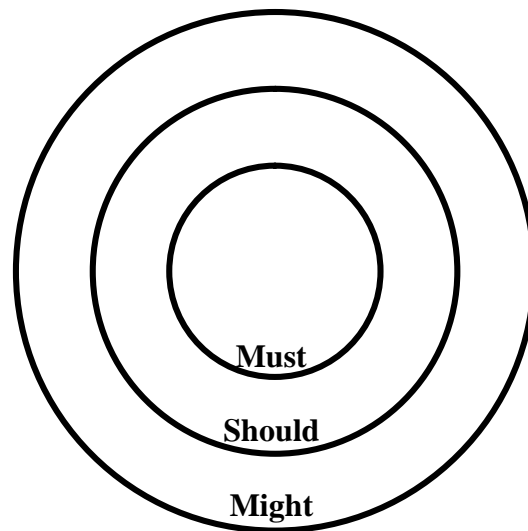
Figure 2: Priority levels in choosing alternatives, (Source: Adair, 2007)

Making a choice highlights the necessity of the economic interpretation of the alternatives. Thus proceeding, the less advantageous alternatives are avoided. This is what Turpin and Marais (2004) recommend when stressing that: "The decision-making process of several decision-makers may be described broadly as having two phases: a divergent, exploratory phase and a convergent phase where the focus is to reduce the number of alternatives and then take the decision". This means analyzing the alternatives. The alternative analysis is an engagement of the decision-making manager because it identifies the extent to which his decision-making provides the adaptation of business to the environment. Selecting the best alternative may engage the manager individually or in collaborating with other professionals. According to Bazerman and Moore (2009): "In his Nobel Prize –winning work, Herbert Simon (March and Simon, 1958; Simon 1957) suggested that individual judgment is bounded in its rationality and that we can better understand decision-making by describing and explaining actual decisions, rather than by focusing solely on prescriptive ("what would rationally be done") decision analysis". So, choosing the best alternative based on group decision represent the best way. In this regard, Goodwin and Wright (2010) stated: "Obviously, several individuals who are involved in decision-making bring together a larger fund of experience, knowledge and creative insights". In this context "The alternatives could not be compared until all of the teams completed their analysis" (Bazerman and Moore, 2009). Considering the presence of a group of individuals in the decision-making process, the voting system can be used. Arrow (1951) referring to other researchers admits that: "Dr. Howard Bowen has considered voting as the demand for collective consumption". Furthermore, Arrow (1951) holds an individual reserved position concerning voting, by

stating that: "The methods of voting and the market, on the other hand, are methods of amalgamating to tastes of many individuals in the making of social choices".

Additionally, voting results can be also influenced by the subjectivity of the participating professionals. According to Grünig and Kühn (2005), Condorcet had discovered this over 200 years ago and is called *the Condorcet voting paradox*. Consequently, the voting system is not always a necessary and sufficient condition to identify the best option. In order to attain it, the evaluation criteria are indispensable. The use of evaluation criteria is a characteristic of the advanced methods, "A decision criterion is the specification of a goal relevant to the evaluation of the options in a decision problem" (Grünig and Kühn, 2005). The evaluation criteria make the choice impartial. Thus, regardless of the number, the evaluation criteria enhance the quality in the selection of alternatives. "Since a goal system usually includes a number of different objectives, a number of different decision criteria are required when evaluating options" (Grünig and Kühn, 2005).

- **Decision implementation** concerns the environmental conditions wherein the decision is to be effectuated. Considering the environmental conditions, it is understandable that the decision implementation is an arduous activity. Concerning this Rosanas (2013) states: "Everything is easier by far on paper (or in thought) than it is in practice." Thus, execution of every decision is a highly important activity. "After the decision is made, its implementation must be assured". (Grünig and Kühn, 2005). In order to obtain this, it is imperative for the decision to be supported by the argumentative section, which renders functional the decision-making. Thereof, it is indispensable to formulate strategies in order to attain the decision and programming all the operations required for implementation. This is related to the stipulation of financial means, the techniques to be employed and the necessary human resources. Turning the decision into a reality is conditioned upon the quantity of these resources, their interaction, as well as the communication quality. The decisions are to be comprehended by the group that is to implement them. Decisions result in prior anticipated impact when they are well- transmitted and well-understood. This clearly evidences the importance of communication as a ubiquitous human need. "All decisions should be explained to all who are affected by them, so as to avoid misunderstandings" (Kourdi, 2003).

Regarding the above stated, communication is a key component supporting the success of the decision-making process. Communication in decision-making consists primarily in the communication among the team cooperating for its preparation. Additionally, communication is a fundamental component to the decision implementation.

Communication during the period of decision preparation is related to the necessity of being knowledgeable on the linguistic rules on the part of the team collaborating for its preparation. Hence, "The reality of a group making these high-stake decisions generates a requirement for creating communication links between the members of the decision-making group with a common understanding of the syntax and semantics of the underlying issues" (Bhushan and Rai, 2004). Meanwhile, communication deemed as an essential component to the decision implementation, is related to the manager-employee communication interactions. In this regard, it is noteworthy referring to Mullins (2010) in introducing the "Johari" window technique, as presented in figure 3.
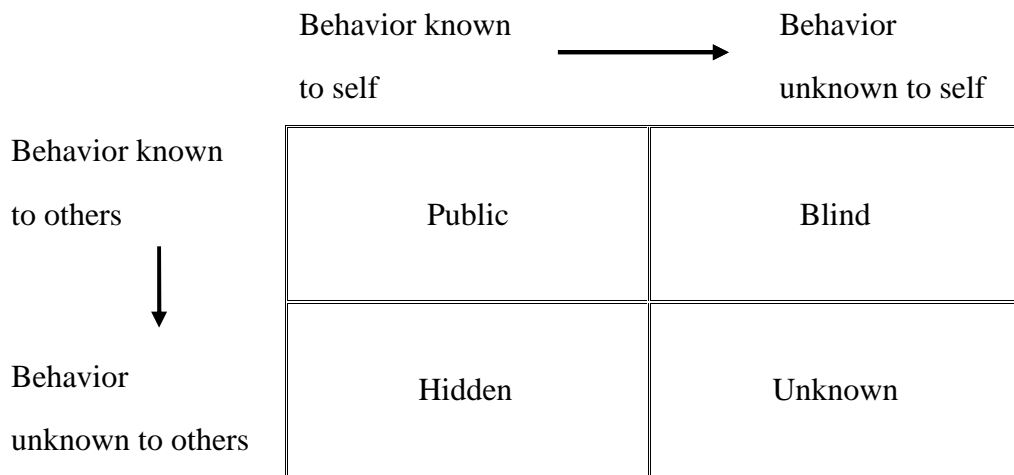
Figure 3: The window "JOHARI", (Source: Mullins, 2010)

2.2 Decision-making as a managerial commitment

Business management is a difficult managerial endeavor as it is faced with a multitude of problems and challenges conditioned upon the environment in which businesses operate. "Companies are currently confronted by exceptional challenges caused by the unpredictability and complexity of their competitive environment" (Sinofsky and Iansiti, 2010). All these factors lead to different kinds of decisions, expanded not only during different time-spans, but also confided in a given reference-period.

Decision-making is an activity faced by professionals of different fields. In some professions, decision-making is part of the daily intellectual activity, therefore it acquires a substantial significance. One of these professions is the manager's profession, which is permanently confronted with various challenges in and out of the business environment, requiring a range of decisions to be taken. Therefore, the manager shall be well acquainted with the decision-making theories, which as a rule, start with the cognition of the decision concept. Hastie and Dawes (2010) define the decision concept divided into three interconnected parts, functional to each-other. Specifically, Hastie and Dawes (2010) provide the following definition: "A decision, in scientific terms, is a response to a situation that is composed of three parts: Firstly, there is more than one possible course of action under consideration in the choice set (e.g., taking the right or left path at a fork in the road). Secondly, the decision maker can form expectations concerning future events and outcomes following from each course of action, expectation that can be described in terms of degrees of belief or probabilities (e.g., the belief that the right-hand path becomes impassable a mile up the trail and that the left-hand path leads to a scenic lake with a good composite). Thirdly, the consequences associated with the possible outcomes can be assessed on an evaluative continuum determined by current goals and personal values". Mintzberg and Westley (2001) emphasize: "Thus, the three major approaches to decision-making are "thinking first" "seeing first" and "doing first". They correlate with conventional views of science, art and craft. The first is mainly verbal (comprising words in a linear order) the second is visual, the third is visceral". Moreover, Mintzberg and Westley (2001) highlight the characteristics of each of the approaches of decision-making, as depicted in figure 4:

Characteristics of the Three Approaches to Making Decisions		
"Thinking first" features the qualities of	"Seeing first" features the qualities of	"Doing first" features the qualities of
Science, planning, programming the verbal facts	Art visioning, imagining the visual ideas	Craft venturing, learning the visceral experiences

Figure 4: Decision–making Approaches, (Source: Mintzberg and Westley, 2001)

In addition to the above-mentioned authors, some other researchers focus on other related decision-making aspects. Thus, Krajewski, Ritzman and Malhotra (2013) paid due attention to some decision-making issues and specifically to those linked with the decision-making theory. They believe that: "Decision theory is a general approach to decision-making when the outcomes associated with alternatives are often in doubt. It helps operation managers with decisions on the process, capacity, location and inventory because such decisions are about an uncertain future". However, the decision-making theory is not limited *only* to the above areas. Accordingly, they (Krajewski, Ritzman and Malhotra, 2013) believe that: "Decision theory can also be used by managers in other functional areas".

Knowledge on decision-making has been developed both in theoretical and practical terms. Considering decision-making from a theoretical point of view there are a considerable number of titles on the subject. Although many authors have researched in decision-making, amongst their approaches there are also observed many differences. To this regard, it is crucial to refer to clarifying the differences between Decision Theory and Decision Science. Considering the decision-making process in its complexity, it is understandable that the decision-making theory represents an interdisciplinary science. To this regard, Peterson (2009) states: "Decision theory is an interdisciplinary project to which philosophers, economists, psychologists, computer scientists and statisticians contribute their expertise". This suggests that decision theory is the study of alternatives designed for an optimal decision making, from the perspective of these sciences. In this context, the author evidences the crucial role that the decision-making theory has when emphasizing: "Roughly put, the ultimate aim of decision theory is to formulate hypotheses about rational decision making

that are as accurate and precise as possible". Researchers like Peterson (2009) and Rapoport (1998) define that the decision theory has two important components:

1. Descriptive decision theory
2. Normative decision theory.

Descriptive decision theory refers to how the agents make decisions in specific situations. To this Rapoport (1998) states: "A descriptive decision theory purports to deal with questions related to how people behave in given choice situations". Via the descriptive decision theory the cause and effect links of the economic or managerial phenomena cannot be duly comprehended to the necessary scale. Understanding and interpreting these connections needs judgment and analysis. Therefore it is claimed that managers make use of the normative methods. The normative decision theory targets the fact on how good decisions can be made. It is based on the systematic study of the phenomena. The systematic study enables evidencing the arguments supporting decision-making by avoiding errors that in many cases are inevitable, especially in cases wherein only the descriptive theory is applied. "A problem of prime importance in normative decision theory is that of defining precisely what can be meant by 'rationality' or 'rational decision" Rapoport (1998). A general assessment on the theory of decision is also made by Bermudez (2009) when stating that: "Decision theory is a tool for assessing and comparing the *expected utility* of different courses of action in terms of probabilities and utilities assigned to different possible outcomes".

However, good decision-making needs more in-depth treatment. Hence, Raiffa (1994) considers: "If the decision theory is to be taken seriously as a prescriptive aid for action, they must teach people to think it reflectively, and often unnaturally about the serious choices they make". This is because decision-making is a response to human needs, which are constantly changing. Therefore, decision-making also needs continuous improvements. To this regard, Kleindorfer, Kunreuther, Schoemaker (1998) propound: "The emerging field of decision science is concerned with understanding and improving the decision-making of individuals, groups and organizations". Improvements in decision-making should imply a decision-making based on scientific arguments, which are in turn based on measurable and verifiable facts obtained through the use of analytical methods in decision-making. Considering the composition of analytical methods it can be concluded that these methods constitute the supporting ground for managers of all levels, but especially top-level managers when it comes to making informed decisions and having a considerable and credible expectation all together. Warkentin (2016) on the above reasoning asserts: "Decision science

scientists employ leading rigorous research techniques, including experimental designs, empirical quantitative analysis, optimization, simulation, surveys and other scientific methods, while also valuing innovative methodological horizons". As evidenced by field-based decision-makers, decision-making based on decision science requirements takes into consideration complete or partial methods studied by various sciences. This is important because: "Utilizing concepts from these disciplines, we view the field of decision science as integrating disciplines analysis with perspective recommendations" Kleindorfer, Kunreuther, Schoemaker (1998).

The extensive ubiquity and prominence of the decision-making to the business success has been in the focus of researchers, whose studies have elevated it to the theory level. Researchers have analyzed and investigated decision-making issues in general and business decision-making issues in particular. However, the decision-making is so important that the theoreticians still continue to develop their theories in this regard. All these new theories are generally built on the basis of previous theories. This trend is also reflected in literature, wherein the decision-making issues are scientifically approached. The literature cites multiple approaches to decision-making processes as the issues involved therein are also great in number. They refer to various decision-making problems from the theoretical and practical perspectives simultaneously.

Considering the importance and the full set of decision-making issues, literature handles on the one hand particular aspects of decision-making and on the other treats the decision-making process as a thorough commitment. In general terms, the approaches refer to:

- structural problems;
- problems of methods applied to the decision-making process;
- data-related problems;
- problems related to the instruments to be utilized in the decision-making process;
- problems concerning the decision-maker, his/her individual characteristics and their impacting level on decision-making etc.

As already emphasized, the whole range of the decision-making process includes numerous and diverse problems. This makes the decision-making in general and the business decision-making in particular, encounter technical difficulties and be associated with other risks and/or expenses. Thereof, acknowledgement with the business decision-making issues is not o n l y indispensable but vitally instrumental, as it concerns the identification of efficient solutions to the business problems. Within the context of a common practice, the in-depth

knowledge of the decision-making problems appears to be trivial, considering the daily routine of the manager's business engagements. Nevertheless, a detailed, comprehensive know-how on the manager's part concerning the decision-making issues will be reflected upon an increase in his professionalism and will undoubtedly lead to qualitative future decisions. Qualitative decision-making shall be a consistent concern of the manager. However, when it comes to identifying the solutions and positive outcomes for strategic business issues, the importance of qualitative decision-making obtains special valor. Thereby, the solution produced by a decision will result to be sustainable and long-term. In this context, the decisions constantly focus on the business key issues and being such alike, they shall reflect management professionalism. Hence, the decision-making is obviously an essential management commitment, accountable for the business fate. Accordingly, Garvin and Roberto (2001) claim: "Decision-making is arguably the most important job of the senior executive and one of the easiest to get wrong".

2.3 Decision-making as a judgment guided process

Decision-making is not simply an economic concept, but it is an all-comprehensive process, incorporating values, elements and a multitude of concerns. All the above factors make the activity, partly or as a whole, subjected to a multi-dimensional judgment. Through the analysis of particular business decisions, it can be easily perceived that the whole decision-making process is guided by judgment. Bazerman and Moore (2009) suggest: "The term judgment refers to the cognitive aspects of the decision-making process". The degree at which judgment in the decision-making process holds ground is such like that it may be stated that judgment is indisputably the stepping stone of each decision. According to Kourdi (2003), Drucker referring to judgement, emphasizes that: "Every decision is a risk-taking judgment". Handling the decision as a risk-taking judgement by Peter Drucker, sustains upon the fact that generally the decision maker is void of total certitude concerning the decision-making consequences. This due to the highly great number of decision-making influencing factors and conditions, wherein the decision is to be applied. Thereof Kourdi (2003), referring still to Drucker, defines that, "Effective executives try to make the few important decisions on the highest level of conceptual understanding".

On the other hand, judgment is a dimension of thought. In general terms: "Thinking is the foundation of everything we do" (Kallet, 2014). Consequently, it is understood that thought also underlies every decision in general and the business decisions in particular. Zutshi and Dr. Creed (2011) also value the correlation between the decision-making and thought,

accentuating that: "Decision-making processes have been widely studied and the foundations of decision theories span thousands of years through a variety of thought disciplines". The importance of thought in decision-making is also evidenced by the fact that thought, as defined by Anderson (2002), constitutes one of the three secrets of the wise decision-making. According to him: "The three secrets of wise decision-making are courage, creativity and balance in the management of complexity". In Anderson studies (2002), one can easily observe that thinking is the foundation of the three secrets of wise decision-making. Thinking is present on each activity of individuals or professionals in general, without differentiating among professions. Therefore, Adair (2007) states that: "Thinking is fun". Accepting that "Thinking is fun", refers to two main facts supporting the statement:

Firstly, thinking is only a human mind attribute.

Secondly, precursory thinking to any challenge, leads to drawing effective solutions. Thus, the thinking process can create a proactive program to the decision focused problem and not simply a reactive one.

Considering the above rationale, thought shall guide every human activity. Only by thinking one may process various information obtained from reality. In this way, options are generated to find acceptable and/or effective solutions to simple or complex issues. Particularly in decision- making, the manager shall be a thinker. To this respect, in his bestseller de Bono (1985) writes: "To be a thinker does not imply to be intelligent. It does not imply either that I can solve all the ingenious problems that people present/display to me hoping that I solve them always". Therefore, from the decision-making perspective, thought is the foundation of each of the "secrets" of decision-making that Anderson (2002) specifically approaches as follows:

- "Rationality is a matter of direction in thought". Rational thinking gives the individual (the manager) the necessary courage. On the other hand, courage is crucial, as it makes the professional act conviction.

- "Creativity is a matter of richness of thought. Creative decision-making considers broad ranges of alternatives, the bases for evaluating those alternatives, and events that might affect their value".

- "Judgment is a matter of balance in thought. Judicious decision-making weighs the various fact and values considerations in proportion to their importance".

Importance of thought, as a prerequisite for decision-making success refers to the fact that thought is considered the pillar to each development and cooperation process. Hence,

thought addresses challenge resolution. Its importance is also highlighted by other researchers. Considering thought of vital importance, Adair (2007) stressed: "As Roy Thompson, one of the greatest businessmen of our time, once said, "If I have any advice to pass on, as a successful man, this is: if one wants to be successful, one must think; one must think until it hurts"".

The conclusions of thought are also conditioned by its directions. In this context, referring to the well-known thinker and writer de Bono, Adair (2007) points out two courses of thinking. Specifically, he refers to the vertical and lateral thinking. Contrasting these two lines of thought enables the induction of their individual specifics. Thus, the respective differences among them also emerged, portrayed accordingly as in the following figure 5:

Vertical Thinking	*Lateral Thinking*
Chooses	Changes
Looks for what is right	Looks for what is different
One thing must follow	Makes deliberate jumps directly from another
Concentrates on relevance	Welcomes chance intrusions
Moves in the most likely directions	Explores the least likely directions

Figure 5: "Lateral" and "Vertical" Thinking Characteristics, (Source: Adair, 2007)

Nevertheless, de Bono (1970) points out: "Lateral thinking is not a substitute to vertical thinking. Both are required. They are complementary. Lateral thinking is generative. Vertical thinking is selective".

With respect to the above, thinking guides the business adaptation towards the alterable environment conditions where it operates. This adaptability is realized via incessant decision- making. Bazerman and Moore (2009) argue: "Environmental conditions that change, can also influence decision-making". The environment where businesses operate also influences the decision-making through the pressure it exerts on the business activity. Consequently, the decision-making success refers to taking into consideration the permanent changes. Hence, Bazerman and Chugh (2006) believe that: "Fortunately, people can learn to be more observant of changes in their environment, which will help to remove their decision- making blinders". In this way, they highlight the prominence of thought in the full course of the decision-making activity.

2.4 Three "Cs" of decision-making

Decision-making comprehensively denotes a multi-dimensional process. As such, decision-making portrays a complex process. This refers to the combination of diverse knowledge the decision-making manager shall possess. Furthermore, the decision-making complexity may be argued by the fact that decision-making theories are based on some scientific disciplines. "The study of decision-making, consequently, is a palimpsest of intellectual disciplines: mathematics, sociology, psychology, economics and political science, to name a few" (Buchanan and O'Connell, 2006). In addition, the complexity of the decision-making process is evidenced by the fact that numerous factors impact the decision-making process. The involvement of scientific disciplines claimed by Buchanan and O'Connell (2006) on one hand and the impact of the full set of factors on decision-making on the other hand, renders the decision-making a challenging issue. Therefore, many researchers are focused on the theoretical approaches of particular aspects of decision-making. Among the up to date investigations we may cite the observations of two researcher groups, who have independently highlighted the three "Cs" of decision-making. Specifically, Garvin and Roberto (2001) and Mullins (2010), who on his part refers to Vroom and Yetton, have treated the three "Cs" of decision-making. Each of these researchers suggests the inclusion of three "Cs" in decision-making, considering different requirements to each "C".

Three "Cs" according to Garvin & Roberto

Garvin and Roberto (2001) recommend that decision-makers shall pay attention to what they have defined as the three "Cs" of the decision-making, as a prerequisite for effective decision-making, emphasizing: "careful attention to three critical factors, the three "C's" of effective decision-making: conflict, consideration and closure". The problems addressed for each of the "Cs" are introduced below:

The first *"C"* according to Garvin and Roberto (2001) defines the conflict. Conflict shall not be considered as an exception to decision-making because as a rule, conflict is part of decision-making. Accordingly, the mediator, the advisor and the partaker in world conflict resolution for more than 40 years, Galtung (2007) emphasizes: "Wherein there are objectives, there also exist contradictions, within the very same organization or among different organizations". Meanwhile, Mullins (2010) points out that Irvine handles conflict as an inevitable factor. Mullins (2010) explains the inevitable nature of conflict as "We all see things in different ways and have our own set of values, beliefs and options". From this perspective, Mullins (2010) acknowledges the cognitive type of conflict, while Galtung

(2007) identifies two types of conflicts, specifically:

- Cognitive conflict
- Emotional conflict

Hence, Galtung (1988) explains the inevitable character of conflict considering its ubiquity, implying the continuous presence of various cognitive levels as: "conflicts within people (the dilemmas) and among people (the disagreements)". Thereof, resulting that conflict may emerge due to the differences in the decision focused cognition of problem, from different individuals involved in the decision-making process. Differentiations in the problem cognition, despite of being generated due to the varying professionalism level of individuals involved in the decision- making, inevitably cause conflict. The manager shall take into account conflict in decision-making, as it is closely linked to the three secrets of wise decision-making. According to Anderson (2002) "Motivational concepts, specifically cognitive conflict, will play a key role in our attempt to understand courage, creativity, and balance". Further on, Anderson (2002) emphasized: "However, cognitive conflict is the best place to start". As on the above, the cognitive conflict concurrently sums up the importance and uncertainty, expressed in the following formula:

Cognitive Conflict = Importance x Uncertainty

Galtung (2007), as a researcher of various conflict forms, emphasizes: "Conflict touches feelings and thoughts". According to him, conflict is also manifested in its emotional form. Claiming that conflict in decision-making is emotional, is a sound judgment as the main subject of each conflict is the decision-making individual, wherein the emotions characterize his/her very existence. In this context, Kourdi (2002) stated: "Decisions are guided by our emotions in various ways". All these components show the continuous presence of conflict in the decision-making process.

In respect to the above, we reach the conclusion that conflict shall not become a barrier to decision-making. Vincke (1992) and Simon (1997) identify as a solution the need to find compromise. According to Vincke (1992): "The aim is to find some compromise in a decision problem, in which are involved several decision-makers (or committees) with different systems of preferences (while, in multi-criteria decision-aid, the decision-maker is unique, even if it is a committee)". After five years, Simon (1997) also suggested the importance of compromise in decision-making. "In an important sense, all decisions are a matter of compromise". Compromise gives stability to the decision and its implementation. The need for compromise is also highlighted by other researchers and it is even considered as a positive step in decision-making. Thus, according to Kourdi (2003): "Decisions often

involve compromise and as long as the essential goals will still be achieved, there is nothing wrong with this". Compromise in decision-making is a conditioned understanding among the participants involved in the process due to the need for the objective's attainment. Maser and Pollio (2012) articulate their considerations on the need for compromise: "Instead of developing an adversarial attitude, I chose to create an environment in which all participants were respected and felt safe to express their opinions and concerns".

Consideration –refers to the second "C". The decision, regardless of the objective focus, is not always a result of individual work, but as a rule is an outcome of several people's effort. In this regard, consideration is related to the importance, attention or concern dedicated to the ideas, analysis, the perspectives of different individuals engaged in the decision. But "Even in small and medium enterprises decision-making is rarely done by sole individuals sitting in isolation" (Bhushan and Rai, 2004). Therefore, Garvin & Roberto (2001) underline: "In fact, keeping people involved in the process is, in the end, perhaps the most crucial factor in making a decision—and making it stick". Taking in consideration the ideas of individuals who cooperate and of those affected by the decision constitutes a necessity to the decision-making quality. Considering the collaborators' opinions makes the decision more comprehensive and consequently successful. The success shall be inscribed to the brainstorming of individuals who compose the groups of interest.

Closure is the third "C" implying the decision finalization. Decision finalization refers to the decision-making required time-span. The decision consequences are conditioned not only upon the decision quality, but also on the time available. The time element is of crucial importance in decision-making. Considering time as a key component to decision-making, Garvin and Roberto (2001) underline: "Knowing when to end deliberations is tricky; all too often decision-making bodies rush to a conclusion or else dither endlessly and decide too late. Deciding too early is as damaging as deciding too late, and both problems can usually be traced to unchecked advocacy". As observed, Garvin and Roberto (2001) consider two time extremes. While Goodwin and Wright (2010), addressing all the factors influencing the decision, classify time as the first factor, underlining: "the time available to make the decision".

As on the above, in some cases the importance of time in decision-making is deemed as decisive. Time is a pivotal benchmark; it generally draws a characterization to decision-making due to the following two reasons:

- Firstly: time is present in all stages of decision-making, expanding from the

information delivery to the preparation of all available options, etc. Experience has shown that businesses have not proven successful when the manager has disconsidered the time factor. This occurs even when they have identified profitable but untimely objectives, or have failed to elaborate on the alternatives in due time, etc.

- Secondly: time, from the decision-maker's perspective. The decision-maker, due to his commitments, cannot have adequate time for all the decision-making stages. Therefore, time constitutes a serious limitation to decision-making. As such, time-limitations shall be observed in each stage of the decision-making process.

Considering the multiple commitments, the manager is obliged to take decisions within short time-spans. This situation confronts him with straining difficulties. In this framework, Jones (2004) recommends: "Scientifically, each decision requires significant amounts of information that have to be analyzed in a very short time".

Three "Cs" according to Mullins

Referring to Vroom and Yetton, Mullins (2010) also identified the "three main Cs" of decision- making, but they differentiate compared to those approached by Garvin and Roberto (2001) as above-mentioned. Yet, according to Mullins (2010), Vroom and Yetton label them as "the three central criteria" and specify: competence, context and commitment.

1. **Competence** "this would include knowledge, experience, skill, access to information and their practical experience to make it work in practice" (Mullins, 2010). In this context, competence basically refers to the philosophical concept of competence. According to the philosophical perspective, competence relates to the entire, exact know- how professionals shall possess. Precise knowledge provides to the professionals a sense of security to make the right decisions. Furthermore, competence carries its administrative aspect. From this perspective, competence is driven by the strict adherence to laws. Thus, competence represents a central criterion in decision-making.

2. **Context** – "which would include the relationships among those involved as well as the physical conditions and the organization culture" (Mullins (2010). Professionals interact to each and every decision-making process, this makes setting human relationships inevitable. Various individuals manifest different ways in how they conceive and approach problems. From this perspective, their contribution to decision-making also varies. Therefore, human relations comprise a vital component

for the smooth implementation of each decision-making process. Their importance lays in the fact that knowledge and respect to human relations enables the resolution and elaboration of problems the decision-making is confronted with. In this way, human relationships enable the creation of a constructive environment, favoring the goal achievements.

3. **Commitment** – refers to "the decision, through the way it affects those involved, and the rewards and punishments they will experience" (Mullins, 2010). Commitment to the decision represents elements of personal and professional responsibility of each involved individual in a decision-making process.

As noted, the approaches of Garvin and Roberto (2001) and Mullins (2010) referring to Vroom and Yetton regarding the three "Cs" of decision-making are specific to each of these separate studies. They focus on issues which are apparently very different from each other. The above researchers share the fact that they bring to the attention of managers the key requirements to be taken into consideration for making qualitative decisions.

In general terms, the impact brought by each of the researchers considering the approaches of the three "Cs" in the decision-making quality by Garvin & Roberto (2001) is a step forward compared to Mullins (2010), as it refers to the basic decision-making problems. Yet, a careful analysis of the "Cs" specific content of each particular researcher may also identify similarities among their approaches. Hence:

- The presence of the "C"-conflict in decision-making as admitted by Garvin & Roberto (2001) evidences the need of the "C"- context suggested by Mullins (2010). This emerges as an inevitable need to maintain the human relations within the group of professionals cooperating for the decision.

- Further on, the "C"-consideration, which Garvin & Roberto (2001) underline as a key element, refers to the fact that collaborators' opinions shall be considered in a decision-making process. However, the dissenting opinions direct the need of hierarchy of thoughts served by the collaborators. The collaborators claim that hierarchy presupposes an order conditioned by the value of each thought. The conditioned order is waged in respect of the competent thoughts, which necessarily must stand at the very top of the hierarchy. Setting the competent thoughts at the top of hierarchy is an inevitable approximation between the "C"-consideration, recommended by Garvin & Roberto (2001) and the "C"-competence, suggested by Mullins.

2.5 The conceptual model of the study

Decision-making is a process enabling the development of the business towards a lucrative future. According to Sjöberg (2000) "Decisions are crucial in many kinds of action; some would regard them as the most important factor". It is a continuous activity influenced by multiple factors, combination of interest, deadlines, etc. carried out at different levels and circumstances. As such decision-making carries risk. The variability of circumstances on the one hand and the risk it carries, in turn make necessary the preparation of optimal decisions. The target of business decision-making is the increase of production, quality improvement, generation of income, decrease of uncertainty, etc., which generally are not easily attainable. All of the above have evidenced the necessity of improving the decision-making process. Therefore, the business economic development cannot be successful without making progress in the decision-making activity. Progress in the decision-making activity is reflected in the successful settlement of the issues the decision has in focus and their related cost. Decision-making is a complex managerial commitment influenced by various factors. These factors, to a large extent, condition the methods used in decision-making. To this regard, Elbanna and Child (2007) have identified some perspectives. Specifically, they state: "These focus on strategic or management choice, decision-specific characteristics, environmental determinism and firm characteristics". Additionally, the above mentioned researchers refer to a fourth perspective and namely the demographic characteristics of the decision-makers themselves. Review of each component of particular perspectives of decision-making addressed above, relies on the reasoning of Elbanna and Child (2007) which leads us to a conceptual model that can be rendered according to an orienting scheme. "A schematic model is a picture or drawing of reality" (Balakrishnan, Render and Stair, 2014). On the above reasoning, the conceptual model guiding this scientific work is presented in figure 6 below:
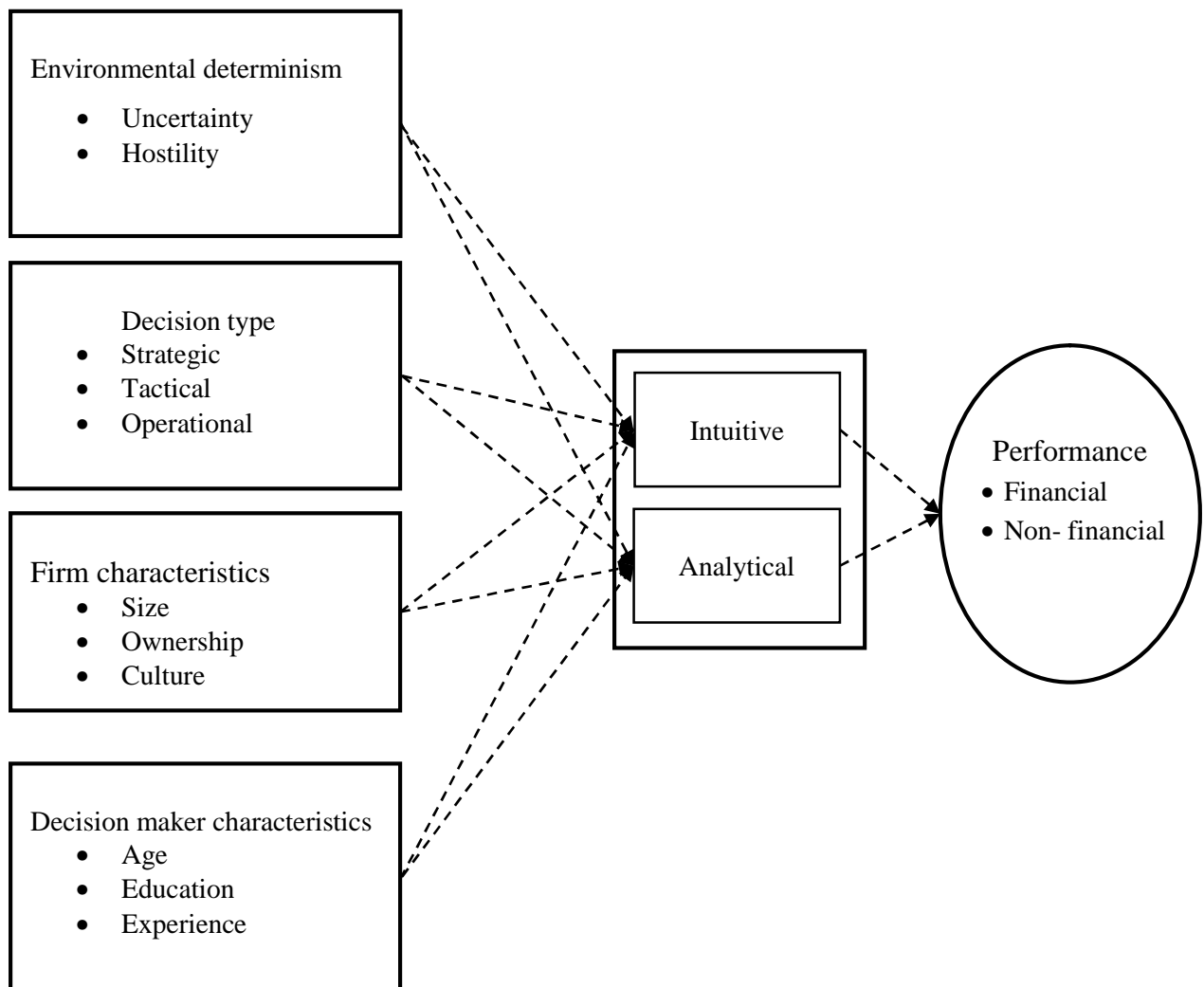
Figure 6: The conceptual model of the scientific work, (Source: Individual research, 2015)

Each of the above perspectives of the model has its relevant specifications that must be recognized in details. In this context, these specifications are analyzed as follows:

- **Environmental determinism**

Environment represents a very important perspective to decision-making, as it affects organizational structures, strategies, etc. Additionally, the environment in which businesses operate is complex. Environment is characterized by sufficient random or defining characteristics otherwise, the whole decision-making process and the decision itself can amount to depreciation. Environmental characteristics affect the method used in decision-making. Given the environmental characteristics, Elbanna and Child (2007) and six years later Elbanna, Child and Dayan (2013) defined that, the environment in which businesses operate is presented as possessing two different features, namely environmental uncertainty

and environmental hostility. For this reason, Elbanna, Child and Dayan (2013) stated: "For reasons of parsimony, as well as that of maintaining continuity with previous work on strategic decision-making, we choose to focus on environmental hostility and environmental uncertainty as the consequence perceived by senior executives of external complexity and dynamism".

With regard to environment consideration during the decision-making process, Goll and Rasheed (1997) believed that: "Environmental characteristics or properties have major implications for all aspects of management including strategy, structures, process and outcomes. Several theoretical arguments have been advanced suggesting that environmental context is a key determinant of the appropriateness of rational strategic decision processes". Therefore, the environment in which the business operates can have positive or negative impact. "Hence, we anticipate that intuition is more likely to lead to unexpected negative outcomes in hostile environments than in munificent environments" (Elbanna, Child and Dayan, 2013). Considering the importance of the environment, Tversky & Kahneman (1986) stipulate that: "Optimal decisions increase the chances of survival in a competitive environment, and a minority of rational individuals can sometimes impose rationality on the whole market".

- **Types of decision**

Continuity of the decision-making causes every business to make a variety of decisions throughout its existence. So, the manager alone or in group will make different decisions ranging in importance, throughout the professional careers. To this concern, Verplanken and Svenson (2001) emphasize that "Decisions vary widely in importance for the decision maker. Many decisions are unimportant, such as the simple purchases. Such choices are routine actions, which need a little thinking; other decisions are more important and evoke active reasoning aimed at acquiring a satisfactory representation of attractiveness of options". Some decisions can be taken at the same time, others at different phases. To the manager, the totality of these decisions amounts to what is called as "portfolio of decisions" (Bazerman and Moore, 2009). By analyzing the presence of the portfolio theory of decisions in business, the view on the existence of a diversity of decisions is reinforced. The totality of decisions made in a business, for a provided period of reference, shows a cause-effect chain of connection, whereas diversity manifests the need for decision classification.

Classification relates to the grouping of decisions according to their common characteristics and distinctions per each type. Decision classification is made by different researchers,

based on the classification criteria considering their characteristics. In any case, even the same author may use more than one classification.

Therefore, **according to goals** – Considering the aim the decision focuses on, its importance to the business and the relevant managerial responsibility, Vercellis (2009) and Pownall (2012) classify the decisions in three categories as: strategic, tactical and operational:

"Strategic decisions: Decisions are strategic when they affect the entire organization or at least a substantial part for a long period of time. Strategic decisions strongly influence the general objectives and policies of an enterprise. As a consequence, strategic decisions are taken at a higher organizational level, usually by the company's top management.

Tactical decisions: Tactical decisions affect only parts of an enterprise and are usually restricted to a single department. The time-span is limited to a medium-term horizon, typically up to a year. Tactical decisions place themselves within the context determined by strategic decisions. In a company hierarchy, tactical decisions are made by middle managers, such as the heads of the company departments.

Operational decisions: Operational decisions refer to specific activities carried out within an organization and have a modest impact on the future" (Vercellis, 2009).

Every decision maker shall consider the above classifications, because occasionally some errors in decisions may result irreversible or can be difficult to repair. They need time to be repaired and this brings about higher repairing costs. Such errors are encountered in strategic decisions. While errors in tactical decisions are recoverable, requiring a short adjustment time and at a relatively small cost.

Vercellis (2009) considers numerous features for each class of decisions and presents them as in the figure 7:

	Operational	Tactical	Strategic
Accuracy	High	←——→	Low
Level of detail	Detailed	←——→	Aggregate
Time horizon	Present	←——→	Future
Frequency of use	High	←——→	Low
Source	Internal	←——→	External
Scope of information	Quantitative	←——→	Qualitative
Nature of information	Narrow	←——→	Wide
Age of information	Present	←——→	Past

Figure 7: The characteristics of decision classification, (Source: Vercellis, 2009)

According to the requirements for the decision preparation - Vercellis (2009) distinguishes effective and timely decisions.

- **"Effective decisions**. The application of rigorous analytical methods allows Decision-makers to rely on information and knowledge which are more dependable.

And

- **Timely decisions.** Enterprises operate in economic environments characterized by growing levels of competition and high dynamism. As a consequence, the ability to rapidly react to the actions of competitors and to new market conditions is a critical factor in the success or even the survival of a company" (Vercellis, 2009)

According to the preparation method

Depending on the decision-making method Vercellis (2009) handles three types of decisions. In more concrete terms:

- **"Structured decisions.** A decision is structured if it is based on a well-defined and recurring decision-making procedure.

- **Unstructured decisions.** A decision is said to be unstructured if the three phases of intelligence, design and choice are also unstructured

- **Semi-structured decisions.** A decision is semi-structured when some phases are structured and others are not"

Whereas Pownall (2012) slightly differently classifies the decisions as:

- **Structured Decisions**- are decision where the aim is clear (i.e. the purpose of decision to be taken is unambiguous, easy defined and understood). A structured decision therefore follows a series of logical and rational steps in a clear progressive order.

- **Unstructured decisions-** by contrast, for individuals and organizations, these decisions are unclear, ambiguous and poorly understood by participants.

- **Programmable decisions** are types of structured decisions which follow clear, delineated steps and procedures.

The above classifications of decisions according to Vercellis (2009) and Pownall (2012) have many similarities between them. Pownall (2012) refers to "Programmable Decisions" considering far more completely decision-making, surpassing even the characteristics of structured decisions.

While, Emmanuel, Otley and Merchant (1990) classifies decisions in two types: programmed decision and non-programmed decision. These authors accept that:

- "**A programmed decision** is defined as one where the decision situation is sufficiently well understood for a reliable prediction of the decision outcome to be made" (Emmanuel, Otley and Merchant, 1990). So, programmed decisions are typically routine and repetitive.

- "**A non-programmed decision** is one that has to rely upon the judgement of managers because there is no formal mechanism avaliable for predicting likely outcomes" (Emmanuel, Otley and Merchant, 1990). Non-programmed decisions refer case as a unique situation. In general this decision takes longer to be made because the information available is incomplete.

According to the preparation and evaluation method, Grunig & Kühn (2005) classify decisions as following:

- "**Univalent decision** problem is one in which the evaluation of the options is carried out on the basis of a single decision criterion or of multiple criteria which stand in a mathematical relationship to each other.

- **Polyvalent decision** problem is one in which there is more than one decision

criterion and the criteria are not mathematically related".

In accordance to the business environment - Rakow (2010) referring to the economist Knight (1921) distinguishes:

- **decisions under "risk"** (known chance)
- **decisions under "uncertainty"** (unmeasurable probability)

The type of decision represents a factor influencing considerably decision-making especially as far as the decision-making methods are concerned. As a general rule, researchers suppose that the strategic decisions are based on the analytical method of decision-making. To hold up to this thinking, we can refer to Turpin & Marais (2004) who state that: "Operational decisions are based on an educated gut feel and experience. Strategic decisions require a more creative process and are shaped while being thought through". Selection of the method to be used in decision-making, alongside with the type of decision, which undoubtedly constitutes a basic factor, is conditioned upon other factors as well. Elbanna, Child and Dayan (2013) have also reached the same conclusion, when pointing out that: "Making decisions on the basis of intuition is increasingly viewed as a viable approach in today's business environment, because few strategic decisions have the advantage of complete, accurate and timely information". However we cannot pretend that a fixed rule exists between the type of decision and the way used in decision-making. Nygren and White (2002) hold on the opinion that: "The Analytical and Intuitive decision-making styles scales do appear to be orthogonal - suggesting that an individual's predisposition toward high (low) Analytical tendencies does not necessarily preclude high (low) Intuitive tendencies as well". In support to this opinion, the researchers declare: "Decision strategies are often characterized as being intuition-based or analytically-based" (Nygren and White, 2002). However, it cannot be pretended that business decisions shall be entirely intuitive or analytical. Thereon Sjöberg (2000) suggests: "The intuitive–analytical judgment scale used five steps, from ''completely intuitively'' to ''completely analytically''.

- **Business characteristics**

Elbanna and Child (2007) say that the coordinated environment impact is linked to the business features. This coordination is justified, because the business is subject to the decisions taken. Consequently, business features shall also be taken in consideration as they affect the decision-making method. Thus, "The firm–specific variables examined in the

present study are the company performance and the company size" (Elbanna, Child and Dayan, 2013).

Businesses are generally characterized by features such as size, ownership and culture. Hurn and Tomalin (2013) define the impact of business organization culture upon decision as thus: "In a more collective management culture, decisions will be arrived at through a process of consultation and discussions, although the authority to make final decisions may still be vested at the top of the organization". The influence of the organizational culture, concerning its importance and necessity it holds to the decision-making process, has been also assessed by other researchers. According to Schein (2004): "Culture thus not only fulfills the function of providing stability, meaning and predictability in the present, but is the result of functionally effective decisions in the group's past". But, the organization culture composition is inevitably influenced by the national culture. Thereof in different countries we are faced with different organizational cultures. Hurn and Tomalin (2013) considering the impact of national cultures, analyze two types of cultures and their respective reflection in the decision-making method. Hurn and Tomalin (2013) state that: "In an individualist management culture, such as in North America, Anglophone countries and the Northern Europe, managers tend to take their own decisions in relation to their job responsibilities and their budget". In Japan, another method of decision-making is salient. Thereon Hurn and Tomalin (2013) say: "The prime example of a collectivist management culture is Japan, where decision-making is carried out through a consultative process, with everyone involved in the discussion and decision-making". Whereas in China, the Chinese researchers Cheng, Rhodes and Lok (2010) present this link between the environment and the decision-making method: "Speed, shown to have an impact on organizational performance is moderated by the business environment. In a turbulent environment, Chinese cultural factors will mostly lead to faster decision-making because of the decision style, and the attention received by the boss or the chief executive".

Another business characteristic affecting the decision-making methods is the business size. Elbanna, Child and Dayan (2013) accept that: "Small firms tend to be less formalized which may encourage a greater use of intuition". Therefore, large businesses are more interested in using contemporary methods – analytical methods.

- **The decision maker**

The decision maker constitutes one of the foremost components of the decision-making model. "The concept of intellectual capital (IC) is very important" (Wiig, 2004). According

to Wiig (2004) the importance of intellectual capital consists in: "IC assets come in many forms. Personal IC assets consist of knowledge and understanding that a person possesses and owns in the forms of mental models, concepts, facts, rules, memories of incidents and situations, and many other manifestations". Characteristics of the decision maker orient the decision to a considerable extent. "Klein and Cooper in a collaborative research task with the British Ministry of Defense observed that human decision processes always take place within the subjective world of the individual decision maker. One Decision maker can see the same objective situation in a completely different way from another" (McLucas, 2003). Likewise, Simon (1997) assesses in a broader perspective the role of the decision maker in the decision-making process. "In designing decision-making organizations, we must understand not only the structure of the decision to be made, but also the decision-making tools at our disposal, both human and mechanical –men and computers" (Simon, 1997).

The influence of decision maker evidenced through the decision-making method reflects upon the business performance. Therefore, the decision maker is a key factor in choosing the decision-making method. Cannella and Monroe (1997) attribute the decision makers' influence to the demographic characteristics. To this respect they state: "Demographic variables such as a top manager's functional background and formal education have also been associated with organizational outcomes" (Cannella and Monroe, 1997). It is very important to take into account the decision maker's background because the demographic characteristics condition individual behavior. According to Elbanna and Child (2007) individual characteristics condition professional skills: "In this case, decision- makers are seen to be rational within the limits of their own capabilities (i.e. bounded rationality)". Additionally, the decision maker individuality must be viewed within the organization context. In this regard, Hensman and Sadler-Smith (2011) say: "The individual decision maker operates within the social context of the organization hence s/he needs to be able to articulate her/his intuitions". But the decision makers' professionalism, besides the individual characteristics is conditioned upon the needed information. Turpin and Marais (2004) assess the problem in this way: "The rational manager view assumes a rational and completely informed decision-maker ("economic man") as described by neoclassical microeconomic theory around the middle of the previous century".

In choosing the method to be used in decision-making coordination between the decision-maker's demographic characteristics and other demographic factors such as the type of decision and business characteristics are considered.

Based on the type of decision, difficulties of the decision and on the individual professional skills, decision-making managers decide upon the group composition working for the decision preparation. Schein (2004) identified various ways concerning the involvement in decision-making process. Thus, Schein (2004) believes that: "Some companies teach their executives to trust their own judgment as a basis for decisions; others teach them to check with their bosses; still others teach them not to trust results unless they are based on hard data, such as test markets or at least market research; and still others teach them to rely on staff experts". The way the decision-making manager will choose the decision is conditioned not only on professional skills, but also on the complexity degree of the decision. Thereon, Child and Dayan (2013) define that: "In such circumstances, decision-makers may be reluctant to rely upon unexplained and risky intuition, and be willing to use rational supports for decision-making, such as hiring consultants, collecting relevant data, and conducting detailed analyses".

According to Pownall (2012) in cases when the decision maker is represented on a group basis, we are dealing with what the author defines as a ***body decision.*** "However, it is important to also note the dynamic nature of the decision body. It is not a static or passive collection of individual(s) and/or group(s), but a body that changes and evolves through new knowledge of the problem or decision to be made, or through the problem itself changing" (Pownall, 2012).

The Pownall (2012) above considerations support precisely the viewpoint of another researcher, March (1994). According to March (1994) the decision maker's individual characteristics are thus defined: "The decision maker would consider all possible individuals, characterized by relevant attributes (their skills, attitudes, and price)". Pownall (2012) referring to Mitchell *et al* (1997) emphasizes: "then propose that stakeholders can be identified through three interdependent features of influence:

1. Their level of power and authority –for example how easily a stakeholder can influence a firm's decision

2. Their level of legitimacy –what is the social and moral authority of the stakeholder when using its influence to shape a firm's decision

3. Their level of urgency –who is the stakeholder's level of immediate implication in the firm's activities"

Since people are different, Jones (2004) believes that: "Different decision-makers may have different attitudes toward risk and uncertainty".

As on the above, it is clearly emphasized the fact that the decision maker is one of most central influential persons in the quality of the decision. Affinity is observed among the hierarchical position of decision makers, his/her personality characteristics and the way he/she acts during the decision-making process.

The manager's impact on the quality of decision can also be determined by the terms of distinct directions during the decision-making process. Referring to this fact, de Bono (1985) underlines some salient features under the label "six thinking hats". Summarized, the respective characteristics are delineated as follows:

Hat Target: The target is neutral and objective. The white hat takes care of the objective facts and numbers.

Hat Red: The red one suggests wrath, (to see red), fury and emotions. The red hat gives the emotional point of view.

Hat Black: The black is sad and negative. The black hat covers negative aspects –why something cannot be done.

Hat Yellow: The yellow is glad and positive. The yellow hat is the optimistic and covers hope and positive thought.

Hat Green: The green one is turf, vegetation and fertile growth, abundant. The green hat indicates new creativity and ideas.

Hat Blue: The blue one is cold and is also the color of the sky that is in favor of everything. The blue hat takes care of the control and the organization of the thought process. Also, the use of the other hats.

Figure 8: The thinking hats, (Source: Edward de Bono, 1985)

- **The Decision-making methods**

Methods applied in earlier periods and that are still used in decision-making vary. Decision-making methods based on ingredients, values, peculiarities and goals have evolved over time. Their evolution has occurred in accordance with the socio-economic development of society in general, and the development of science, in particular. Researching to this regard it is easily discernable that decision-making methods have continuously gained the

researchers attention. One of the addressed issues is the classification of decision-making methods. Regarding the classification of decision-making methods, a vast number of researchers have addressed the topic. Specifically, Covina, Slevin, and Heeley (2001) state: "A technocratic management style implies a heavy reliance on quantitative decision-making tools and an overall propensity to be systematic, analytical, and scientific when making top-level business decisions. At the other end of the technocratic dimension is an intuitive-experience based decision-making style". Additionally, Nygren and White (2002) claim that: "Decision strategies in both simple and complex tasks have often been characterized as being intuitive or analytical". Anderson (2002) declares: "There are, basically, two ways to prioritize items on a list: intuition and analysis". Whereas, Dane, Rockmann and Pratt (2012) state: "Critical to the present investigation, intuitive decision-making differs substantially from analytical decision-making". Considering the above approaches of Covina, Slevin and Heeley (2001), Nygren and White (2002), Dane, Rockmann and Pratt (2012) the decision-making methods are classified in two groups:

a. Intuitive methods

b. Analytical methods

Intuitive methods differ greatly from analytical methods. These differences have captured the attention of decision-making field researchers. According to Dane and Pratt (2007): "Intuition has long been viewed as involving a form of information processing that differs from rational, or analytical, processes".

a. First group - intuitive methods

The intuitive methods as a rule includes methods based on the descriptive methods of the economic phenomena. To Anderson (2002): "Intuition is what we ordinarily use". Additionally, he deems that: "Intuition is quicker, takes less effort, and requires no training". According to Anderson, Sweeney, Williams, Camm & Martin (2012): "Qualitative analysis is based primarily on manager's judgment and experience; it includes the manager's intuitive 'feel' for the problem and is more an art, than a science". According to these methods, the economic phenomena can be characterized by simple economic indicators. The calculation of these indicators is made possible on the grounds of basic mathematical operations and their derivatives. Derivative indicators are considered the indicators deriving from the combined uses of various basic mathematical operations. A representative of the derivative indicators may be considered the percentage, utilized in the descriptive analysis.

Intuitive methods play an important role in decision-making. Thus, Dane and Pratt (2007) highly estimate intuitive methods. They reckon that: "Within organizations, intuition has been posited to help guide a wide range of critical decisions". Such a situation is present mainly in small businesses. Therefore, "Some managers, especially those running small businesses, must be generalists" (Wickham, 2004).

Regarding the intuitive methods Dane and Pratt (2007) make evident the fact that two barriers exist. In this context, Dane and Pratt (2007) state: "We believe that there have been two major barriers to a productive discourse on the topic of intuition within the management literature", such as:

1. Regarding the first barrier, they state: "The first concerns the considerable confusion surrounding what intuition is". Certainly, every manager shall possess the due knowledge on the definition of what intuition represents. The above mentioned researches claim of an existing confusion in the well-understanding of the intuition concept, to this regard they state: "This conceptual confusion comes, in part, from the various perspectives used to understand intuition" (Dane and Pratt, 2007). Further, Dane and Pratt (2007) think that: "It represented access to divine or inborn knowledge". Whereas, according to Elbanna, Child and Dayan (2013): "Intuition is a synthetic psychological function in that it apprehends the totality of a given situation".

2. Whereas, regarding the second barrier, Dane and Pratt (2007) state: "A second barrier hindering this line of inquiry is that scholars often fail to distinguish between when intuitions are used and when they are used effectively". In this context, five years later, in cooperation with Rockmann, they identify the intuitive methods far-reaching expansion. So, they define: "These advances notwithstanding, empirical research on intuition remains limited" (Dane, Rockmann and Pratt, 2012). Dane and Pratt (2007) claim that intuitive methods efficiency is determined by the conditions wherein they are used. This is why they state: "We then consider the factors that determine when the use of intuition in decision-making is most effective" (Dane and Pratt, 2007).

Forecasting the future of the business performance is a necessity. This amounts to a very important managerial responsibility. The manager predictive capacity based solely on his intellectual experience, at some cases may be considered as limited. Making use of intuition considers only the manager's experience. This significantly restrains the number of alternatives and in many cases, does not result in the claimed quality. The limitation refers to the fact that the actual reality of decision-making is distinctive compared to the previous time-periods. As such, experience and intuition can serve as a reference point to predicting

the future, but the prediction quality remains questionable. Designing decision alternatives based only on simple intuitive methods causes lack of the necessary scientific support to the instigated decision. It is understandable that the intuitive power in the decision-making process cannot provide efficient decisions in any case. The intuitive concept generally refers to an approximate solution and not to the efficient solution of the problem the decision focuses on. Concerning this, Dane, Rockmann and Pratt (2012) have stated: "Emerging research has revived discussions surrounding the effectiveness of intuitive decision-making". Based on this, the decision-making process shall not claim that intuition must be completely denied. Its value increases considerably if supported by the most advanced methods in decision-making. Covina, Slevin, Heeley (2001) state: "Unlike decisions made in the technocratic mode, those made in the intuitive-experience based mode are less likely to result from an explicit logic, and objective data are seldom sought to justify them on an a priori basis". Whereas, according to Kedhi (2007) in some cases, the use of intuition alone in decision-making represents a risky experiment. Hammond, Keeney, Raiffa (1999) are of the opinion that: "But experience is a costly, inefficient teacher that teaches us bad habits along with good ones". However, researchers suggest the use of intuition, because according to Rosanas (2013): "Experience makes you learn, obviously".

In spite of the intuition's importance, decision-making based only on intuition does not provide the preferred quality, because:

- Decision-making does not possess the sufficient arguments to be deemed as good and rational. Reliance on descriptive methods (intuitive) in many cases poses difficulties to the penetration in the economic phenomena analysis and their affecting factors. It is highly quandary measuring the impact degree of these factors to the economic phenomenon, being the object of decision-making.

- Business activity is conducted in a multitude of environments and often complex circumstances, wherein the intuition power is excessively weak and insufficient for analysis.

Considering the above, intuition remains a valuable method. To this regard, Dane in collaboration with Jones and Pratt (2009) has evaluated the role of intuition related to its functions. "Researchers have viewed intuitions as serving at least three different functions: as a vehicle for problem-solving, as an input to making moral decisions, and as an instrument facilitating creativity" (Dane, Jones, Pratt, 2009). This evaluation refers to the specific nature of moral decisions. "Moral decisions are not typically viewed as being

effective or not, but rather as being right or wrong" (Dane, Jones, Pratt, 2009). But researchers estimate the intuition's role in effective decision-making. Dane and Pratt (2007) consider: "Drawing on recent advances in psychology and the decision sciences, we suggest that, under certain conditions, intuition may indeed facilitate rapid and effective decision-making in organizations". In this context, Zutshi and Dr. Creed (2011) denote: "Making an intuitive decision that later turns out wrong can be a surprise, especially for managers who have a good record of intuitive successes". Whereas Sinofsky and Iansiti (2010) state: "Managing is not a perfect science. But as with all complicated activities, experience tends to help. Experience provides new perspectives and new approaches, new ways to read people, and new ways to shape their behavior".

The economic problems, being the object of decision-making in business, are complicated. These problems are affected by numerous and diverse factors, acting independently or coordinately, being simultaneously or operating at different time-frames. Practically, it is extremely difficult and at cases impossible taking into consideration the impact of all these factors, accompanied by the methods experience provides. According to Anderson (2002) "For important and difficult decisions, some analysis is usually a good idea". Whereas Rosanas (2013) is of the opinion that: "Complex decisions usually involve several people and several (often many) variables; and to solve them we must take various (often many) criteria into account, some of which cannot be quantified but are important, perhaps not immediately but in the near or distant future". For this reason, managerial commitment in decision-making is a difficult activity. The insufficiency of scientific know-how has resulted in a decision-making process dominated by experience. For this, Elbanna, Child and Dayan (2013) allege: "We argue that theoretical progress on the role of intuition in decision-making is difficult without adequate empirical examination". Owning to the development of managerial sciences, informatics, statistics, mathematics, etc., enabled the provision of decision-making based on more reasonable and argumentative analysis. In these cases the manager shall orient the decision-making activity according to scientific judgment, because it is the logic, not intuition the best stimulus in decision-making. According to Sjoberg (2003): "Other decisions are made in accordance with certain rules, or sometimes laws and they involve integrating information in a certain way, with the help of calculations, perhaps, or listings of advantages and drawback, etc. Such decisions are called analytical". It is understandable that between the decision-making based on intuitive methods and decision-making based on analytical methods exist differences. To this Nygren and White (2002) identify the differences between the two groups of methods. In this aspect, they consider:

"This would suggest that both analytical and intuitive decision styles could have unique, asymmetric correlations with other individual differences, measures related to decision-making (e.g., risk propensity)".

b. *Second group –analytical methods*

Coping with challenges makes the managerial intuition an insufficient support to permeate, analyze and explain the multifold nature of the business activity. In this confrontation, new surviving ways are needed. Therefore Dane, Rockmann, Pratt (2012) are presented as supporters of using the analytical methods when they state: "Critiquing the limitations of intuition and lauding the merits of analysis on such tasks appears to stack the deck in favor of analysis and against intuition" (Dane, Rockmann, Pratt, 2012). In this context, the use of the most advanced methods in decision-making represents an essential factor for surviving in a competitive market. Survival in the competing market has posed a hurdling problem to decision-making for a relatively long period of time. According to Goll and Rasheed (1997): "Research on cognitive processes suggests that high environmental complexity may lead to greater use of cognitive simplification processes such as selective perception, heuristics and analogies, which in turn may affect strategic decision processes by potentially restricting the range of alternatives considered and the information used to evaluate them". Therefore, managerial intuition shall be increasingly replaced with analytical methods recommended by the modern sciences. Science development enables the utilization of analytical methods in decision-making, since: "But analysis takes longer, requires effort, and requires training" (Anderson 2002). In this context, Black (2010) evaluates statistics as an important factor to qualitative decision-making. Therefore (Black, 2010) states: "Statistics is an important decision-making tool in business and is used in virtually every area of business". The development of various sciences, being statistics, mathematics, econometric, etc., and the use of different methods of decision-making based on these sciences, mainly belong to the XX century. Their time affiliation amounts to one more argument in favor of expanding the use of these methods. Additionally, the rapid developments in the Information Technology (IT) field are a strong hold to the greater use of analytical methods in decision-making.

The use of analytical methods in decision-making amounts to a potential opportunity for business managers to increasingly benefit from the scientific developments. The manager's engagement in using the analytical methods in decision-making shall not be identified solely by a scientific approach to the theoretical conceptions and their relevant verifications. From

a decision maker's perspective the use of analytical methods considers a simpler and more explicit approach. The analytical methods in decision-making stand as a combined reality between science and its practical application. Using analytical methods in decision-making shall be a priority to each managerial level engaged in decision-making. These methods ensure the claimed quality in decision-making, as they facilitate the visions on the economic phenomena development and make more precise the aims. "But at a time when chaos so often triumphs over control, even centuries' worth of mathematical discoveries can do only so much" (Buchanan and O'Connell, 2006). In this context, Ballestero and Romeo (1998) assess: "Finally, by resorting to more or less sophisticated mathematical techniques, the "best" or "optimal" solution is obtained". Qualitative decision-making enables managing businesses professionally. From this point of view, decision-making is attributed measurable dimensions in time and space. This assessment shall not be entirely attributed to the method used. Method is a general term. As such, we cannot pretend it to be able to provide answers to the multiplicity of specific issues, focusing business decisions. Therefore, in many cases, decision-making considers the various models within the respective methods. "The answer is that this estimation is a perfectly correct analysis of a model. The problem is not in the mathematics; the problem is in the modeling" (Gilboa, 2011). Meanwhile, according to Pownall (2012): "Modeling –is the process through which reality can be understood. Models of reality are nothing more than simplification of reality". Some researchers use the term techniques, instead of modeling. Krajewski, Ritzman and Malhotra (2013) emphasize: "The concept can be applied later to other techniques, such as linear programing".

The managerial commitment in choosing analytical methods in decision-making shall not only consider the decision focused problem, but also the surrounding conditions wherein the business operates. This due to the fact that, the environmental conditions may serve as an orientation to the model that shall be utilized. Only in this way, the used model will ensure success to the manager. "Decision-making environment enabled formulating helpful mathematical models (linear programming, integer programming, nonlinear programming, etc.) with objective functions that specify the estimated consequences of any combination of decisions" (Hillier and Lieberman, 2005).

As deducted from the above reasoning, models are generally established in the center to decision-making based on analytical methods. They operate as schemes of different statistical, mathematical and econometric methods, supporting the solution of particular decision-making problems. Hence, they operate as tools used to achieve highly accurate results while approaching a certain economic situation. Each model analysis leads to the

conclusion that models express the relationships existing among variables that characterize an economic phenomenon. In this way, models create the possibility to validate hypotheses raised to the economic phenomenon. As such, models serve as an important tool extending to the limits of necessity in managerial decision-making.

Similar to the methods, models have been increasingly improved over the years through the scientific developments. As such, they demonstrate the command level of the proven knowledge of professionals pertaining to a certain scientific field and are applied to easily attain certain defined objectives. Models are specific for different decision-making problems. Scientific developments have enabled building links between different models within the same method or in coordination with models pertaining to other methods. This influences considerably the identification of solutions in problematic situations or serves as an integral part of more complex issues. The identification of solutions in problematic business situations is made possible by the scientific and technological developments in the present reality. Hence, the increase in the number of individuals having access to Internet creates favorable conditions to highlight the scientific developments and their practical implementation.

Each of the decision-making methods or their respective models have their own history of development. This development has also conditioned the establishment of the respective structures. Additionally, each method or model of decision-making is characterized by advantages and disadvantages that the decision-maker shall be introduced to beforehand. Hence, the development of statistical sciences highlighted the concern of sample selection, the definition of the most efficient method of statistical data processing and assessment. In this respect, the studies of Frank Wilcoxon regarding the assessment test are highly commented. This step was furthered on for arbitrary sample extensions in 1947 by Mann and Whitney. In 1945, Wilcoxon, in the article titled "Individual Comparisons by Ranking Methods", raises the concept "to indicate the possibility of using ranking methods .. in order to obtain a rapid approximate idea of the significance of the differences in experiments of this kind". The criterion selection of Mann Whitney (Mann Whitney test) was deemed as commendable because it is one of the most well-known methods in the non-parametric analysis. The value of Mann Whitney test lies in the fact that it makes possible acting in cases when the economic phenomenon lacks factual data, but we mainly possess information concerning the data ranges, the specific variables, not the variable itself (Osmani, 2004).

However, Mann Whitney test is a non-parametric test and therefore it carries some incorrectness, specifically:

- Used only when qualitative variables are analyzed.

- The data on which analysis is based is characterized by interviewee subjectivism, during the course of qualitative variables evaluation.

- Using the averaging method, to the purpose of range determination, transmits to the study the known defaults proven to be carried by "the average".

Notwithstanding the above-stated, it remains an appraised test when operating under qualitative variables; therefore it is taken into account when proceeding with economic character studies.

Additionally, in this article Wilcoxon stresses also the existence of a statistical laboratory as a key supporting structure because: " in cases where the numerical treatment of the problem is complex, computations are performed in the laboratory" (Wilcoxon, 1945). Pursuant to these approaches, it is crucial to highlight the fact that a statistical laboratory belonging to the same period was established. "The Statistical Laboratory of the University of California, Berkeley, was established in 1939 as an agency of the department of Mathematics. The functions of the Laboratory include its own research, help in the research carried on in other institutions and a cycle of courses and of exercises for students" (Wilcoxon, 1945).

The focus of a decision-making issue emphasizes the fact that several models can exist to its regard. The decision-making manager is provided the opportunity to select the most comprehensible models and consequently, the one that is most easily applicable. Hence, to the modeling of the distribution of labor force in a certain service unit (similar to the transport problem) otherwise referred to as the designation problem, according to Kedhi (2007) the linear programming method can be applied or else easier methods may be utilized, as the one named "the Hungarian method" etc. The use of analytical methods in decision-making is not extended and cannot be extended to the model solution and result calculation. Computer sciences support decision-making based on analytical methods by providing rapid, accurate and low-cost solutions, because where there could be either literally or metaphorically hundreds of alternatives, solving the problem 'by hand' is utopian (Munier, 2011). "Micro-computing arrived just in time to enable a reorganization of decision-making channels" (Boyer, 2004). Hence, within a period of more than 30 years, the managers have the necessary infrastructure for more complex modeling for the decision-making. In this regard, Proctor (2005) states: "A growth in interest in the development of computer programs to aid creative-thinking problem solving took place in the 1980s".

The development process of analytical methods highlights the fact that they are generated as a result of a single researcher's work or because of the coordinated work of several researchers. Hence, the developments of the game theory model pertain to the early XX century: "Game theory in the modern era was ushered in with the publication in 1913, by the German mathematician Ernst Zermelo, of *Uber eine Anwendung der Mengenlehre auf die Theorie des Schachspiels*" (Kelly, 2003). The game theory, according to Simon (1959), represents an expansion of the rational behavior concept. The author specifically states: "Modern game theory is a vigorous and extensive exploration of ways of extending the concept of rational behavior to situations involving struggle, outguessing, and bargaining" (Simon, 1959). While Nash (1953) considers: "With people who are sufficiently intelligent and rational there should not be any question of "bargaining ability," a term which suggests something like skill in duping the other fellow". Furthermore, Brandenburger and Nalebuff (1995) make the following assessment regarding the use of game theory: "Managers can profit by using these insights from game theory to design a game that is right for their companies". Afterwards, the game theory was further developed. Accordingly, "The mini-max theorem was proved for the general case in December 1926, by the Hungarian mathematician, John von Neumann" (Kelly, 2003). Further Morgenstern dealt with the issues following the use of game theory. To this regard, Kelly (2003) further states: "In 1938, the economist Oskar Morgenstern, unable to return to his native Vienna, joined von Neumann at Princeton". Regarding the linear programming method, referring to a mathematical problem of optimization character, Kedhi (2007) claims: "The first method of its solution is found by the mathematician George Dantzing in 1947" etc. Meanwhile Koksalan, Wallenius dhe Zoints (2011) estimate: "It is hard to speak about the roots of multiple objective mathematical programming without recognizing George Dantzing's (1914-2005) contributions to linear programming". Further on Anderson, Sweeney, Williams, Camm, Martin (2011) deems that: "Linear programming is a problem-solving approach developed to help managers make decisions".

The analytical methods, separately and collectively combining their various models, enable waging fruitful perspectives to the business decision-making. Given the heuristic level of some analytical methods' content and their respective models, the importance of their use may be also identified, as following:

- Analytical methods are a direct output of the scientific innovation's successful implementation to the business activity. As such, they undoubtedly promote

economic growth.

- Through modeling, a harmonization level is attained between the technical and economic requirements, mainly encountered in the decision-making problems.

- Analytical methods enable the respectively quantity allocation of the inventories and their optimal combination, enabling the manager's claimed efficiency. The effective use of production resources is of interest to the managers. In this regard, Meisel (2011) underlines: "Every company aims at using its resources efficiently".

- They enable the prognosis of economic phenomena at various time limits, based on the decision-maker's preferences and on the environmental circumstances the business operates, because: "A single decision is made based on the current knowledge about resources and about the environment" (Meisel, 2011).

- These methods enable the designation of several potential versions to the decision. Furthermore, enabling the selection of rational versions based on preferential criteria. This allows for an accurate, rapid and well-grounded alternative solution, representing the decision.

- Analytical decision-making methods represent a notable resource enabling the design of strategies having clear-set objectives and concrete implementation opportunities.

- Via analytical methods the linkages among qualitative variables may be measured and studied, which is not otherwise made possible by the use of intuitive methods.

Regarding the above stated, we can conclude that the use of analytical methods in the decision-making is an up to date requisition. In this way, continuous positive improvement in the decision-making process can be achieved. Thus, the contribution of analytical methods used in the decision-making process is undisputable. It is conspicuously demonstrated under the circumstances when society poses as a requirement the sustainable economic growth solution. The latter is made possible if vital strategies are designed, which requires efficient decision-making enabled by the use of analytical methods.

Analytical methods have constantly changed and evolved. Thus, Pownall (2012) describes the developing rationale of some models through their historical background as follows: "

A. Simple average forecasting
B. Moving averages
C. Exponential smoothing data forecasting
D. Errors, accuracy and confidence
E. Casual forecasting (explanatory forecasting)
F. The Ordinary Least Squares Regression method

G. ANOVA

H. Non-linear Forecasting and multiple regression- Curve fitting

I. Multiple regression and partial regression analysis

J. Probability"

The evolution, as above introduced, highlights the analytical method's improvement – innovation. Innovation shall permanently constitute a management concern. Each of the methods approached by Pownall (2012) contributes to the decision-making quality. Analyzing the conceptual model of the study, we may conclude that the selection of the method to the decision preparation represents a management commitment and is conditioned upon:

a. The problem in the focus of the decision.

b. The manager's professionalism in selecting the respective decision-making method, inclined by innovation.

c. Having the indispensable infrastructure.

d. The environmental circumstances.

The manager's professionalism and environmental circumstances constitute the key factors to a more precise choice regarding the formulation of the decision-making method. In addition, the method selection is conditioned upon the available data. Considering the data, we may evidence as follows:

a. Defined data situations

b. Probability data situations

c. Insecurity conditions situations

Under the circumstances when referring to the defined data situations, the method considered by Bhushan and Rai (2004) state that: "The analytic hierarchy process (AHP) is a systematic approach developed in the 1970s to give decision- making based on experience, intuition and heuristics the structure of a well-defined methodology derived from sound mathematical principles".

According to Goodwin and Wright (2010), "AHP proceeds as follows:

- Sets up the decision hierarchy

- Makes pairwise comparisons of attributes and alternatives

- Transforms the comparisons into weights and check the consistency of the decision-maker's comparisons

- Uses the weights to obtain scores for the different options and makes a provisional

decision

- Performs sensitivity analysis".

According to Sipahi and Timor (2010), "AHP provides decision makers with a way to transform subjective judgments into objective measures". Meanwhile, Jiang, Zhang and Sutherland (2011) are of the opinion that AHP represents: "The model employs a pair-wise comparison approach to characterize the relative importance of different performance criteria, and assigning importance weightings to these criteria by the Analytic Hierarchy Process (AHP)".

The effective models under the analytical methods, serving the utility of the decision-making and increasing its security and success level are numerous. Accordingly, besides to the fore-mentioned, Krajewski, Ritzman and Malhotra (2013) also suggest some formal procedures for decision-making. Among these procedures we may mention: "

a. Break-even analysis helps the manager identify how much change in volume or demand is necessary before a second alternative becomes better compared to the first alternative.

b. The preference matrix, which helps a manager deal with multiple criteria that cannot be evaluated with a single measure of merit, such as total profit or cost.

c. Decision theory helps the manager choose the best alternative when outcomes are uncertain.

d. A decision tree helps the manager when decisions are made sequentially-when today's best decision depends on tomorrow's decisions and events" (Krajewski, Ritzman and Malhotra, 2013).

Additionally, amongst the most prominent analytical decision-making methods may be also considered those based on the probability theory. The latter enables the manager to measure and improve his decision-making effectiveness. Black (2010) pointed out: "Probabilities support the notion of inferential statistics". In this framework, the probability theory makes possible the assessment of an economic activity in the focus of decision-making, from a multiple analysis. Regarding improvements that the probability theory in decision-making has brought about, Goodwin and Wright (2010) underline: "Real decision-makers may have acquired skills in probability estimation as a result of regular experience of carrying out the task, and they are also likely to have expertise relevant to the decision problem". The probability theory enables reviewing the assessments. Hence, "Bayes' theorem will be used as a normative tool, telling as how we should revise our probability assessments when new information becomes available" (Goodwin and Wright, 2010). Goodwin and Wright (2010)

label the importance of the probability theory in decision-making situations assessment by the term 'calibration', implying a precise decision-making. "A major measure of validity of subjective probability estimates is known as calibration" (Goodwin and Wright, 2010). The probability theory is a highly estimated theory by the renowned Hungarian mathematician, Paul Erdos, known for his contribution of 1525 scientific articles. Erdos considers it a successful method. Since 1974 he stated: "Probability methods have often been applied successfully to solve various combinatorial problems which is some cases have been (and still are) unassailable by other method" (Erdos, 1974).

If experience lacks, it is difficult to estimate probabilities. In these circumstances Krajewski, Ritzman and Malhotra (2013) suggest that managers can use one of four decision rules, such as: "

1. *Maximin*. Choose the alternative that is the "best of the worst". This rule is for the pessimist, who anticipates the "worst case" for each alternative.
2. *Maximax*. Choose the alternative that is the "best of the best". This rule is for the optimist who has high expectations and prefers to "go for broke".
3. *Laplace*. Choose the alternative with the best *weighted payoff*. To find the weighted payoff, give equal importance (or, alternatively equal probability) to each event.
4. *Minimax Regret*. Choose the alternative with the best "worst regret". The regret can be lost profit or increase cost, developing on situation".

The probability theory made possible the use of decision tree. The difficulty and complexity of decision-making problems guided researches to focus into finding an instrument to facilitate the decision-making and make more rational the managerial commitment. Therefore, Goodwin and Wright (2010) would state: "As we shall see, decision trees can serve a number of purposes when complex multistage problems are encountered". For the other researcher, Das (2008) "A *decision tree* possesses an ordered list of systematic questions that leads the decision maker through a series of decisions to a logical endpoint that results in a solution". Further, Krajewski, Ritzman and Malhotra (2013) argued: "A decision tree is a schematic model of alternatives available to the decision maker, along with their possible consequences".

Following a careful analysis of a decision tree, its basic elements are identified as following:

a. Directions pursued by the problem solution, in the focus of the decision.
b. Probability for each direction occurrence.
c. Consequences of each direction.

Hence, the decision tree provides a complete overview, close to the imminent probable reality. From this perspective, the decision tree provides a considerable support for the manager, to the decision-making process. "Decision trees can be helpful in thinking through possible sequences of acts and events" (Anderson, 2002). Furthermore, Krajewski, Ritzman and Malhotra (2013) consider the decision tree as supportive to the management commitment. They handle it as one of the formal procedures and point out: "A decision tree helps the manager when decisions are made sequentially-when today's best decision depends on tomorrow's decisions and events". Therefore, it is recommended that the decision maker shall know in details how the decisions' tree operates. Consequently, he/she shall be capable to establish it, functional to the decision focused problem. Considering the manager's profession, it is understandable that the decision tree construction is a reiterative process over time. Hence, changes in objectives or in the environment wherein the decision is applied have naturally led to the need to build the decision tree in harmony with the emerged conditions. Change of conditions will cause modifications to the tree of decisions. This is also testified by the researchers Goodwin and Wright (2010): "The process of constructing a decision tree is usually iterative, with many changes being made to the original structure as the decision maker's understanding of the problem development", because they suggest: "Decision trees are models, and as such are simplifications of a real problem" (Goodwin and Wright, 2010).

Under the name of "tree", the decision tree has as constituents what are figuratively referred to as 'branches'. Each branch constitutes an orientation for the decision maker, providing to him/her the opportunity to conduct the assessment, as every branch represents: "A branch node is either a chance node or an action node" (Das, 2008). The assessment opportunities are converted into management decisions because: "The sequence of choices can be shown using a decision tree in which decisions are seen as branching out from one another" (Jones, 2005). Further, Anderson (2002) believes that: "Every path in a decision tree is a future scenario". Consideration of scenarios is highly important because they introduce action plans. As such they are used for the future forecast. "Scenarios are tools for examining possible futures. This gives them a clear advantage over techniques that may be based on a view of the past" (Kourdi, 2003).

Each decision tree is constructed in accordance with the decision-making problems. In this regard, Mullins (2010) highlights the fact that "Vroom and Jago developed four decision trees relating to a generic type of managerial problem:

Use of decision trees:

- an individual-level problem with time constraints,

- an individual-level problem in which the manager wishes to develop employee's decision-making ability

- a group-level problem in which the manager wishes to develop employee's decision-making abilities, and

- a time-driven group problem"

Analytical methods are numerous. Some intend making predictions to the future, others guide the decision-making activity towards efficiency. Thus, to the future forecast it can be applied the Autoregressive – Moving - Average (ARMA) Model. The ARMA Model is a very useful model in the analysis of time series. According to Fengwang Zhang, Wengang Che, Beibei Xu, Jingzhi Xu (2013): "In summary, ARMA model is simple, efficient, and with high accuracy in the short-term forecast which makes it very important in the time series forecast". Whereas to Fung and Chung (1999): "Since the ARMA model is a non-linear problem, it is commonly used in the time-varying process. The time lag between measurement and compensation decreases as the computing time decreases, thereby improving the forecasting accuracy".

To a manager is pivotal the production efficiency. Decision - making focusing on production efficiency should be oriented by the Data Envelopment Analysis- DEA Model. DEA Model is a nonparametric method that enables empirical assessment of the limits of production. According to Coper, Seiford and Tone (2007): "One reason is that DEA has opened up possibilities for use in cases which have been resistant to other approaches because of the complex (often unknown) nature of the relations between the multiple inputs and multiple outputs involved in many of these activities (which are often reported in non-commeasurable units)". Further on they continue: "DEA utilizes techniques such as mathematical programming which can handle large numbers of variables and relations (constraints) and this relaxes the requirements that are often encountered when one is limited to choosing only a few inputs and outputs because the techniques employed will otherwise encounter difficulties". Meanwhile to Malkhalifeh and Mollaeian (2012): "Data Envelopment Analysis (DEA) was suggested by Charnes et al., is a mathematic technique for evaluating the relative efficiency of a set Decision Making Units (DMUs), with the common set of inputs and outputs". Therefore, by using DEA model it is generally intended that a certain amount of output be obtained using small amounts of

input, meaning lower costs of production. This increases the value of using the DEA model for improving the quality of decision-making in business.

From the whole range of analytical methods the manager has to choose amongs them. Therefore the above-mentioned analytical decision-making methods such as game theory, Analysis of Variance (ANOVA), decision tree, ARMA, etc., taking into consideration their content, are conditional upon their various efficiency levels.

The decision-making based on analytical methods, theoretically is a viable activity but the present culture of doing business in numerous countries depicts a pessimistic picture. However, the confirmation of this fact results into a necessity to reverse the empirical assessment into a conviction. In addition, the most important component in launching such studies is to find ways for improving work in the future, in order to increase the use of analytical methods in the decision-making process. Only in this way we may put an end to the amateur approach of decision-making, entirely based on the intuition, only securing a minimum of trust values.

The managers have already understood that being successful requires qualitative decision-making, conditional upon the manager's professional competence. The decision quality enables on the one hand the completion of business tasks and on the other hand it marks success to the manager's professional career. This makes the employees work more productively, providing them material benefits and satisfaction as well. In this context, the managers or the management team shall be continuously able to qualify and get training in terms of skills development in the use of new modern means, the most up-to-dated scientific and technical developments. A successful management helps businesses being competitive through the establishment of values, not only bound to economic profit but also through professional growth, business ethics, leadership, motivation, work satisfaction etc.

The application of analytical methods in decision-making requires extensive scientific knowledge on the part of the decision-making manager. Thus, Anderson, Sweeney, Williams, Camm, Martin (2011) stated: "A manager can increase decision-making effectiveness by learning more about quantitative methodology and by better understanding its contribution to the decision-making process".

As on the above, it is obviously understandable that the analytical methods have a common framework, exactly defining it as: the learning process, for which Rosanas (2013) states: "In summary, learning has three dimensions, which show up very clearly in decision-making activities. First, experiential and abstract knowledge guides us in deciding what we should and should not do, based on our own and other people's experience. Secondly, we develop

mechanical and intellectual skills. Finally, we learn to distinguish what really satisfies us from what does not".

- **Performance**

The business economic progress presents an opportunity to its sustainable development. To this regard, managers of all levels become interested in the business performance. However, a positive performance cannot be achieved devoid of a qualitative decision. Referring to the decision-making cycle, it can be stated that the qualitative decision-making sustains the ongoing business performance. Accordingly, Simon (1959) propones: "When performance falls short of the level of aspiration, search behavior (particularly search for new alternatives of action) is induced". In a competitive market, the business performance considers not only the decision-making quality, but also timing. Considering time as an influential factor in decision-making, Goll and Rasheed (1997) and Cheng, Rhodes and Locke (2010), in their theoretical approaches, assess time in respect to decision-making as follows: "The quick decisions resulting from comprehensive decision processes lead to better performance" (Goll and Rasheed, 1997). While, according to Cheng, Rhodes and Lok (2010): "The effect of the speed of the Strategic Decision-making (SDM) process on organizational performance has received more attention in recent research because the business environment is more dynamic and the rate of change is faster".

All the above assumptions demonstrate an increasing market-oriented attention on the manager's side. Businesses are constantly facing market challenges and the manager attentively shall consider these challenges in order to provide the best performance in the market. Therefore, according to Schein (2004): "The market is the best decision maker if there are several product contenders (internal competition was viewed as desirable throughout DEC's history)".

Based on the above, the decision quality is reflected in the level of performance. Thus, the decision-making manager needs to make a performance assessment. According to Jiang, Zhang and Sutherland (2011): "The performance of the remanufacturing system can be evaluated by a variety of different criteria. The criteria adopted for this work are cost, quality, time and service". Therefore, performance assessment considers the financial and non-financial perspectives simultaneously.

3. Methodology

Generally speaking, the business world is facing major challenges related to its very existence, growth and the development of each and every single business within this realm. These challenges, obviously require focusing into the improvement of the managerial practices. The business management activity is highly complex and the need to engage in scientific research is indispensable due to the many difficulties the scientific research entails, as Yin (2011) states: "Doing qualitative research is difficult. You need to have a sharp mind and maintain a consistent demeanor about your work". The research results and their accuracy are conditioned upon the methodology used, as stated by Kumar (2014): "Research is not only a set of skills, but also a way of thinking". The methodology provided in the research study, concerning its formulation, aims at envisioning a logical and functional division according to the major issues comprised. Adherence to the requirements of each division provided in the methodology is indispensable.

Specifically:

3.1 The context of the study

Decision-making depicts one of the most concerning problems of business management, due to its impact on the market success when it faces competition. To this concern, the study of decision-making issues becomes important as Kumar (2008) accepts that resarchers also need to know the criteria by which they can decide upon certain problems and not others. In this context, given the decision-making wide spread and the variety of problems it entails, the scientific research aims at considering the scientific study of decision-making methods in the theoretical aspect and moreover in terms of their impact on business performance. The study of the above-stated problem is guided by the methodology developed to this purpose. In this context Creswell (2014), referring to the two researchers in the field states: "Using Cherryholmes (1992) and Morgan (2007) and my own views pragmatism provides a philosophical basis for research: Individual researchers have a freedom to choose. In this way, researchers are free to choose the methods, techniques, and procedures of research, the best meeting their needs and purposes".

The study aims at contributing to the recognition of some main decision-making problems, focusing on decision-making methods, in the context of finding solutions to the managerial problems, as a prerequisite for successful and sustainable business development. At the current development level and the actual trends inspiring for a European integration of the region, the economy of these countries has experienced numerous challenges affecting the

economic development, both from the macroeconomic and microeconomic perspectives. Consequently, the businesses have faced numerous difficulties. The study relies on findings concerning the business development in the region, which is significantly conditioned by the decision-making process. In this context, considering the importance of refining the decision-making process it is important that the scientific research be guided by the thoughts of Kumar (2014) who states: "Research develops in you a way of thinking that is logical and rational and that encourages you to critically examine every aspect to your day-to-day situation". Given the very nature of decision-making, the scientific research process in this field is cumulative referring to a long-term perspective. From this point of view, an economic problem is choosen, which based on the data, needs to be answered correctly and timely.

Referring to the eminent importance of the decision-making process, improving its overall quality needs a continuous attention. Thus within this context, studying the decision-making problems requires special focus and entails several directions. Herein, to undertake this study, available previous studies are utilized and are performed some preliminary investigations, interviews and field surveys, which have been indispensable to analyze the specific issues, within the study's framework. To this necessity Kothari (2004) accentuates: "All this is done through experimentation and survey investigations which constitute the integral parts of scientific method". On the above rationale, the essential motivation to initiate the study consists in a multitude of problems, evidenced by preliminary investigations:

a. *Listing the observed causes, supporting the necessity of involvement in the study.*

The preliminary studies and investigations have made possible evidencing some major factors, conditioning the commitment into this research study. Specifically:

- The social and economic system change, that occurred by the end of the last century in Eastern European countries led to the transformation of the socialist-economic system, that had strenuously survived for a long period of almost fifty years, into the free market economy. Under these conditions, the businesspersons and managers had neither the experience, nor the professional training regarding the rules of doing business in general and the specific aspects of the decision-making activity in particular. Consequently, Albania and the regional countries initiated to orientate their economy towards a free market economy by providing the businesses and

citizens with a complete tableau of a new way of living and new work standards and values.

- Engagement in this scientific work is simultaneously significant due to the very fact that according to the data collected from the National Library in Albania resulted that there is no other study carried out regarding decision-making and the methods of decision-making and/or other titles related to the subject. The same reality is depicted in the regional countries, part of the study.

- Around the 80s of the last century, scarce efforts were made in the use of advanced methods to running an enterprise. It was the kind of effort employed by some mathematicians when using one of the analytical methods, namely the linear programming method utilized in economically cutting the standard materials (raw material) in smaller portions. In this effort two of the operational enterprises of the time were included, the "Dinamo" Factory and the main tailoring factory in Tirana (capital of Albania). The undertaking consisted in preparing several different schemes and cutting denominations, thus creating the opportunity to determine and select the best and more efficient scheme possible. However, given the extremely left political-economic trends of the Albanian government of the time, this effort proved unsuccessful because as a functional goal the linear programming method was not focused on the economic efficiency of the model and consequently on the business efficiency. That was because the political-economic orientation of Albania, entirely ruled out the maximum profit as the main function goal.

- It is imperative to evidence the factors limiting and encouraging the managers to use the analytical methods in decision-making, as the most advanced methods.

- It is also pivotal that through the study of decision-making related issues, we can achieve some possible development approaches for the business, potential to be implemented in concrete terms in Albania and in the region. It will positively influence the manager's interest related to the use of the most advanced methods in the future.

- Developing a successful business has long been a priority for the businesses and managers of the countries being the object of the study. Currently, at a time when these countries aspire to integrate in the European economy, this has been converted into a necessity. The efficient management of the situation needs organizational and infrastructural support. In this context, it is required the organization of activities intended to building capacity in information acquisition, training and consultancy,

etc. Thereof, the study intends to define the necessity related to the description of the training needs, concerning the areas closer to the manager's position.

- Under the circumstances of a new economic system established in Albania and in the regional countries after the 90s, it is observed on the one hand a growing number of newly created businesses, and on the other a considerable number of businesses going bankrupt. The business bankruptcy rate makes evident the inability of businesses to be successful among the competitors operating in the same activity. Avoiding the negative economic phenomena sets the focus on problems affecting the quality of decision-making process.

The above rationale highlights the necessity to engage in a study of these dimensions in the field of decision-making.

   b. *Diagnosis*

Based on the above identified causes, the diagnosis is defined. The quality of each scientific research is conditioned upon the accuracy of the diagnosis; the elements in the research study can be mentioned:

- Manager's definition concerning the overstated prospects of their businesses.

- Low profitability of the firms in many bankruptcy cases.

- Routine decision-making in the work process.

- Opportunities on improving the decision-making process.

- Observed inactivity concerning the use of analytical methods in decision-making

3.2 Integral parts of the methodology

The above rationale makes necessary an engaged commitment to a scientific research. Referring to Ceku and Kola (2004): "The scientific research is characterized by the targeting the problem on the theoretical basis, critically reviewing the previous researches, defining the concepts, the operationalization of variables, the pre-testing evaluation and the eventual hypotheses formulation and the theoretical verification of hypotheses".

On this basis, the attention is focused on two main approaches:

   a. The theoretical approach to the decision-making problematics

and

   b. The commitment into collecting the necessary data.

Consequently, the methodology can be easily divided into two compounding parts:

- Table work

- Field work

Each phase entails numerous issues to be handled in detail, having as a main aim orienting the research.

3.2.1 Table work:

Consists in several problems, such as:

- **Literature Review**

Decision-making is an area that researchers have been constantly debating and discussing. Consequently, the literature available on decision-making addresses the decision-making theoretical issues from the perspective of different authors. The vast theoretical framework provides more clarification on the multitude of questionable issues and serves to analyze the decision-making problems. The literature review represents an important basis upon which any scientific study is founded. To this regard, Creswell (2014) states: "I see worldviews as a general philosophical orientation about the world and the nature of the research that the researcher brings to a study". The literature review aims at the acknowledgement and collection of knowledge in order to support the conceptual model of the study, as a prerequisite for the study success. "Literature survey is a study involving a collection of literatures in the select area of research in which the researcher has limited experience, and critical examination and comparison of them to have better understanding" Panneerselvam (2004). Through the literature review process, it is made possible the evidencing of the basic concepts of the study. According to Creswell (2009): "Cooper (1984) suggests that literature reviews can be integrative, in which the researchers summarize broad themes in the literature". Onwards Creswell (2009) on his opinion, and also based on Cooper and Marshall & Rossman judgements, agrues that: "The literature review accomplishes several purposes. It shares with the reader the results of other studies that are closely related to the one being undertaken. It relates a study to the larger, ongoing dialogue in the literature, filling in gaps and extending prior studies (Cooper, 1984; Marshall & Rossman, 2006)".

The focus of the literature reviewing process is the analysis of the examination on the theoretical level of decision-making problems. The effectiveness of the research study refers mainly to the evidencing process and the study process of the texts published in the decision-making field, the scientific articles, reports and scientific journals that provide the core of the theoretical research basis. The literature review on decision-making is considered on some perspectives:

- The theoretical perspective on the recognition of the problems affecting the decision-making process.
- The perspective of recognizing the decision-making practices of the managers' running the businesses.
- The perspective of recognizing and evaluating the managers' approach regarding the decision-making methods.

In selecting the authors was taken into consideration the fact that their works must support each other's perspective. In some cases, the authors's approaches are confronted, having as a main aim the presentation of a more comprehensive theoretical framework to the study.

- **The research objectives**

The development processes and the continuous confrontation with the competitors, has led to a growing interest on the part of the managers for a better performance of the businesses they run. The general focus towards performance depicts a greater support on finding the most innovative leadership approaches in running a business. In this context, the studies on decision-making issues, aiming at the promotion of a competitive and sustainable business, have gained prominence. It has resulted particularly important the research concerning the willingness and capacities of the managers to approach the different methods of decision-making and the very impact the use of decision-making methods provide to business performance.

The problems the scientific studies in general are confronted with and the decision-making area in particular are numerous and vary. Thus, each researcher is confronted with a series of arduous issues due to the lack of knowledge on the respective field. These strenuous issues constitute the objectives of each research study, as Creswell (2014) cites: "Being the objective is an essential aspect of competent inquiry". Given the diversity of problematics focusing, the scientific study objectives vary. According to Singh (2006): "The research has the following three objectives:

1. Theoretical objective,
2. Factual objective, and
3. Application objective.

The theoretical objective:

Those researches whose objectives are theoretical, formulate the new theories, principles or laws.

Factual Objective:

Those researches whose objective is factual, find out new facts. This objective is by nature descriptive.

Application Objective:

The research having application objective does not contribute a new knowledge in the fund of human knowledge, but suggests new applications".

In this context:

1. **Theoretical objective**, can consider:

- As complete as possible coverage, within the contours of the study, of the theoretical issues of decision-making from the perspective of different researchers in the field of decision-making.

- According the decision-making problematics designing the conceptual model. The model extends the relationship between the components and represents an important support towards analyzing the decision-making problematics, focusing into the explanation of causal linkages among them.

2. **Factual objective**

- Analyze the some of the factors influencing the decision-making method in business management.

- The exploration of some key aspects on the manager's attitudes related to the evaluation of the respective decision-making methods grouping.

- Analyze the decision-making methods impact on the business performance.

- Achieve consistent and general conclusions. Provide recommendations for the future on the use of more efficient methods in decision-making and on waging more indepth researches on the subject.

3. **Application Objective:**

Generate a list of some major applications regarding the use of analytical methods in decision-making.

- **Hypotheses**

The objectives and the designed conceptual model make necessary the formulation of the hypotheses. Many scholars have provided formulas on the hypothesis. However, the analysis on each definition leads us to the conclusion that the general understanding of the hypothesis

does not change. Generally, the hypotheses have a more or less complex nature, depending on the number of independent variables involved.

The hypothesis on the manager's level -are oriented in respect to the conceptual model of the study. They are analyzed in five groups and divided in two phases.

The first phase of the analysis refers to:

(1) Hypotheses analyzing the environmental characteristics impact on the choice of the decision-making method.

(2) Hypothesis focusing on the type of decision.

(3) Hypotheses oriented on the impact of the business characteristics.

(4) Hypotheses aiming to measure the impact of human capital characteristics on the decision-making methods.

The assumptions comprised in the above groups are analyzed on the perspective of their impact on the decision-making methods.

In the second phase, the group of (5) hypotheses is included, these are hypotheses aiming to measure the manager's perception on the impact of the decision-making methods in the business performance.

❖ **First phase**

Hypotheses on the environmental characteristics, the first group – The external environment wherein the business operates, considered in its entirety, constitutes an important influencing factor in the manager's orientation towards the methods that need to be used in decision-making. The external environment with its components as: government policies, the extent of informal economy spread, the international market developments, etc. increase the reliance that the variability in the action intensity of these compounds affects the methods to be used in managerial decision-making. To this aim, they must be hypothesizes so as to assess their impact.

The hypothesis considering the decision characteristics, the second group – The decisions to be taken during the decision-making process are numerous. The variety of decisions should be perceived as an option available to the manager so he/she can obtain an appreciable business performance. In its entirety, the decisions generally are characterized by different types. The decision types are perceived to exert a distinctive influence in the method that the manager uses in decision-making.

The hypothesis referring to the business characteristics, the third group - The business, being the entity wherein the decisions are taken and implemented, constitutes an important

factor in studying the decision-making process. The relationship between the business characteristics and the decision-making methods is evident. Therefore, the study of this interrelationship is made possible through the hypotheses, which separately hypothesize upon each characteristic, as to the size of the business, ownership and the organization culture, that are allegedly supposed to affect the manager, concerning the method that can be used in decision-making.

The hypothesis referring to the decision-maker's characteristics, the fourth group – The dynamics of the businesses appropriateness, attained through decision-making, is conditioned upon the given situation and the development of human capital. The determining factors in choosing the method used in decision-making belong to the decision-maker, his/her demographic characteristics condition these methods. The logic of method selection, conditioned by the decision-making manager opens the discussion on the need to analyze the characteristics of a manager. Therefore, the knowledge on the human capital characteristics makes possible understanding the concepts of their attitude to the problem in focus of the study. To this aim, the human capital, perceived as a commitment on the part of the decision-making managers to the decision-making process, through age, educational level and/or their experience is hypothesized to impact the method used in decision-making.

❖ **Second Phase**

This phase of the study aims to evidence the influence of decision-making methods in the business performance. The hypotheses of this phase constitute the fifth group of hypotheses that intends to gauge the manager's perception on the impact of decision-making methods to the business performance. The manager's perceptions and capacities guide them towards choosing and using different methods in decision-making, which are duly reflected in the business performance. The reflection is referred to the financial and non-financial performance simultaneously.

• **The sources of providing the data**

The data is highly crucial to the scientific research. Given the importance of data collection, Singh (2006) stipulates that: "The data collection is the accumulation of specific evidence that will enable the researcher to properly analyse the results of all activities by his research design and procedures. The main purpose of data collection is to verify the research hypotheses". Furtheron the author proceeds: "Data are both qualitative and quantitative in nature" (Singh, 2006).

The data available to this scientific research are of primary and secondary nature. The secondary nature data, especially those referring to the business financial performance, indispensable to calculate the characterising performance indicators, are the quantitative data. These data are provided by prestigious institutions, such as the Ministry of Finance and the General Taxation Directorates of the respective countries. Meanwhile, the primary data is obtained from field work through the questionnaires and the interviews, administered to this aim.

- **The questionnaire and interview preparation**

The questionnaire problematics considers its constituting phases. To this intention, they are thought to be separately discussed, due to their specifications. The comparative evaluation of the method to be used in business decision-making should be analyzed through the data obtained from the perspective of the main stakeholders involved in this activity, critical to the future of the business. The main actors are the decision-making managers. However, because of the widespread use of different decision-making methods coming as a result of the development of the human capacities in the business decision-making practice, other stakeholders can be traced. In the group of other actors, the experts are involved. Including the experts in the group of interest aims at collecting data in order to cover the current situation and enable the prediction of the problem in the future, being the focus of the study. Given that we are dealing with two sets of actors, it was judged necessary that the issue be studied in two levels:

a. At the experts' level – experts of the academic and the business world, belonging to various specialties are considered.The goal in this case is to obtain the appropriate explanation of the specific phenomenon, in order to test the hypotheses.

b. At the managers' level – at the level of decision-makers, in order to search and retrieve information on the extent of the phenomenon diffusion, object of the study and the respective problems.

The inclusion of these two actors in the study is conditioned by the fact that the level of knowledge on the decision-making methods and their impact on business performance varies. This variability is conditioned not only by the level of education, but also by the individual engagement to deepen knowledge in this field, which provides the individual with the power to rigorously explain the terminology, problems, evidence factors, causalities, make interpretations, and so on. Mainly these attributes pertain to the experts. Meanwhile the managers are specialists who possess sufficient, detailed knowledge of the duties they

perform. Expert interviewing has been considered highly important to clarify the question of the research, as well as the problems reflected on the impact of decision-making methods on business performance.

On this basis, to collect the data the technique of interviewing and the instrument of questionnaire were used, respective to the above stakeholder's groups.

The interviewing technique was used for the group of experts. To the interview preparation, the open questions were considered. In order to disclose the expert's opinions, the qualitative in-depth unstructured interviews were used. Kumar (2011) delineates that "According to Taylor and Bogdan in-depth interviewing is "repeated face-to-face encounters between the researcher and informants directed towards understanding informant's perspectives in their lives, experiences, or situations as expressed in their own words". Depending on the way the unstructured, in depth interviews are built, there is a general purpose. Thus, the number of topics and sub-topics discussed is limited- aiming at exploring in depth the experts' position. Therefore they are mainly based on interrogative questions; as such they do not have a generally predetermined plan on interviewing. In many cases the questions are situational in order to understand the interviewer's perspective on the discussed issues. However, in order to guarantee the progress of the interview, some orientation questions were prepared, samples of those are set out in annex no. 2.

Whereas, in order to evidence the managers' views, the questionnaire instrument is utilized, which is highly important. To this, Panneerselvam (2004) observes: "The success of survey methods depends on the strength of the questionnaire used". The questionnaire preparation is one of the most delicate parts of the study, considering the fact for which Kothari (2004) ascertains that: "Questionnaire to be used must be prepared very carefully so that it may prove to be effective in collecting the relevant information". By the questionnaire means was intended to collect evaluation data on the current decision-making practices and the influencing factors.

The survey instrument has considered the questionnaire used by Elbanna and Child (2007) wherein, the necessary modifications were made in order to adapt it to the Albania and the regional circumstances. The modifications refer only to a small number of questions and do not affect their scope. Thus, adaptation has aimed to understand what is required to be measured by each sentence, which can be expressed in a question form or in an affirmation (stance) form. Therefore in the questionnaire composition are included question-sentences, as well as stance-sentences. Meanwhile, the stance-sentences are used to gather opinions about the issues the study considers. Most of the stance-sentences are characterized by the

Likert scale. "Most frequently used summated scales in the study of social attitudes follow the pattern devised by Likert. In a Likert scale, the respondent is asked to respond to each of the statements in terms of several degrees, usually five degrees (but at times 3 or 7 may also be used) of agreement or disagreement (Kothari, 2004). The study considers the Likert scale of five levels, thereby creating opportunities to the manager to make acceptable choices according to his/her logic.

The questionnaire considered highly important to the regional countries' conditions the below sections:

First section, includes questions on the general business data., related to the size of the business and its legal form. The variables derived from this section are dummy variable.

Second section, intends to evidence the issues related to the decision-making methods used in business. Therefore, the section consists in statements designed to measure the managers' perception on the evaluation of the analytical and/or intuitive methods in decision-making. The variables of this section are ordinal variables.

Third section, consists in assertions guided by the decision features. The assertions intend to evidence the impact of the type of decision, in determining the decision-making method. Herein, the dummy variables are included.

Fourth section, considers the measurement of the external environment impact, where the business operates, being the uncertain and/or the hostility environment in decision-making methods. As above, the ordinal variables are also utilized in this section.

Fifth section, refers to the culture dimensions of the organization. The approach to what the organization considers important and how it carries out its activities, thus directing the manager in selecting the method to be used in decision-making. This section includes assertions regarding the collective and/or centralized culture impact on the decision-making method.

Sixth section, contains statements and questions that characterize the financial and non-financial business performance. However, to the financial performance, are considered the financial indicators generated by the official data provided in the annual financial balances, available from the General Taxation Directorates, of the regional states object of the study.

Seventh section, intends to evidence the interrelationship between the managers' demographic characteristics and their respective tendencies, in relation to the use of decision-making methods.

The questionnaire used for the study is presented in the study annex.

Considering the geographical scope of the study, in order to develope a normal surveying in Montenegro and Macedonia, the questionnaire was translated into Serbo-Croatian. The questionnaire's clear understanding by the managers of these countries, pointed out the importance of verifying the accuracy of translation, mainly concerning the questionnaire specific terminology. To this reason, the questionnaire was translated twice by different translators, once from the Albanian language into the Serbo-Croatian language and afterwards from the Serbo-Croatian language into the Albanian language.

- **The variables**

The first phase

The independent variables: Environmental determinism, Decision type, Business characteristics, Decision-maker characteristics.

The dependent variables: Intuitive methods and Analytical methods.

The second phase

The independent variables: Intuitive methods and Analytical methods.

The dependent variables: Financial Performance, Non-financial Performance.

- **The sampling**

The study success is inevitably determined by the human capital, as the human capital is the means able to generate new ideas and effective operation approaches. Given the decisive role of the human capital, great caution was dedicated to the selection of the sample. To Singh (2006) the sample represents: "A population is any group of individuals that have one or more characteristics in common that are of interest to the researcher". Choosing the study sample is a highly crucial step, conditioning to a considerable extent, the research results as: "The sample tends to be less variable than the population because in many environments the extreme elements of the population are not readily available. The researcher will select more elements from the middle of the population" Black (2010). Related to the sampling, the Fowler (2014) approach was considered, consisting in the following issues:

"With respect to sampling, critical issues include the following:

- the choice of whether or not to use a probability sample
- the sample frame (those people who actually have a chance to be sampled)
- the sample size
- the sample design (the particular strategy used for sampling people or households),
- the response rate (the percentage of those sampled for whom data are actually collected)".

As above noted, the study scrutinizes in two levels, namely the expert's level and the managerial level. Therefore, two samples were defined.

The sampling of the experts: related to the sampling of the experts, the suggestions of various researchers were considered. Kumar (2014) on the experts' sampling recommends: "Expert sampling: The selection of people with demonstrated or known expertise in the area of interest to become the basis of data collection". The expert sampling designation highlights the resolution of two problems, namely:

- *Designation of the sampling method*, the expert's sample in the focus of the study is chosen based on the method "snowball-empirical selection". Miles and Banyard (2007) emphasize that: "Instead, Swift, et. al. used a snowball sample, in which they gained the trust of a small group of users and asked these people to introduce potential other volunteers to the researchers". This method was considered to be used because the Academy of Science in Albania, the Academy of Sciences and Arts in Macedonia and the respective Academy in Montenegro as specialized institutions do not possess a database of the experts in the field. The choice was made possible after a preliminary identification related to the characteristics of the experts to be interviewed. The sustention on the selection of the experts' sampling, according to the snowballs method, was a process resulting also after consulting the relevant literature in the field. Thus, according to Gupta and Gupta (2011) the sample selection in this case is obtained as follows: "In this sampling technique initially a small group of respondents is selected on a random basis. After the interview the selected respondents are asked to identify others who belong to the target population of interest". To this they stipulate that: "In this process, snowball like effect is produced and that is why such sampling technique is known as a snowball sampling technique" (Gupta and Gupta, 2011).

- *Defining the sample size*. The experts' sample size is also conditioned by the method to be used in processing the data. The interview with the experts generates non-parametric data. Therefore, the data processing will use the non-parametric methods, referred to the calculation of the Kendall coefficient and Association coefficient. Calculating the Kendall coefficient was considered the fact that each cell density of the contingency table shall be greater than 5. Kothari (2004) argues that: "Some statisticians take this number as 5, but 10 is regarded as better by most of the statisticians". The sample in this case amounts to 52 experts.

The experts sampling, according to the geographical dimensions of the study consists in:

➢ Tirana   31

➢ Skopje   12

➢ Podgorica   9

The managers' sampling: As for the managers, since they constitute the main actor in decision-making, the general observation approach was considered. Based on the official documents from the General Taxation Directorates of the respective countries, the list of the businesses conducting their activity in the food industry sector was provided. The sample consists of: native managers, meaning no mangers of foreign nationality were interviewed based on the claim that otherwise they would inevitably reflect the national culture in decision-making. Thereon 167 businesses were analyzed, surveying 1 (one) manager for each business, based on the claim that the decision-making method and consequently the doing business culture does not change within each business. The number of respondents is represented as follows:

➢ Tirana   77 managers

➢ Macedonia   53 managers

➢ Montenegro   37 managers

The sample size consisting in 167 businesses is acceptable for a scientific study. The rationale also finds support in literature. Hence, Anderson and Gerbing (1988) believe that the sample size of over 150 elements (individuals) is also acceptable for the processing of data through various programs and achieving statistically reliable conclusions. "Whereas this does not present a problem in statistical inference, because the standard errors computed by the LISREL program are adjusted accordingly, a sample size of 150 or more typically will be needed to obtain parameter estimates that have standard errors small enough to be of practical use" Anderson and Gerbing (1988).

- **The geographical coverage**

The geographical coverage of the study does not simply highlight the physical concept. In fact, the physical coverage represents an environment where the businesses are developed through adapting to the conditions in which they operate. Considering the development standard and the decision-making culture, it is reasonable the regional countries to be included in the study, such as: Albania, Macedonia and Montenegro. Specifically, the study is focused on their capitals, claiming that these are the most developed areas. The largest number of enterprises is concentrated in the capitals. It creates the due conditions in order to provide sufficient data for the research.

- **The object of the study**

The object of study are the businesses operating in the food industry sector for the below reasons:

- Given the geographical extension of the study, it is concluded that the development perspective of these countries is based on tourism. Thus, the demand for traditional products will remain permanent, having conspicuous rising trends. Accordingly, the food industry represents a strong support and amounts to a prime branch of these countries' economy.

- Moreover, a social sensitivity is discerned regarding the food industry sector, as its products are the preferred commodities not only by tourists, but also for the domestic consumers.

- In addition, the food industry constitutes a main branch to these countries' economy, taking into consideration that numerous other branches such as construction, etc. are gripped by the economic crisis.

3.2.2 Field Work

- **Pre-testing of the questionnaire**

The questionnaire was subjected to the pre-testing procedure as a necessity to verify the clarity and in this context, to avoid any possible ambiguity. The pre-testing is conducted through the personal interviews with the experts and managers in the region, asking the respondents to comment on the level of understanding and the validity of each question. Thus, some adjustments were necessarily made in order to clarify and adapt to each regional country variations. Thus, the diversity of the decision types presented in the study evidenced interpretative difficulties during the prequalification phase of the questionnaire. For this reason it was judged appropriate that in the questionnaire to be reflected only the decisions according to goals, as it was an easier approach to be perceived by the managers, at this stage of the study. The remaining part constitutes the annex no. 1 questionnaire to the study. Each statement is set according to the 5 (five) level scale representation of the Likert scale response: 1 –Total Rejection, 2 –Rejection, 3 –Neutrality, 4 –Acceptance, 5 –Total Acceptance. Meanwhile, the rest are closed.

- **Actualization of the questionnaire and the interview**

The actualization of the questionnaire and the interview refers to 'on the field' research and analysis, focusing on the stakeholders. The surveys aimed to critically examine the latent

premises of the managers' reasoning. The questionnaires' surveying was done via direct contact –utilizing the face-to-face method, having as its main basis 'communication'. "This is the task of communicating the findings to others and the researcher must do it in an efficient manner" (Kothari, 2004). The face-to-face surveying method creates the due grounds for cooperation and an in-depth examination of the problematics, as according to Yin (2011): "All interviews involve an interaction between an interviewer and a participant (or interviewee)". In this context, cooperation is essential to assess the managers and experts perceptions regarding the decision-making methods and their impact on the business performance.

The *time-duration,* the survey was conducted through the questionnaires, a phase which lasted 16 weeks, during the months of January to April 2015. The surveying implementation period in Macedonia and Montenegro has been longer compared to the duration of the surveying in Albania, as the majority of the managers in these countries had limited knowledge and communication skills in Albanian language and scarce knowledge or an entire lack of knowledge in English. The situation is explained by the fact that, until the change of the governing systems in the Eastern European countries, Serbo-Croatian remained the official language of this region. Consequently, communication was conducted in Serbo-Croatian language by the help of the permanent interpreter, who assisted us during the whole interviewing and surveying period. The average duration to completion of a questionnaire, by the manager of each business lasted about 35 minutes, aiming at obtaining the indispensable information. In many cases, in order to clarify the situation in-depth surveying question were also added.

3.2.3 Data processing, interpretation and results generation

- **The Approach**

Considering the theoretical problems of the research methodology, the scientific research can be of quantitative and qualitative nature. Newman and Benz (1998) accentuate that: "William Firestone (1987) in an article in the *Education Researcher,* differentiate qualitative from quantitative research based on four dimensions: assumptions, purpose, approach, and research role". The quantitative research focuses on the phenomenon, the impacting factors, the conditions and the speed according to which the phenomenon occurred. "Quantitative research, on the other hand, falls under the category of empirical studies, according to some, or statistical studies, according to others" Newman and Benz (1998). The quantitative research spectrum tests the direction and measures the connection strength between the

variables. Whereas, concerning the recognition of the present state situation and the evidence upon the reasons why we are confronted to this situation, the qualitative research is more appropriate. Related to the qualitative research, Newman and Benz (1998) referring to Glaser and Strauss (1967), point out that "qualitative data are often coded a posteriori from interpretations of those data". Meanwhile, Graham (2007) suggests, "Qualitative research is different from this, because there is no separation of data collection and data analysis".

On the above reasoning, the more in-depth expertise on the phenomenon focusing the study is made possible through the in-depth individual interviews and the observation. In the study both types of research are considered, namely the quantitative and the qualitative inter-combined. The combination of both research types has several advantages. "The advantages of a combined approach are:

- Clarifying and answering more questions from different perspectives,
- Enhancing the validity of your findings,
- Increasing the capacity to cross-check one data set against another" Grbich (2013).

To the materialization of the study, the below methods are used:

- The qualitative analysis method based on the narrative method aims at the interpretation of the evidenced phenomena. In addition, it is also used the non-parametric analysis.

- The quantitative analysis method, the digital data used by the analysis, thereon provides a clearer vision of the problem in the research focus, also resulting in a support to the theoretical approaches. Through this method it is enabled also the regression among variables.

- The research surveying method, applied through the questionnaires and interviews in order to test the relationship between the method used in decision-making and the determining factors.

- **Data processing**

Specifically, the descriptive statistics is used in order to discern the situation; the verifying research –the statistical analysis, necessary to explain and evidence the links between the variables and the confirmatory analysis. In this context, the data processing considers:

- The descriptive statistical analysis. The descriptive statistical method aims to draw from the real business world the most important phenomena, whose consequences determine the professionals's behavior. The method aims at identifying the problem in focus, its characteristics, identifying the limitations in order to define the

necessary solutions. The descriptive statistics has served to analyze the general characteristics. Furthermore, the descriptive statistics also served for the hypotheses verification. However, given the complexity the decision-making process entails, and its impact on the business performance, other statistical methods were also considered. Thus, the descriptive analysis method was incorporated with the non-parametric correlative analysis method. All these methods used separately and/or jointly, made possible the formulation and materialization of the phenomena in focus of the research study.

- Data processing is obtained by means of statistical methods, aiming at evidencing the factors that influence the phenomenon, the study targets. Thereon, "The role of statistics in research is to function as a tool in designing research, analysing its data and drawing conclusions therefrom" (Kothari, 2004). The research study is based on two types of data, quantitative and qualitative data. A fact that conditions upon their operationalization (processing), specifically:

  - The data obtained from the interviews are non-parametric data. Their processing, functional to the testing of the respective hypothesis evidences the need to approach them as parametric data. These data are processed according to the specific requirements for the evaluation of the hypothesis via the Coefficient of Association in both its forms and Pearson Coefficient (C). Also, the Kendall coefficient is used.

  - The data obtained from the questionnaires conducted in the field are parametric data. The data processing collected from the questionnaire and the hypotheses testing is effectuated via the software Statistical Package for the Social Sciences (SPSS) -version 20.0. and Alpha Micro Operating System (AMOS) - version 18.0., a statistical software package for structural equation modeling. Through this software package SPSS 20.0 the factor analysis was made possible in order to evidence the links among the independent variables and the dependent ones, and moreover obrain the respective impact measurement. Meanwhile the confirmatory analysis has been carried out through the AMOS 18.0 software.

- **Interpretation**

The interpretation of the results of the data analysis is of paramount importance. Thereon, Kothari (2004) emphasizes that: "Interpretation is essential for the simple reason that the usefulness and utility of research findings lie in proper interpretation". Furthermore Kothari (2004) makes a specific assessment concerning interpretation, arguing, "Interpretation is an

art that one learns through practice and experience". The data interpretation has considered the deduction and induction methods, aiming that the evidenced facts analysis be as in-depth as possible, thus making interpretation an arduous commitment. This has considerably helped us in the formulation of a concrete, real and objective assessment of the analyzed phenomena in order to conclude in stable and realistic findings. Consequently: "The task of interpretation is not an easy job, rather it requires a great skill and dexterity on the part of researcher" Kothari (2004).

On the above reasoning, the due conclusions were drawn, the formulation of ideas and objective recommendations. Recognizing the difficulties that the decision-making entails, we will aim at drawing simple, understandable and realistic conclusions. This would undoubtedly be a contribution to the benefit of the managers and the policymakers.

3.3 The audience

As the first research of its kind, the study entitled "The contribution of decision making methods to business success" will comprise in its interest cadre a relatively extensive audience. "Dissertations and graduate theses offer special insight into the importance of attention to audience" (Patton, 2002). Mainly the audience of this scientific study we think it will be:

- Mainly the research will result of interest to the business managers and superiors regarding their activity orientation with respect to the choice of method to be used in a successful and sustainable business.
- Moreover, the research will prove of interest to the students aspiring to dedicate their professional career to the business management subject, within the context of decision-making.
- In conclusion, the research study will be of interest to the researchers or academics for undertaking further studies in this extensive field.

4. **Result Analysis**

The data analysis represents the total of the followed procedures related to the data analysis process and afterwards the results derived from this analysis. In this context, the data handling approach will be presented in this range: the results of the analysis deriving from the descriptive statistics, the results of the non-parametric statistical analysis, the results of the Exploratory Factor Analysis (EFA) and the Confirmatory Factor Analysis (CFA). According to Bolboaca, Jantschi, Sestras, Sestras and Pamfil (2011), Fisher (1922) suggested: "no progress is to be expected without constant experience in analyzing and interpreting observational data of the most diverse types". Finally, the focus groups results will be presented –the perspectives of the experts and managers.

The businesses in the regional countries are increasingly facing competitive challenges. This has bought to attention an increased interest in spotting viable opportunities in order to cope with the competition harshness. This growing concern has impelled the researchers to focus their studies on finding means and methods to support the business managers, in this regard. This study brings an additional know-how in addressing the decision-making issues in the region, in order to study, analyze and 'detect' the manager's position towards the decision-making methods.

The positive performance of a business is a challenge to the manager. Coping with challenges requires a realistic assessment of the actual situation. Therefore, it requires that available data must be analyzed and interpreted. "Interpretation is essential for the simple reason that the usefulness and utility of research findings lie in the proper interpretation" (Kothari, 2004). The interpretation is based on the interview and survey results, supported by the proposed hypothesis.

Given that performance is conditioned upon decision-making in business, it is understandable that the decision-making quality is crucial. Meanwhile, the decision-making quality is also conditioned on the specific method used. The methods used in decision-making vary substantially and thereof the respective results are not identical. The choice of the decision-making method to be used is a manifestation of the selected managerial orientation, conditioned by numerous factors. Bringing evidence and measuring the impact of these factors raises an interest for further, in depth analysis to this regard.

In respect to the study methodology the analysis consists in:

- Analysis at the level of experts

- Analysis at the level of managers

4.1 Analysis at the level of experts

The analysis on the level of experts takes into consideration the data collected during the field-work through the in-depth interviews with experts. These interviews resulted in the output of the quality variables.

> **Descriptive analysis**

The descriptive method aims at identifying the problem in focus, its characteristics, evidencing the restrictions in order to determine the appropriate viable solutions. The descriptive method analysis in coordination with the correlative non-parametric method analysis made possible the formulation and materialization of the phenomena in the focus of study.

All the interviewed experts in the study's subject-area admit that currently the intuitive method is the dominant approach in businesses decision-making in the region. However, the experts do not share identical points of view regarding the dependence of the business performance on the method used in decision-making. On this basis, in respect to the requirements of the descriptive analysis method it results that 25% of the interviewed experts agree that the use of intuitive methods in decision-making provides a sparing, inadequate success in business. Meanwhile 11.5% of the experts believe that despite of using the analytical methods, the business again may have insufficient success, thus a low performance.

The group of experts supports their evaluation on the fact that the business success is limited to a considerable extent on the effective choice of the analytical method and in accordance with the problem being in focus of the decision. Following this argument, the experts believe that if the analytical model used in decision-making does not refer far enough to the problem being the core of decision-making objective, the analytical method success and consequently the business performance remains questionable. 13.5% of the interviewed experts agree that the intuitive methods use in decision-making can provide an evident success to the businesses. These experts argue that this is the case of the businesses run by managers having a long experience in running a business. Cheng, Rhodes and Lok (2010) referring to Haley and Haley emphasize that: "Decisions are made intuitively by managers with extensive experience and knowledge of the subject matter (Haley and Haley 2006). This reduces the rationality degree of the analysis". In this context, the experts agree that in this

case the performance is largely discernable and achievable, mainly when the manager has an outstanding professional profiling; ex. technological profiling in a certain field as an engineer-technologist; in the study we refer to the professionals as "food technologist engineer", etc. In this regard, Dane and Pratt (2007) emphasize that: "While the heuristic-based view of intuition has dominated research on intuition and problem solving, a growing body of research suggests that "experts" can make highly accurate intuitive decisions (Dreyfus & Dreyfus, 1986; Klein, 1998, 2003; Prietula & Simon, 1989; Simon, 1987, 1992, 1996)".

Referring to this specification, the experts believe that: when the intuitive decision-making methods are used, the performance is attributed to the manager's individual professional skills and the relatively long experience in running the business. The experts claim that experience makes the managerial intuition manifest a satisfactory success degree in decision-making. In this approach, the managerial experience grants insight to intuition, which in addition to the random factors provides a considerable success to the business, deriving from the decision-making method used. Meanwhile the majority of respondents, representing 50% of the total, consider the business success pertaining to a substantial degree to the use of analytical methods in decision- making.

The above expert's approaches on the role of decision-making method used in business performance leads us to the estimation that as a general rule, a dependent relation must exist between the method used in the decision-making and business performance. In more concrete terms, along with the results gained from descriptive method analysis covered above, in order to target the alleged connection we used the non-parametric correlative analysis.

As to define the impact of the method used in the business performance we refer to the following hypotheses:

H$_1$: *If the manager used the analytical methods in decision-making, the business is expected to be successful.*

➢ **Non-parametric statistical analysis**

The evidence analysis collected from in-depth interviews with the experts in Albania, Montenegro and Macedonia considers some of the non-parametric methods as: the coefficient association in both forms, the coefficient of Pearson (C) and the coefficient of Kendall.

Pursuant to the requirements of the above non-parametric methods and on the available data gathered from the expert's interviews, the contingency table is established. Jarman (2015)

suggests: "A contingency table is a tool for breaking down a frequency distribution by variables". The contingency table has r = 2 rows and c = 2 columns. Bolboaca, Jantschi, Sestras, Sestras, and Pamfil, (2011) point out that: "An important assumption is made for the test of homogeneity in populations coming from a contingency of two or more categories". In the contingency table there are displayed the factual densities to any variant combination, concerning the method type used in decision-making and the expected business performance under other unchanged conditions, as indicated in table 1.

Table 1: Contingency Table

Variables	**Intuitive methods used (x_1)**	**Analytical methods used (x_2)**	
Less Successful (y_1)	a = 13	b = 6	a+b = 19
Successful (y_2)	c = 7	d = 26	c+d = 33
	a+c = 20	b+d = 32	n = 52

Source: I. Canco Dossier

The above table enables to calculate the indicators as following:

→ **The Coefficient of Association**

According to Osmani (2004), the Coefficient of Association is approached in both its forms:

Coefficient of Juli

$$Ka = \frac{ad - bc}{ad + bc}$$

Ka = 0.779

Coefficient of connectivity

$$Kl = \sqrt{\frac{1 - \frac{bc}{ad}}{1 + \frac{bc}{ad}}}$$

Kl = 0.883

The coefficients of association in both forms brings about evidence to the fact that business performance is in a considerable amount positively dependent to the method used in decision- making.

→ **Coefficient of Pearson (C)**

As noticed in the study, it resulted that we have two qualitative variables, with two levels each. In order to bring evidence concerning the relations among them, the Pearson

coefficient is used. In this regard Panik (2005) emphasizes that: "We noted in the preceding section that the Pearson correlation coefficient $_{xy}$ serves as an index of linear association between the two variables x and y; that is, it measures the strength of the linear relationship between x and y".

The Pearson contingency coefficient is calculated according to the below formula:

$$C = \sqrt{\frac{\chi^2}{\chi^2 + n}}$$

To this, we calculate in advance the size of ^{2} via the following formula:

$$^2 = \frac{\Sigma (f - f_e)^2}{f_e}$$

wherein:

f - factual density

f_e - expected density

Expected densities $(i,)$ to the combination (xy)ij calculated according to the below formula:

$$f_{e(i,j)} = = \frac{n_i \cdot n_j}{n}$$

wherein:

n_i - i row densities

n_j - j column densities

n - the total amount of cases or general densities

The expected densities under the relevant boxes belonging to the table of contingency result in:

$$f_e(11) = 7.3$$

$$f_e(12) = 12.69$$

$$f_e(21) = 11.69$$

$$f_e(22) = 20.3$$

On this basis, we calculate the value ^{2} resulting to be 11.48.

Bolboaca, Jantschi, Sestras, Sestras, and Pamfil (2011) emphasize that: "The ^{2} test was introduced by K. Pearson in 1900". Considering the above value on the ^{2} the Coefficient of Pearson (C) results in 0.431.

We conclude that the correlation between the business performance and the method used in decision-making is a significant positive relationship, which simultaneously amounts for the confirmation of the raised hypothesis.

Hence:

- The coefficients of association (the coefficient of Julie and the coefficient of connectivity) despite the shortcomings must be considered bearing in mind the fact that they fully justify the "Rule of thumb". According to this rule if the variable has two variants (tables 2x2), and if the coefficient is greater than 0.707 it indicates important connection.

- The coefficient of Pearson also evidences a significant correlation between the kind of method used in decision-making and the business performance. This results from the comparison of the value of this coefficient compared to the critical value of $^2\mathrm{kr}$ = 0.384:

$$\text{Coefficient of Pearson:} \quad 0.431 \ \underline{\ } \ 0.384$$

This is one more argument confirming that managers must orientate their decision-making activities in compliance with the use of analytical methods. Nevertheless, experts admit that currently, on the average, the proportion between the use of intuitive decision-making methods compared to the analytical decision-making methods in the regional countries is respectively: 78% : 22%.

In the current scenario, not that much optimistic, the experts make evident a variety of factors such as:

- The considerable impact of the multi-annual dominant tradition of decision-making. It amounts in the opinion of nearly 61.5% of the surveyed experts. The changes in the decision-making approach require time and professional qualifications on the part of the manager. In this case, we are dealing with priory established stereotypes. Therefore, to change the situation it is required a separation from the old course of action (which is the traditional decision-making approach) and the establishment of another operation mode, in respect to the development requirements, which is the analytical approach.

- To 57% of the respondents, the very presence of a large number of small businesses and other businesses having a sole owner is a factor significantly affecting the choice of decision-making method. To the managers working in businesses run by a sole

owner, considering the hierarchical structure of these businesses, it is obviously understandable that they (the managers) lack the necessary space to update the decision-making approaches. Therefore, the small business owners are not interested to change the decision-making method.

- The academic guidance and orientation in the university studies, mainly in the Bachelor degree. 38.5% of the experts consider it a factor that does not allow young managers a fast-traced orientation towards the practical use of the decision-making analytical methods.

- Another crucial factor is the lack of a functional database in the majority of businesses, serving as the main support for modeling appropriate decisions to the business future. Actually 85.7% of the experts consider it highly important the impacting absence of this factor.

- The informality rate in the domestic economy is considered a conditioning factor increasing the necessity of the modern business decision-making. The informality range in the region has a considerable spreading scale.

- The respondents admit that very few of the managers take into consideration the expert's opinion on the use of analytical methods in decision-making. Only 11% of experts admit having had cases of cooperation with various business managers concerning the modernization of decision-making methods. This is an indicator of the manager's growing interest towards access in the use of the analytical methods.

Regarding the above consideration, experts proclaim that the intellectual forces should orientate the business activity on the increase of the analytical methods use in decision-making. Given that the analytical methods are not limited in number, the experts were asked to determine from the entirety of analytical methods the best possible methods applicable to the current period. This enabled the calculation of the Kendall coefficient of concordance.

$\rightarrow$ **Coefficient of Kendall** (the case of several variables)

In an effort to orientate the managerial commitment towards the use the analytical methods in decision-making, the expert's opinions were considered regarding the preferential sequence of some analytical methods available to be used in the current period. The coefficient of Kendall (the case of several variables) was considered, as "Kendall's coefficient of concordance, represented by the symbol W, is an important non-parametric measure of relationship" (Kothari, 2004). While Sheskin (2004) points out that:

"Specifically, Kendall's coefficient of concordance is a measure which allows a researcher to evaluate the degree of agreement between *m* sets of ranks for *n* subjects/objects".

Special attention was given towards observing the requirement that the use of Kendall's Coefficient of Concordance entails, because as Kothari (2004) highlights: "The basis of Kendall's coefficient of concordance is to imagine how the given data would look if there were no agreement among the several sets of rankings, and then to imagine how it would look if there was perfect agreement among the several sets". In respect to this consideration, it was aimed that the experts remained unaffected and shared independent opinions. They were asked to rank preferentially the four methods, namely: ANOVA, the time series, the regression analysis and the programming models. To this intention, furthermore the study aims at determining the extent of the expert's estimates correlation with regard to the preferential sequence of some of the selected analytical methods that can be currently used. Even in this case, the requirements of non-parametric methods are considered. Specifically, considering the expert's assessments with regard only to the four analytical methods making possible that their grouping-division consisted in seven groups. The quantification of the correlation amount through the Kendall's Coefficient of Concordance (the case of several variables) was calculated according to the below formula:

$$W = \frac{12 * S}{m^2 * (n^3 - n)}$$

wherein: "*S*" will be accounted as follows:

$$S = \sum(S_i - \bar{S})^2 = \sum S_i^2 - \frac{(\sum S_i)^2}{n}$$

Meanwhile, "$\bar{S}$", is calculated according to the formula:

$$\bar{S} = \frac{1}{2} m * (n + 1)$$

wherein:

m - the number of experts,

n - the number of analytical methods considered in ranking,

Expert estimates, using the respective groups are presented in table 2:

Table 2: Expert's rating on the decision-making methods

Method	Number of expert = 9	Number of expert = 5	Number of expert = 9	Number of expert = 5	Number of expert = 12	Number of expert = 7	Number of expert = 5
ANOVA	2	1	1	2	2	3	1
Time Series	1	2	4	1	1	1	3
Regression Analysis	4	3	2	4	4	2	2
Programming	3	4	3	3	3	4	4

Source: I. Canco Dossier

Following the Kendall's coefficient order of calculation and based on the above table data the following values on the formula's parameters results are depicted as below:

$\overline{S} =$ 130

while:

S = 105

It enables the calculation of "W"

W = 0.476

In the end, we can conclude that the expert's estimates widely vary. This reinforces the idea that on the manager's side there should be no preferential scale concerning the use of analytical methods in decision-making bases on the degree of complexity. The manager's commitment should be more oriented on the use of analytical methods in decision-making. This requires creative thinking, technical skills, scientific skills and financial support.

4.2 The analysis at the level of managers

In a scientific study the result analysis is indispensable as it enables the detailed overview of the present situation, it evidences the factors and extend of their influence. Therefore, it enables the extraction of substantial conclusions regarding the economic phenomena based on the processing of the collected data. A detailed and result-directed analysis facilitates the manager's task and sets the basis for supporting future studies.

4.2.1 General considerations

In the study were applied the descriptive and the exploratory factor analysis and the confirmatory factor analysis was used separately or in concordance with others and in conformity with the specifications of the conceptual model components (or factors).

The study starts with the factor analysis. Referring to Brown (2006): "Since its inception over a century ago (Spearman 1904, 1927) factor analysis has become one of the most widely used multivariate statistical procedures in applied research endeavors across multitudes of domain (e.g., psychology, education, sociology, management, political science, public health)".

In the economics philosophy it is highly important to distinguish the differentiation between the knowledge recognition and the knowledge understanding. The knowledge recognition is concerned with establishing the general framework of the economic phenomenon, meanwhile the knowledge understanding is concerned with the necessity of the economic phenomenon existence, the cause's evidence, the operation regulation, the mutual influences and connections with other phenomena and the determination of the indicators conditioning the expansion size, the phenomenon intensity, etc. The economic phenomenons are studied and analyzed through variables, being the dependent or the independent variables.

The data analysis has considered the Exploratory Factor Analysis (EFA). Brown (2006) defines: "EFA is a data driven approach, such that no specifications are made in regard to the number of factors (initially) or the pattern of relationships between the common factors, and the indicators (i.e., the factors loadings)". The Exploratory Factor Analysis aims at defining the basic structure of the variables via the statistical analysis. Further on to this regard Brown (2006) points out: "Rather, a researcher employs EFA as an exploratory or descriptive technique to determine the appropriate number of common factors, and to uncover which measured variables are reasonable indicators of various latent dimensions (e.g., by the size and differential magnitude of factor loadings)".

To this regard, based on the concrete research through the surveys, the analysis considered initially the factor analysis –EFA, which aims at generating results with regard to the influence of the factors that orientate the manager in using the decision-making methods. This is also explained by Yong and Pearce (2013), considering Decoster opinion they state: "EFA is used when a researcher wants to discover the number of factors influencing variables and to analyze which variables 'go together' (De Coster, 1998)". Having the intention to develop further analysis, the factor analysis was followed by a confirmatory

analysis because according to Zait and Bertea (2011): "Confirmatory Factor Analysis (CFA) which is commonly used for validity issues". The idea is reinforced by Yong and Pearce (2013) when recommending that: "You could also run a Confirmatory Factor Analysis (CFA) to validate the factorial validity of the models derived from the results of your EFA". Regarding the above reasoning, Brown (2006) defines that: "Accordingly, EFA is typically used earlier in the process of scale development and construct validation, whereas CFA is used in later phases after the underlying structure has been established on prior empirical (EFA) and theoretical grounds". Almost in the same arguing line Bollen (1989) states: "The factor analysis tradition spawned by Spearman (1904) emphasized the relation of latent factors to observed variables. The central concern was on what we now call the measurement model". Meanwhile according to Grouzet, Otis, and Pelletier (2006): "Confirmatory factor analysis (CFA) framework is ideally suited for testing whether scores measure "the correct something" (rather than "nothing"; Thompson, 2003) and whether the meaning of this "something" is equivalent across samples or times." Given the importance, CFA has received a widespread. In this context, Jackson, Gillaspy, and Purc-Stephenson (2009) relying on the reasoning of other scholars agree that: "Since the late-1990s, there has been a positive trend in the use of CFA, with most applications being in the area of scale development and construct validation (Brown, 2006; Russell, 2002)". Meanwhile to Ullman (2006): "CFA, is as the name implies a confirmatory technique. In a CFA the researcher has a strong idea about the number of factors, the relations among the factors, and the relationship between the factors and measured variables. The goal of the analysis is to test the hypothesized structure and perhaps test competing theoretical models about the structure".

Through an historical perspective, Schumacker and Lomax (2008) evidence that: "The term confirmatory factor analysis (CFA) as used today is based in part on work by Howe (1955), Anderson and Rubin (1956) and Lawley (1958)". But "In contrast to EFA, CFA is appropriately used when the researcher has some knowledge of the underlying latent variable structure" Byrne (2008)". The latent variables reflect factors deriving from the conceptual model. They are generally causal variables such as the logical reasoning or the intellectual capacity of the manager; the manager's and the business' background in general or the manager's background in the respective business, the logical reasoning, the theoretical knowledge, etc. Bollen (2002), based on previous studies, admits that: "A final issue is whether the indicators of a latent variable are causative indicators or effect indicators (Blalock 1964, pp. 162-69; Bollen 1984; Bollen & Lennox 1991; Edwards & Bagozzi 2000).

Causal (formative) indicators are observed variables that directly affect their latent variable. Given their composition it is understandable that they are immesurable variables. "Because latent variables are not directly observed, it follows that they can not be directly measured" (Byrne, 2010). While Bollen (2004), addressing problems related to the definition of the term 'latent variables' states: "In some ways this is not a new definition but is a formalization of a common idea that a latent variable is one for which there are no values." Anderson and Gerbing (1988) referring to other scholars argue that we can not claim a significant difference between the factorial analysis and the confirmatory analysis. Therefore, to this regard Anderson and Gerbing (1988) admit that: "this distinction is not as clear-cut". Further on Anderson and Gerbing (1988) refer to Joreskog (1974) who noted: "Many investigations are to some extent both exploratory and confirmatory, since they involve some variables of known and other variables of unknown composition". Aiming to evidence the specifics of the confirmatory analysis Anderson and Gerbing (1988) stipulate that: "A confirmatory factor analysis model, or confirmatory measurement model, specifies the posited relations of the observed variables to the underlying constructs, with the constructs allowed to be intercorrelated freely". Therefore in this study besides EFA, the CFA is used.

The analysis aims at evidencing the connection and influence among the variables and specifically the influence of the independent variables on the dependent variables. However, during the analysis process conditioned upon the specific study problematics and in order to evidence as much impact as possible, the independent and the dependent variables can be replaced, as "Variables are tricky things. They are the things that alter, and whose changes we can measure, so that we can make comparisons" (Coolican, 2013). The measurement of variables can vary. To this aim Coolican (2013) affirms: "A measure of a variable can take several, perhaps many, values across a range. The value is often numerical but not necessarily so".

The quality of the results of any scientific research is conditioned upon the reliability of the data.

4.2.2 Adequacy of data

The adequacy of data considers addressing the issues of the collected data from the theoretical aspect in order to draw scientifically based conclusions. On this basis, recommendations for further developments can be provided.

➢ **Adequacy of data referring to EFA**

The data analysis in the study considers the test of significance "p". Taking into consideration the "p" constitutes a necessity and according to Reinhart (2015): "Fisher viewed *p* as a handily, informal method to see how surprising a set of data might be, rather than part of some strict formal procedure for testing hypothesis". Further on to this regard Reinhart (2015) stresses out: "The *p* value, when combined with an experiment's prior experience and domain knowledge, could be successful in deciding how to interpret the new data". It should be noted that Field (2005) emphasized: "Although Fisher felt a *p* =.01 would be strong evidence to back up a hypothesis, and perhaps a *p*=.20 would be weak evidence, he never said *p* =.05 was in any way a special number". Meanwhile Kothari (2004) suggests: "Use 5% level of significance".

As a first step the data analysis considers the data validity and reliability. To this regard, Field (2009) emphasis: "Validity is a necessary but not sufficient condition of a measure. A second consideration is reliability, which is the ability of the measure to produce the same results under the same conditions. To be valid the instrument must first be reliable". To Hair, Black, Babin and Anderson (2010): "Validity is the degree to which a measure accurately represents what it is supposed to". Validity measurement is important. However, even though the researchers appreciate the importance of data measuring validity in a scientific study, they do not extend it to the limits of necessity.

The validity of construct should and can be measured by testing. The most used test in measuring the internal reliability, in cases when the measurement considers several degree cases, is the Crombach Alpha. To this, Churchill (1986) argues that: "Coefficient alpha is the basic statistics for determining the reliability of a measure based on internal consistency" Likewise Henseler, Ringle and Sinkovi (2009) regarding the internal consistency define it as 'the traditional criterion'. Therefore, Henseler, Ringle and Sinkovi (2009) state: "The traditional criterion for internal consistency is Cronbach's alpha (Cronbach, 1951), which provides an estimate for the reliability based on the indicator intercorrelations". Despite the importance of Cronbach alpha in assessing the reliability, it can not always be pretended that a thorough assessment of reliability is necessary and indispensable. To this Churchill (1986) admits that particular analysis of certain parts of the model can be carried out. To this regard he guides: "If the construct had, say, five identifiable dimensions or components, coefficient alpha would be calculated for each dimension" (Churchill, 1986).

On the above reasoning, it is evidenced as important to determine the reliability of data, but to researchers the data validity is equally important. In this context, Kline (2000) suggests: "However, this should not lead one to suppose that reliability is identical to validity. The highly reliable test can be invalid".

> ➤ **Adequacy of data referring to CFA**

Data validity is important in CFA. According to Kline (2000): "Cronbach and Meehl (1955) introduced the notion of construct validity". The validity should be considered in its two aspects. To this Pedhazur & Schmelkin (1991), considering the approaches of some other researchers assert: "In earlier treatments of the topic (Campbell, 1957; Campbell & Stanley, 1963), two types of validity were distinguished and discussed: internal and external validity." In particular, each type of validity relates to:

- ✦ The internal validity refers to the fact that the results of the study can be attributed only to the independent variables.

   and

- ✦ External validity concerns the fact that the findings of the study may be referred to other studies or scenarios (Ceku & Kola, 2011).

In a scientific study the internal validity constitutes a substantial condition in order to judge upon the conclusions of the study. To Drost (2011) "Internal consistency concerns the reliability of the test components. Internal consistency measures consistency within the instrument and questions on how well a set of items measures a particular behavior or characteristic within the test." The internal validity refers to two points of view, namely it concerns:

- • The content validity
- • The construct validity

The content validity. To this regard, Brown (2000) defines: "*Content validity* includes any validity strategies that focus on the content of the test". Based on the designation, it is understandable that the validity of content concerns the problematic behind the logic of the question provided in the questionnaire, and concerns also the issue of accuracy, how precisely is the question measuring the target phenomenon. The validity of content, as it considers the logic of the question is regarded as a resolved problem; while being in the analysis stage, the questionnaire preparation is carried out in accordance with the literature review. Moreover, in compliance with the methodology used, the questionnaire is pre-tested

for compatibility purposes. These serve as the basic grounds and make us believe that the validity of the content that refers to the logic of questions is considered satisfactory and acceptable.

The construct validity refers to the fact that it can be determined based on the field-work. "Construct validity has traditionally been defined as the experimental demonstration that a test is measuring the construct it claims to be measuring" (Brown, 2000). The validity of construct depicts upon to what extend the statement (the element) represents the base construct and to what proportion does the element relates to other elements. The proportion evidencing the relationship of the element to other elements expresses the degree that the element is associated to other elements, under given expectations.

By focusing on the validity of construct, researchers have recognized that it includes: the convergent validity and the discriminant validity. According to Bagozzi; Yi and Phillips (1991): "Campbell and Fiske's (1959) proposed two aspects of construct validity: convergent and discriminant validity" for which Churchill (1979) states: "The measures should have not only convergent validity, but also discriminant validity. Discriminant validity is the extent to which the measure is indeed novel and not simply a reflection of some other variable". In the same conclusion have also reached Henseler, Ringle and Sinkovi (2009) when defining that: "For the assessment of validity, two validity subtypes are usually examined: the convergent validity and the discriminant validity". Drost (2011) is of the same opinion, based on the judgments of Campbell and Fiske's (1951). Therefore Drost (2011) suggests: "Campbell and Fiske's (1951) proposed to assess construct validity by examining their convergent and discriminant validity." Given the specifics that the two types of validity reflect, the convergent validity and the discriminant validity they will be separately analyzed.

The convergent validity refers to a size denoting the fact that: the elements which are supposed to represent a construct converge to this construct. Anderson and Gerbing (1988) believe that the convergent validity is the size according to which the elements are expected to be charged, operating altogether as distinct factors. To this regard they orientate: "Convergent validity can be assessed from the measurement model by determining whether each indicator's estimated pattern coefficient on its positive underlying construct factors is significant (greater than twice its standard error)" (Anderson and Gerbing, 1988). Meanwhile Henseler et al. (2009) admit that: "Convergent validity signifies that a set of indicators represents one and the same underlying construct, which can be demonstrated through their unidimensionality". The convergent validity is measured by Coefficient alpha.

Meanwhile the discriminant validity refers to the extent on which a measurement does not correlate with other measurements, which leads to the conclusion that measurements changes. To this Hair et, al. (2010) accept that: "Discriminant analysis is the appropriate statistical technique for testing the hypothesis that the group means of a set of independent variables for two or more groups are equal". From this perspective, it can be concluded that the construct is unique and one dimensional. The validity becomes evident if the elements are strongly loaded on one factor only, thus none of the elements is charged more upon other factors, compared with the factor to which it relates. Evidencing the discriminant validity is conditioned upon the test that should be used to define it. Anderson and Gerbing (1988) based on the conclusions obtained by Bagozzi & Phillips (1982) recommend the *chi* square test to measure the discriminant validity. In concrete terms Anderson and Gerbing (1988) stipulate that: "A significantly lower ^{2} value for the model in which the trait correlations are not constrained to unity would indicate that the traits are not perfectly correlated and that discriminant validity is achieved (Bagozzi & Phillips, 1982)".

The construct validity and the convergent validity are crucial to the structural equation modeling technique by supporting the results deriving from the modeling of the structural equations. In addition, the confirmatory analysis is also important due to its relation to structural equations. CFA represents a preliminary step to the structural equation modeling. In this context Garson (2012) accepts that: "The first step of structural equation modeling is confirmatory factor analysis, where the measurement model is assessed separately from the structural model".

> **Structural equation modelling**

The challenges of the decision-making processes are numerous. They need to be analyzed through the visible and the invisible relationships among the factors. The general analyses provide information on the components of the decision-making process, but not regarding the latent and the mutual effects they bring, which in turn are enabled by the Structural Equation Modeling. The conception of Structural Equation Modeling analysis in the study starts with the presentation of several theories and conceptual alternatives concerning this method.

Structural Equation Modeling (SEM) is a substantial method, regarding which Henseler et al. (2009) delineate that: "The advent of structural equation modeling (SEM) with latent variables has changed the nature of research in international marketing and management." Meanwhile Kline (2011) considers structural equations as one of the most indispensable

means of CFA. Thereupon Kline (2011) asserts: "The SEM technique of confirmatory factor analysis (CFA) is one statistical tool (among others) for testing hypotheses about convergent and discriminant validity".

The SEM technique prominence can also be evidenced if we take into consideration two facts:

1. SEM is developed and utilized in study analysis for a relatively long time, for some decades. A fact declared by Teo, Tsai and Yang (2013) when emphasizing that: "The use of Structural Equation Modeling (SEM) in research has increased in psychology, sociology, education, and economics since it was first conceived by Wright (1918)".

2. Referring to some of the characteristics displayed by SEM concerning the preciseness of the method in testing the interrelations among the constructs, a fact which Henseler et al. (2009) from their point of view, and moreover based on other researcher's perspective assert that: "Researchers acknowledge the possibilities of distinguishing between measurement and structural models and explicitly taking measurement error into account. As Gefen, Straub and Boudreau (2000) point out: "SEM has become *de rigueur* in validating instruments and testing linkages between constructs".

The *Structural Equation Modeling* (SEM) represents not only a tool for processing the data, or a method for presenting the relationships between the variables, but also a confirmatory analysis by evaluating and testing the relationships in question. Precisely to this regard, Bollen (1989) highlights: "Their models had two parts. The first was a latent variable model that was similar to the simultaneous equation model econometrics, except that all variables were latent ones. The second part was the measurement model that showed indicators as effects of the latent variables, as in factor analyses". Generally speaking, the relations among the variables are linear and may be observed or unobserved (latent), which can not be measured in a perfect order because, "the latent variables cannot be measured directly" (Teo, Tsaiand and Yang, 2013). Thereon Teo, Tsaiand Yang (2013) present their reasoning as thus: "Structural Equation Modeling is a statistical approach to testing hypotheses about the relationships among observed and latent variables (Hoyle, 1995). Observed variables also called indicator variables or manifest variables. Latent variables also denoted unobserved variables or factors". Meanwhile, according to Schumacker and Lomax (2008): "The goal of SEM analysis is to determine the extent to which the theoretical model is supported by sample data". Further on, evaluating the SEM role, Schumacker and Lomax (2008)

emphasize: "Consequently SEM tests theoretical models using the scientific method of hypothesis testing to advance our understanding of the complex relationships amongst constructs". While to Garson (2013): "Confirmatory factor analysis in structural equation modeling establishes not only convergent validity but discriminant validity as well, items for construct not only inter-correlated with other but do not cross-load on other constructs in the analysis". Concerning the way it is conceived, the analysis made possible by SEM is considered to be a specific and indispensable analysis. The necessity of using the SEM is also evidenced by Cheung and Rensvold (2002) who admit that: "Structural equation modeling (SEM) is widely used in the social sciences".

As above highlighted, since it has first been utilized until now, it is noted that SEM is presented as a considerably far-reaching method. This dissemination is due to several characteristics that distinguish this method from other methods of analysis. In respect to these characteristics Teo, Tsaiand and Yang (2013) referring to other researchers' state: "Byrne (2001) compared SEM against other multivariate techniques and listed four unique features of SEM:

(1) SEM takes a confirmatory approach to data analysis by specifying *a priori* the relationships among variables. By comparison, other multivariate techniques are descriptive by nature (e.g. exploratory factor analysis) so that hypothesis testing is rather difficult to do.

(2) SEM provides explicit estimates of error variance parameters. Other multivariate techniques are not capable of either assessing or correcting for measurement error. For example, a regression analysis ignores the potential error in all the independent (explanatory) variables included in a model and this raises the possibility of incorrect conclusions due to misleading regression estimates.

(3) SEM procedures incorporate both unobserved (i.e. latent) and observed variables. Other multivariate techniques are based on observed measurements only.

(4) SEM is capable of modeling multivariate relations and estimating direct and indirect effects of variables under study".

The quality of the analysis resulting from structural equation modeling is conditioned upon considering a defined limit on the size of the sample. The importance of the sample size in the measurements results is confirmed also by Anderson and Gerbing (1988) when admitting that: "Measurement models in which factors are done by only two indicators per factor can be problematic, however, so large samples may be needed to obtain a converged and proper solution". They consider a sample size of 150 individuals. The problem of the sample size is

pointed out by other researchers as well. Therefore, Yong and Pearce (2013) draw attention by emphasizing that: "A larger sample size will diminish the error in your data and so EFA generally works better with larger sample sizes. However, Guadagnoli and Velicer (1988) proposed that if the dataset has several high factors loading scores (> .80), then a smaller small size (n > 150) should be sufficient". The size of the sample in CFA has an impact on the measurement and quality of indicators. With respect to this Kline (2016) accentuates that: "Researchers should be more concerned with estimating effect's sizes and their precisions than with the outcomes of significance testing (Kline, 2013)".

Further development of the analysis is viewed in a broader perspective, concerning the general compatibility of the model. To this reason, the diagram analysis in the form of graphics is supported by the indicator's analysis of the model compatibility evaluation. In general, the evaluation of the model consists in the purpose of CFA. To this regard, Teo, Tsai and Yang (2013) declare: "Confirmatory factor analysis is often used to test the measurement model". Kline (2011) as well, relying on the opinion of some researchers, orientates towards undertaking analysis through the indicators. Therefore Kline (2011) recommends: "Hayduk, Cummings, Boadu, Pazderka-Robinson, and Boulianne (2007) remind us that the real goal is to test a theory by specifying a model that represents predictions of that theory among plausible constructs measured with the appropriate indicators". This is obtained through the multiple indicators. The analysis support by the indicators in order to measure the compatibility of the model is crucial when considering the suggestion of Brown (2006). Thereon Bown (2006) emphasizes that: "Like EFA, the purpose of CFA is to identify latent factors that account for the variation among a set of indicators". Hair at al (2009) denominate these indicators as: *GOF- Goodnes-of-fit*. To their regard, Hair at al (2009) stipulate that: "Ever since the first GOF measure was developed, researchers have strived to refine and develop new measures that reflect various facets of the model's ability to respect the data".

> **The model compatibility assessment indicators**

The indicators generally constitute a sustainable basis in the analysis. Nevertheless Kline (2011) claims that indicators should not be considered having an indisputable value. This is what Kline (2011) implies when noting that: "Again, do not forget that "closer to fit" in SEM does not mean "closer to truth"".

The indicators assessing the compatibility of the model are numerous. According to Hair et al. (2009) the model compatibility can be assessed through multiple indicators which can be:

absolute indicators, comparative indicators and conservative indicators. A clasification suggested by Teo et al. (2013) considering the thoughts of some other researchers states: "Overall, researchers agree that fit indices fall into three categories: absolute fit (or model fit), model comparison (or comparative fit), and parsimonious fit (Kelloway, 1998; Mueller & Hancock, 2004; Schumacker & Lomax, 2004)". Neverthless, various researchers choose and make use of some of them. Thus, Grouzet, Otis, and Pelletier (2006) admit that referring to Bollen (1989) they have used two types of indicators. In this context they assert that: "Two types of fit indexes were used: overall and comparative fit indexes", etc.

In this context, given that the model compatibility assessment indicators found in literature are numerous, in this study are selected some of the most useful ones, as: x^2, DF, CMIN/DF CFI and RMSEA. The majority of these indicators are recommended by other researchers as well.

The absolute indicators

Regarding their content, these indicators measure the overall compatibility of the model incomparable to any other model. Thereon, Hair et, al (2009) referring to Kenny, D.A., and D.B. McCoach (2003) define that: "Absolute fit indices are a direct measure of how well the model specified by the researcher reproduces the observed data". Kline (2011) stipulates that: "Absolute fit indexes are generally interpreted as proportions of the co-variances in the sample data matrix explained by the model". While Hooper, Couglan and Mullen (2008) considering the opinion of other researchers suggest: "Absolute fit indices determine how well an a priori model fits the sample data (McDonald and Ho, 2002) and demonstrates which proposed model has the most superior fit". Among the absolute indicators considered in the study are the following:

- **Indicator Chi-Square -** x^2 is one of the absolute indicators of the model compatibility assessment. To Teo et al (2013) this indicator is: "The main absolute fit index is the x^2 (chi-square) which tests for the extent of misspecification". A good compatibility model refers to the low values of this indicator. This is what Kline (2011) claims referring to Hayduk et al. (2007) Yuan, Bentler, & Zhang (2005). A good compatibility, referring to the low values of x^2 is affected by the sample size. Dr. Reardon, Dr. Miller and Coe (1996) condition the importance of the indicator x^2 related to the size of the sample, admitting that: "The significance of the Chi-Square statistics is likely a function of the sample size". Meanwhile Albright and Perk (2009) based on the opinions of Jöreskog emphasizes that: "However, the x^2 test is widely recognized to be problematic (Jöreskog, 1969)". Moreover, Hooper,

Coughlan and Mullen evidence the chi square as a problematic indicator. To this, Hooper, Coughlan and Mullen (2008) stress that: "A good model fit would provide an insignificant result at a 0.05 threshold (Barrett, 2007), thus the Chi-Square statistic is often referred to as either a 'badness of fit' (Kline, 2005) or a 'lack of fit' (Mulaik et al, 1989) measure".

- **DF** (*Degrees of freedom*), according to Anderson, Sweeney and Williams (2016) *degrees of freedom* it is established by Gosset. Following Anderson, Sweeney and Williams (2016) state that: "The *t* distribution is a family of similar probability distributions, with a specific *t* distribution depending a parameter known as the degrees of freedom", meanwhile Hair et al. (2009) claim: "As with other statistical procedures, the Degrees of freedom represent the amount of mathematical information available to estimate model parameters".

- **CMIN/DF** is an indicator deriving from the two above-mentioned indicators and therefore turns out to be an absolute indicator. In order to obtain a more objective analysis of the model compatibility we can refer to the rapport between the Chi-Square and the degree of freedom of the df model. Chan, Lee, Lee, Kubota and Allen (2007) concerning the CMIN/DF indicator state: "One approach is to divide the chi square value by the degrees of freedom". But, Peters and Templin (2013) referring to Byrne (2001) recommend the coordinated use of the relative and the absolute indicators, "Both absolute and relative fit indices were used to evaluate model fit. Absolute fit indices included the chi-square statistic and the chi-square divided by degrees of freedom $^2/df$ (CMIN/*df*), while the Comparative Fit Index (CFI) tested relative fit".

Comparative Indicators

Given the name, these indicators enable the comparison of compatibility among the alternative models, but Hair et, al. (2009) names these indicators as: "Other Absolute Indices". While Teo, Tsaiand Yang (2013) consider them as relative indicators.

Indicator CFI (*Comparative Fit Index*) CFI is a comparative indicator between the estimated model and the null or independent model (Hair et al. 2009). By addressing the limit values of CFI Hair et al. (2009) define that they vary from 0 to 1. But related to the limits of CFI Hair et al. (2009) go further noting that: "The CFI is normed so that values range between 0 and 1, with higher indicating better fit".

Conservative Indicators

These are indicators that better evidence the compatibility of the model in relation to a simple model. To Hair et al (2009) "A parsimony fit measure is improved either by a better fit or by a simpler model". Among the conservative indicators used in the study is the

RMSEA indicator. According to Hooper, Coughlan and Mullen (2008) and afterwards according to Albright and Park (2009) the indicator RMSEA is introduced by Steiger and Lind. Related to this fact, Albright and Park (2009) define that: "Another commonly reported statistic is the Root Mean Square Error of Approximation (RMSEA), a measure of fit introduced by Steiger and Lind (1980)". Despite the importance of conservative indicators evaluated by the above-mentioned authors, yet these authors (Hair et al, 2009) assert that: "The use of parsimony fit indices remains somewhat controversial". In more details the approaches regarding these indicators are presented as follows:

Indicator RMSEA (*Root Mean Square Error of Approximation*) – The achievements of this indicator are acceptable in this scientific study if we take into consideration the declaration of *Sideridis; Simos; Papanicolaou;* Fletcher (2014) regarding the sample size. Namely, *Sideridis; Simos; Papanicolaou;* Fletcher (2014) define: "For a test of close fit, one would need 150 participants in order for the RMSEA confidence interval to be less than .05 so that the value of close fit would be within the 95% confidence interval". In relation to the RMSEA value, Hu & Bentler (1999) consider an escalation of values. Specifically, they accept this escalation: .05 good, .05 - 0.1 moderate and .10 bad.

Jackson, Gillaspy, Jr. and Purc-Stephenson (2009) considering the achievements of Hu and Bentler's (1999) declare that: " we examined the percentage of preferred models that would have been acceptable based on Hu and Bentler's (1999) recommended cutoffs for RMSEA (.06)". Grouzet, Otis, and Pelletier (2006) define: "Finally, values for RMSEA less than .08 are used as thresholds for not rejecting a model (Browne & Cudeck, 1992; see also Hu & Bentler, 1999)". Meanwhile Hair et, al. (2006) determine that the value of RMSEA should be 0.08. Three years later, Hair et al. (2009) establish an evaluation interval. Thus, in this regard they point out that: "Thus, it enables to report that the RMSEA is between 0.03 and 0.08, for example, with 95% confidence" (Hair et al., 2009).

As outlined above, SEM considers two issues (models). To this regard Jayasinghe-Mudalige, Udugama and Ikram (2012) relying on the achievements of Hair et al., 1998; Hughes et al., 1986 assert that: "SEM is a family of statistical models that seeks to explain the relationships among multiple variables and combines features of the two models: (i) Measurement Model Confirmatory Factor Analysis (CFA)], and (ii) Structural Model into a simultaneous statistical test".

In this context, in the study are carried out the below analyses:

a. The analysis expressing the relationship between the factors presenting the environment characteristics and the method used in decision-making.

b. The analysis evidencing the impact of the business features on the decision-making methods.

4.3 Analysis according to the components of the conceptual model

Phase I

The analysis will consider the EFA, CFA and descriptive analysis. The logic model components start with the business environment where the business operates. Therefore, the analysis starts with the business environment characteristics, the model component.

4.3.1 Environment analysis characteristics

> ➢ **Exploratory Factor Analysis**

The external environmental characteristics where the business operates are widely researched, having in focus their impact in the use of decision-making methods. In this context, is analyzed and measured the impact of the assumptions (questionnaire) on the environment characteristics (in which the business operates). The analysis starts with determining the sample adequacy. To this aim we must consider the respective statistics. In more concrete terms, the KMO statistics is considered, shown in Table 3, resulting in the value of 0.735 and Bartlett's value test with P < 0.001. Statistically, the data is considered important and as such, indicate that the factor analysis is duly appropriate. This allows that the evidence collected by the questionnaire on the assertions concerning the environment can be grouped into smaller groupings related to the influential considered factors.

Table 3: KMO and Barlett's Test on the environment characteristics

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.735
Bartlett's Test of Sphericity	Approx. Chi-Square	137.298
	Df	21
	Sig.	.000

Source: I. Canco Dossier

Referring to Kaiser (1974), the Kaiser-Meyer-Olkin, the Sampling Adequacy measure is delineated as: "a statistics that indicates the proportion of variance in your variables that might be caused by underlying factors. High values (close to 1.0) generally indicate that a factor analysis may be useful with your data. If the value is less than 0.50, the results of the

factor analysis probably won't be very useful". As noted, according to Kaiser, 1974 when the statistical values results in the range 0.5-1.0, the factors analysis may be useful for the questionnaires collected evidence.

Meanwhile in the table 4 considering the Eigen values, the explained variation and the varimax rotation result to a total explained variation amounting to 49.453 % considering the fact that the factors to be accounted for are those having the Eigen values greater than 1 (Kaiser, 1958). In the same line Brown (2015) argues: "The logic of the Kaiser-Guttman rule is that when an Eigen value is less than 1.0, the variance explained by a factor is less than the variance of the single indicator". These values are indicated in the following table 4:

Table 4: Total Variance Explained on the environment characteristics

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1 – Hostility environment	2.320	33.146	33.146	2.320	33.146	33.146	2.145	30.640	30.640
2 – Uncertainty environment	1.142	16.308	49.453	1.142	16.308	49.453	1.317	18.813	49.453
3	.871	12.442	61.896						
4	.836	11.938	73.833						
5	.717	10.245	84.078						
6	.607	8.674	92.752						
7	.507	7.248	100.000						
Extraction Method: Principal Component Analysis.									

Source: I. Canco Dossier

In support to the assessment statistics generated from the above tables (table 3 and table 4) was conducted the grouping of the questionnaire assertions regarding the "environmental characteristics" according to a correlative relationship among them, as represented in the table 5.

Table 5: Correlative relationships between the environment characteristics

Rotated Component Matrix[a]		
	Component	
	1 - Hostility environment	2 - Uncertainty environment
1. Customs policy orients decision-making based on analytical methods.	.729	
2. Informality level in domestic economy instigates interest in the use of analytical methods in decision-making.	.695	
3. Fiscal policies condition the method used in decision-making.	.685	
4. The exchange rate forecast has forced me in selecting the decision-making method.	.684	
5. The technological changes in the international market condition the use of analytical methods.		.738
6. The dynamic environment forced me to gather additional data on decision-making.		.647
7. The government policies affect the use of analytical methods in decision-making.		.552
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		
a. Rotation converged in 3 iterations.		

Source: I. Canco Dossier

The components designation is performed in as thus:

Component 1: *The hostility environment* - Under this component, included in the questionnaire, there are four assertions, representing the environmental features perceived as hostile to the business. The collected facts from the questionnaire support the environment hostility relationship towards the business. The principal components factor analysis on these assertions resulted in a single factor. The weights of the assertions included in this factor are represented in table 5. The explaining variation resulted in the amount of 30, 640%.

Component 2: *The uncertainty environment* - Under this label are included the environmental features that bring uncertainty to the businesses operating therein. The three statements included in this component and the respective component's weights are presented in table 5. The explained variation results to be: 18.813%.

The business interrelation to the hostility and uncertainty environments make a tight conjoint of the relationship between the business manager's activity and the method to be used in decision-making. In this context, the assertions grouped under this factor refer to the fact that the uncertainty environment affects the use of analytical method in the decision-making on the part of the manager. The benefits in using the analytical methods in decision-making are evidenced by the fact that in an uncertainty environment these methods provide sustainable success to the manager in business decision-making. This is expected to be empirically confirmed.

> ➤ **Multicollinearity measuring**

In the regression analysis, a problem to be considered is multicollinearity. The multicollinearity presence evidences a strong but incomplete correlative connection between the independent variables. It may also lead to incorrect conclusions on identifying the statistically significant independent variable (Lind et al. 2002). Multicollinearity increases the coefficients standard error, which makes the coefficients for some independent variables result not important, different from zero. All the above reasoning makes necessary the multicollinearity assessment among the independent variables. Multicollinearity reflects a high correlation among an independent variable to another variable or among an independent variable to a group of other independent variables (Geralis and Terziovski, 2003).

Assessing multicollinearity is made possible after constructing the independent variables correlation table. The high correlation values are an indicator of the multicollinearity presence (Geralis and Terziovski, 2003). According to Lind et al. (2002) the correlation values ranging between -0.7 and 0.7 are not problematic, so they are deemed acceptable and thus the continuance of the regression analysis is made possible.

The correlation between the environmental components where the business organization operates mark a relatively strong positive link, indicating that the environmental hostility increase also affects the uncertainty augmentation. The fact can be explained, on a logical perspective, by the intensity dominance of the hostility environment on the business activity. To the businesses operating in a hostile environment, the environment uncertainty should be considered present, as a fellow-companion of their activity. From the table 6 data, it turns out that the correlation coefficient consists in 0.522, which indicates that the coefficient remains within the specified limits ratio. Thus it enables continuing with the analysis.

Table 6: Measuring multicolinearity for environmental components

Correlations:			
		Uncertainty environment	Hostility Environment
Uncertainty environment	Pearson Correlation	1	.522**
	Sig. (2-tailed)		.000
	N	167	167
Hostility environment	Pearson Correlation	.522**	1
	Sig. (2-tailed)	.000	
	N	167	167
**. Correlation is significant at the 0.01 level (2-tailed).			

Source: I. Canco Dossier

➤ **Confirmatory Factor Analysis**

The environment in which the business operates is of particular importance and in some cases determinant in choosing the method of decision-making by the manager. Figure 9 depicts the conceptual model diagram evidencing the influence of environment factors where the business operates (unsafe environment and hostility) to the decision-making methods (intuitive and analitical). Ullman (2006) believes that: "Diagrams are fundamental to SEM because they allow the researcher to diagram the hypothesized set of relations-the model. The diagrams are helpful in clarifying a researcher's ideas about the relations among variables". Further on, in the diagram are presented the questions of the questionnaire through which the respective measurement is intended to be performed.

Conceptual Environment Model > Decision methods
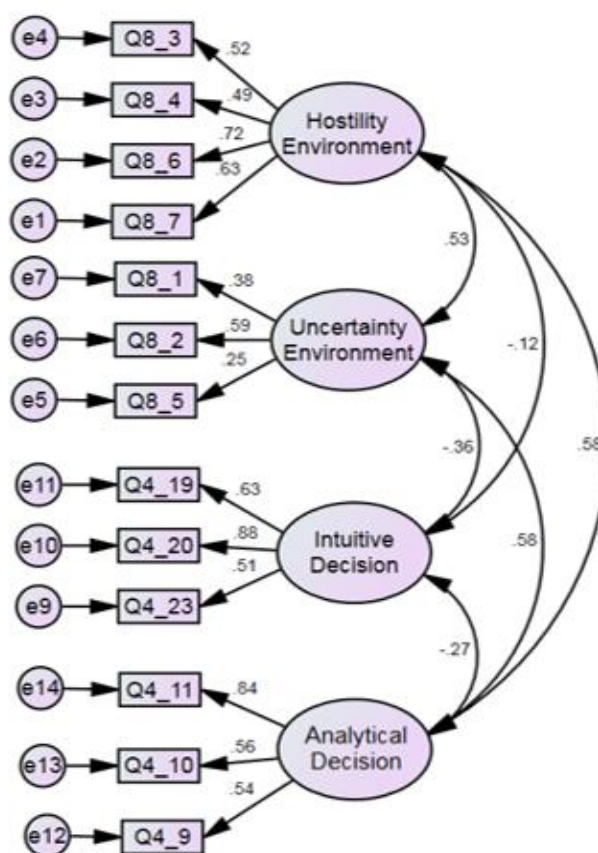
Figure 9: The final hypothesized model for environment characteristics, (Source: I. Canco Dossier)

Note: Q8_3: Informality level in domestic economy instigates interest in the use of analytical methods in decision-making.

Q8_4: Fiscal policies condition the method used in decision-making.

Q8_6: Customs policy orients decision-making based on analytical methods.

Q8_7: The exchange rate forecast has forced me in selecting the decision-making method.

Q8_1: The government policies affect the use of analytical methods in decision-making.

Q8_2: The dynamic environment forced me to gather additional data on decision-making

Q8_5: The technological changes in the international market condition the use of analytical methods.

Q4_19: I usually make quick decisions because I consider what is valid in the moment of decision-making.

Q4_20: I always base on my intuition when making decisions.

Q4_23: I make decisions independently.

Q4_11: I appreciate the analytical methods because they enable a successful management of the productive resources.

Q4_10: I appreciate and use the analytical methods because I feel protected from risk.

Q4_9: I appreciate the analytical methods because they take into consideration the simultaneous influence of many factors in decision-making.

The indicators of the above-mentioned model are as follows:

Chi-square = 94,968; DF = 59; CMIN/DF=1,61; P=0.002; CFI=0.901; RMSEA= 0.061

Chi-square - Teo et al emphasize the fact that Chi-Square statistics are considerably affected not only by the sample, but also by probability.

CMIN/DF=1,61 evidences a satisfactory compatibility, as supported by the many researchers like Kline (2005), Chan, Lee, Lee Kubota and Allen (2007), etc. Based on the opinions of other researchers Chan, Lee, Lee Kubota and Allen (2007) recommend that: "According to Carmines and McIver (1981), ^{2}/df ratios in the range of 2:1 or 3:1 indicated an acceptable fit between the hypothetical model and the sample data, the model must be over identified". Almost of the same opinion is Hoe (2008), who also refers to other researchers. Hoe (2008) emphasizes that: "Kline (1998) suggested that a ^{2}/d.f. ratio of 3 or less is a reasonably good indicator of model fit".

P=0.002: This level of significance evidences the fact that the indicators possess statistical importance, as is indicated in many other cases.

CFI=0.901; this indicator is within the acceptable limits, referred to Hair et al (2009), while Hu and Bentler (1999) consider it at the traditional level.

Thus, finally Hair et al (2009) define as the best value the level above .90 stating exactly: "CFI values above .90 are usually associated with a model that fits well". Meanwhile Teo, Tsaiand Yang (2013) go further by setting a higher value. Concretely they define: " .95 for CFI is associated with a good model". While Hu and Bentler (1999) recommend a greater chance of comparison having three levels, namely: .95 great, .90 traditional and .80 sometimes permissible. However, Hooper, Coughlan and Mullen (2008) suggest that: "From this, a value of CFI   0.95 is presently recognized as indicative of good fit (Hu and Bentler, 1999). Today this index is included in all SEM programs and is one of the most popularly reported fit indices due to being one of the measures least affected by sample size (Fan et al, 1999)".

RMSEA= 0.061; it is a good level indicator, which is based on the studies of Hair et, al (2006), Hair et, al (2009), Chan, Lee, Lee Kubota and Allen (2007), Jackson, Gillaspy, Jr. and Purc-Stephenson (2009), based on achievements of Hu and Bentler's (1999).

Meanwhile Hair et, al. (2006) determine that the value of RMSEA should be 0.08. Three years later, Hair et al. (2009) establish an evaluation interval. Thus, in this regard they point out that: "Thus, it enables to report that the RMSEA is between 0.03 and 0.08, for example, with 95% confidence" (Hair et al., 2009).

As noted above, all the indicators show that the model in general has a good compatibility.

The above indicators evidence that the model is a good one and fits the survey data. Therefore, we can proceed with the empirical testing of the relations among the factors

approached theoretically in the literature review. This makes possible to move on to the testing of hypotheses, as indicated in table 7.

> **Testing the hypotheses of the model**

For an in-depth study on the impact of the environmental components where the business operates on the decision-making methods, the following hypotheses were established:

H₂: *The environmental uncertainty brings a low possibility in the use of intuitive methods in decision-making.*

H₃: *A hostility environment eliminates the possibilities to use intuitive methods in decision-making.*

H₄: *The business activity in an uncertainty environment is an opportunity to use the analytical methods in decision-making.*

H₅: *The more hostility the external environment presents, the more the manager tends to use the analytical methods in decision-making.*

The data analysis regarding the above hypothesis is presented in table 7.

Table 7: Standardized regression weights for environment characteristics

			Estimate	S.E.	C.R.	P	Label
Analytical Method	<---	Uncertainty Environment	.42	3.588	.869	.385	
Intuitive Method	<---	Hostility Environment	.072	.162	.682	.495	
Analytical Method	<---	Hostility Environment	.91	.231	4.781	***	
Intuitive Method	<---	Uncertainty Environment	-.99	10.738	-.884	.377	

Source: I. Canco Dossier

In the above table it is evidenced the environmental impact wherein the business operates on the managerial orientation regarding the method of decision-making through the path coefficient. By processing the collected data in the regional countries, it results that the environmental impact, whether uncertainty or hostility, orientates the managerial activity toward the use of analytical or intuitive methods in decision-making, which as indicated in

table 7 generally result not having a substantial significance. Meanwhile, the managerial orientation regarding the use of analytical methods when the business operates in a hostility environment measured by the path coefficient results having a highly substantial significance, which means that the manager's interest to use analitical methods in decision-making is considerable.

We think and believe that this situation justifies the concerns related to the correct understanding of the surveyed managers regarding the concept of the environment on the one hand, and the impact of its components upon the decision-making method, on the other. Exploring in this regard it results that some of the problems related to the understanding of the environment by the managers in the analyzed regional countries, turn out to be:

1. The information provided in the Table no. 7 refers to the fact that the environment wherein the businesses operate presents a complex reality. To Simon (1959) understanding the complexity of the environment is based on the fact that: "The decision-maker's information about his environment is much less than an approximation to the real environment". This complexity on the one hand concerns what Courtney, Kirkland and Viguerie (1997) recognize that the environment contains "a lot of strategically relevant information". While on the other hand it concerns the fact that, although the environment needs to be analyzed during the decision-making process, again it represents a remaining uncertainty. In this context Courtney, Kirkland and Viguerie (1997) state that: "But often, quite a bit can be known about even those residual uncertainties". Regarding the above reasoning, the environment is presented as a complex construct that complicates the interpretation by the managers. These are the difficulties that Simon (1959) considers when stating: "The decision-maker's model of the world encompasses only a minute fraction of all the relevant characteristics of the real environment, and his inferences extract only a minute fraction of all the information that is present even in his model". To this Goll and Rasheed (1997) suggest: "The incorporation of environment as a multidimensional construct in research design promises to provide a richer and more comprehensive understanding of environment's role in organizational phenomena". In this context Bocanet (2012) considers the environment as a component of indirect influence in the activity of the organization and for this she says: "The effects of environment are indirect, neither the individuals nor the organization experience reality".

2. Furthermore, regarding the understanding of the environment characteristics, we believe that the reasoning on it was affected by how accurate the managers were able to make the difference between the statements referring to the uncertainty characteristics of the

environment and the statements referring to the hostility characteristics of the environment. This fact in many cases complicates the expected measurement of the environment characteristics impact because: "With self-report measures/questionnaires we can also assess the degree to which individual items represent the construct being measured, and cover the full range of the construct (content validity)" (Field, 2009).

3. Another problem to this situation are the dimensions of the study; the stretch of the study in three different countries. The complexity degree of the environment in various countries is different. This variability concerns the fact that the hostility and uncertainty intensity of the environment wherein the businesses operate differs from one analyzed country to the other. Even though these countries are post-communist countries, their politico-economic past has been different. Thus, Albania was a country having an extreme leftist economic development. While Montenegro and Macedonia were integral parts of the former Yugoslavia Republic. In this context, the economic policies in Montenegro and Macedonia have been somewhat more liberal. The developmental differences among these countries are pointed out by important indicators characterizing their environment. Thereon, according to the CIA Fact Book, the level of informality in Albania reaches over 50%. Meanwhile, according to Center for Economic Analyses, the level of informality in Montenegro is 40% and in Macedonia 47%, etc. Additionally, understanding the intensity of competition by the Albanian manager's perception having a socialist background, where the businesses (enterprises) had the state as a sole owner, differs from the concept of managers in Montenegro and Macedonia who were faced with this phenomenon in the past, etc. These circumstances led to the results that the understanding and afterwards the stand of the managers regarding the context of the environment and its impact on decision-making methods is presented as having evident distinctions. This is also supported by Goll and Rashed (1997) when referring to Hambrick and Finkelstein that suggest: "One of the major factors that determine the extent of managerial discretion is the degree to which the environment allows variety and change (Hambrick and Finkelstein, 1987)". The differentiations in the manager's mentality are a direct reflection of the legal infrastructure characteristics of 'doing business' in each of the regional countries.

The above situation does not amount to a peculiarity (exception). To this regard we refer to Button, Ioannidis, Mokrysz, Nosek, Flint, Robinson & Munafò (2013) who claim that: "A study with low statistical power has a reduced chance of detecting a true effect, but it is less well appreciated that low power also reduces the likelihood that a statistically significant

result reflects a true effect". By not considering it as an exclusion-case the low significance, they think: "The first concerns, problems that are mathematically expected to arise even if the research conducted is otherwise perfect: in other words, when there are no biases that tend to create statistically significant (that is, 'positive') results that are spurious" (Button, Ioannidis, Mokrysz, Nosek, Flint, Robinson & Munafò, 2013). In other study analyzes the researchers have evidenced considerable cases when the variables result insignificant. Thus, Chen and Dahlman (2004) in their study evidence that: "Similarly, the ICT variables phones and Internet users also have estimated coefficients that in most cases are not statistically significant".

As on the above, the lower significance should not be a concern, but should serve as a condition for further, future studies. This situation constitutes a recognized and applied practice by other researchers in similar conditions, as suggested by Goll and Rasheed (1997).

➢ **The empirical estimation of the model**
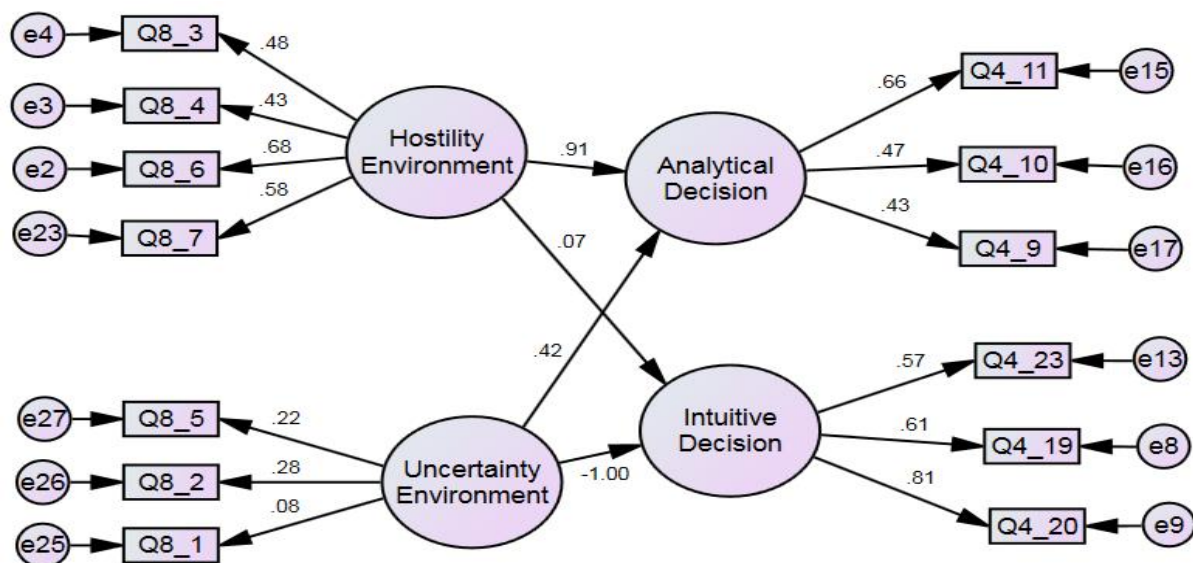
Figure 10: The hypothesized full structural equation model of environment characteristics,
(Source: I.Canco Dossier)

Referring to the table 7 and to the figure 10, it results that:

Uncertainty Environment does not affect the analytical decision, because CR or the t-value is smaller than the value ± 1.96 (0.869) and the P value is greater than 0.05 (0.385).

Hostility_Environment does not affect the Intuitive decision, because CR or the t-value is smaller than the value ± 1.96 (0.682) and the P value is greater than 0.05 (0.495).

Hostility Environment affects the analytical decision, because the CR or the t-value is greater than the value ± 1.96 (4.781) and the P value is smaller than 0.001 (0.000). Uncertainty Environment does not affect the Intuitive decision because the CR or the t-value is smaller than the value ± 1.96 (-.884) and the P value is greater than 0.05 (0.377).

> ➢ **Discriminant and convergent validity analysis**

In the context of confirmatory analysis, a particular position is retained by the discriminant validity assessment of the constructs. According to Gerbing and Anderson (1988) the discriminant validity of the constructs is defined by the fact whether the correlation between the two constructs differs in the overall unity or harmony. Further on, it is highly important the definition of convergent validity. To this Ghadi, Alwi, Abu Bakar and Talib (2012) highlight: "To test of convergent validity moreover factor loading, AVE and CR should be checked". These authors, taking into consideration the opinions of other researchers as Fornell & Larcker, (1981) recommend this analysis as important, therefore they have used it in their study. On this basis they state: "In this study, convergent validity was assessed by factor loading, Composite Reliability (CR) and Average Variance Extracted (AVE)" (Ghadi, Alwi, Abu Bakar and Talib, 2012).

Regarding the above, in the study are weighted the respective indicators, namely: Composite Reliability (CR) and Average Variance Extracted (AVE). Based on the questionnaire collected data the respective values are displayed in the table 8.

- **Composite Reliability (CR) Analysis**

The measurable achievements of the study are closely related to the reliability of the field-work collected data. For Drost (2011) reliability is concerned with: "In sum, reliability is consistency of measurement (Bollen, 1989), or stability of measurement over a variety of conditions in which basically the same results should be obtained (Nunnally, 1978). Thus, to this context the measurement of reliability is critical. Therefore, the researchers stress the prominence of measuring the reliability. Exactly this is what Drost (2011) holds forth when referring to Rosenthal and Rosnow who state: "Reliability is a major concern when a psychological test is used to measure some attribute or behavior (Rosenthal and Rosnow, 1991)".

Regarding to each indicator the researchers focus on the acceptable (measurable) levels (limits) because: "The level of CR is another guideline to review convergent validity" (Ghadi, Alwi, Abu Bakar and Talib, 2012). Further on Ghadi, Alwi, Abu Bakar and Talib

(2012) provide orientation with respect to the coefficient that should be used to measure CR. To this regard, supported by the thoughts of other researchers they point out that: "Although Cronbach's alpha is a very popular coefficient to test reliability (Bollen & Long, 1993) and (Garson, 2011)". Additionally, referred to other researchers they admit: "According to Hair et al., (2010), the acceptable value of CR is 0.7 and above" (Ghadi, Alwi, Abu Bakar and Talib, 2012). Besides, referring the researchers, Jayasinghe-Mudalige, Udugama and Ikram (2012) accentuate: "The rule of thumb for CR is that it should be 0.6 or higher, and ideally 0.7 or higher to mean that reliability is good with internal consistency (Fornell and Bookstein, 1982)". Despite the importance the alpha coefficient has in measuring CR, there are researchers who believe that this coefficient can not justify everything. To Bacon, Sauer and Young (1995): "Cronbach's (1951) coefficient alpha is a popular measure for composite reliability assessment in this context, even though the assumption underlying the use of alpha as a reliability coefficient are rarely met". Further on they specify that: "Coefficient alpha has become a mainstay for many researchers but is neither accurate nor a useful decision aid in the structural equation context" (Bacon, Sauer and Young, 1995).

As indicated from the table 8, CR values range from .379 to .721. However, it is evident that the values over .684 predominate. Thus, if we refer to Farrell and Rudd (2009) based on a study done by Tellis, Yin and Bell (2009) it results that some researchers and namely Byrne (1998), Diamantopoulos and Siguaw (2000) and Sharma (1996) analyze the CR limits in some levels. According to them the CR environmental constructs generally result in the *Openness* and *Enthusiasm* levels. Pursuant to the above, according to Byrne (1998) CR= .5 is considered *Openness* and .53 *Enthusiasm*. To Diamantopoulos and Siguaw (2000) *Openness* refers to CR= .63 and *Enthusiasm* refers to CR= .68. Meanwhile Sharma (1996) admits that CR= .61 is considered simultaneously *Openness* and *Enthusiasm.* Only one constructs results having the CR= .379

- **Average Variance Extracted (AVE)**

Meanwhile measuring the discriminant validity of the constructs is obtained through AVE. There are numerous researchers recommending AVE to measure the discriminant validity. To this regard Hair et. al emphasizes that: "Also available are reliability measures derived from confirmatory factor analysis. Included in these measures are the composite reliability and the average variance extracted". This is what Zait and Bertea (2011) also alleged when stating: "In order to establish discriminant validity there is need for an appropriate AVE (Average Variance Extracted) analysis". Henseler et al. (2009) admit that the discriminant validity can be attained through the AVE. Thereon Henseler et al. (2009) state: "Fornell and

Larcker (1981) suggest using the average variance extracted (AVE) as a criterion of convergent validity". AVE is substantial to the measurement of discriminant validity. To this Nejatian, Sentosa & Piaralal (2011) evidence the importance of AVE declaring that: "The average variance extracted (AVE) measures the "amount of variance that is captured by the construct in relation to the amount of variance due to measurement error" (Fornell and Larcker, 1981). Henseler et al. (2009) referring to other researchers define the size of AVE, specifically they point out: "An AVE value of at least 0.5 indicates sufficient convergent validity, meaning that a latent variable is able to explain more than half of the variance of its indicators on average (e.g., Gotz, Liehr-Gobbers, & Krafft, 2009)". Garson (2013) stipulates that: "For convergent validity, AVE should be .50 or greater and less than composite reliability". Other authors also define AVE as an indicator reflecting the discriminant validity. To this Janita and Miranda (2013) say: "Convergent validity was assessed thought the AVE". Also, it is claimed that the constructs have discriminant validity if the AVE of each construct results in a higher value compared to the square of the construct correlations regarding all other constructs. Moreover, based on the recommendations of researchers, Nedo (2014) suggests the limit value of AVE. Specifically she states: "In fact a 0.4 cut-off value was appointed. Lastly, the variance extracted 0.5 (i.e., 50%) as suggested by Fornell and Larcker (1981)".

The results deriving from the processing of data are generally within the due limits accepted by other researchers as well. Thus, Farrell and Rudd (2009) referring to the study of Tellis, Yin dhe Bell (2009) claim that the researchers: Byrne (1998), Diamantopoulos and Siguaw (2000) and Sharma (1996) accept as the lower level AVE = .26. Concretely to Byrne (1998) AVE = .26 is considered *Openness* and AVE = .29 is considered *Enthusiasm*. Diamantopoulos and Siguaw (2000) accept the limits respectively .36 as *Openness* and .42 as *Enthusiasm*. While Sharma (1996) recognizes that AVE = .36 should be considered concurrently as an *Openness* and *Enthusiasm* level. Only one of the AVE constructs results lower than the above accepted limits.

The CR and AVE values regarding the influence of environment characteristics where the business operates in decision-making methods are presented in the following table 8.

Table 8: Composite Reliability and Average Variance Extracted on the environment characteristics

	CR	AVE
Analytical_Method	0.692	0.439
Hostility_Environment	0.684	0.356
Intiutive_Method	0.721	0.475
Uncertainity_ Environment	0.379	0.186

Source: I. Canco Dossier

As noted from table 8 the CR and the AVE present some minor differences compared to the defined limits. But it must be admitted that the deviations do not constitute a problem related to the discriminant validity of the constructs. One more reason to believe in this regard is Field (2009) stance in relation to " ", which is recommended to be used in measuring the internal consistency. To Tavakol and Dennick (2011): "Alpha was developed by Lee Cronbach in 1951 to provide a measure of the internal consistency of a test or scale". Field (2009) admits that: "Unlike the previous subscales, the overall   is quite low and although this is in keeping with what Kline (1999) says we should expect for this kind of social science data, it is well below the other scales". Meanwhile Kline (2000) has emphasized: "**Consequently it is hardly surprising that relatively few tests have good evidence for their validity. Indeed, perhaps the opposite is true: the fact that any tests have been shown to be valid is surprising**". Further support in this regard is also the fact that there are recent scientific studies on decision-making literature wherein these indicators are presented at low levels. Hence in the study of Asiamah; Mensah, and Oteng-Abayie (2016) AVE results in a minimum of 0.167 and a maximum of 0.511. While CR captures respectively the values 0.260 to 0.751.

The results of discriminant validity are presented in the following table 9:

> **Discriminant Validity**

Table 9: Correlation fixed to 1 and freely estimated between pairs constructs for environment characteristics

Pairs	Correlation fixed to 1	Correlation estimated freely
Uncertainty_Environment ⇔ Analytical Method	Chi-square = 85.203 P=0.000	Chi-square = 17.638 P=0.024
Hostility_Environment ⇔ Analytical Method	Chi-square = 73.361 P=0.000	Chi-square = 12.266 P=0.506
Uncertainty_Environment ⇔ Intuitive Method	Chi-square = 191.213 P=0.000	Chi-square = 15.200 P=0.055
Hostility_Environment ⇔ Intuitive Method	Chi-square = 126.262 P=0.000	Chi-square = 24.352 P=0.028

Source: I. Canco Dossier

Table 9 data support the fact that the characteristics of the environment in which businesses operate orientate the position of the manager towards the methods used in decision-making. In this context the statistics highlight that the Discriminant Validity is reached and the indicators have statistical significance.

4.3.2 Decision characteristics analysis

The varieties of decisions that have to be taken in business are part of the ongoing commitment of the manager. A comparative overview regarding the impact of the type of decision on the methods that managers use in the decision-making process provides significant evidence on this fact.

> **Decision type analysis**

The frequency analysis on the analytical methods used in decision-making conditioned upon the sort of the decision refers to the confirmed assertion presented in the questionnaire as follows:

"The analytical methods are most frequently used in the preparation of: a. Strategic decisions; b. Tactic decisions; c. Operative decisions".

According to this analysis, the requirement results show that more than a half of the managers, respectively 53.7% admit that the analytical methods are more frequently used when the decision-making focuses on the strategic decisions. 38% of the managers stated

that the analytical methods are used in the tactical decisions preparation and only 8.3% of the respondents were of the opinion that the analytical methods are also used for the operational decision-making. The same trend appears in the density analysis altogether, as for this assertion also the interviewed managers had a choice of more than one alternative, as indicated in the table 10:

Table 10: Decision Type Frequence

Decision Type Frequencies		Responses		Percent of Cases
		N	Percent	
Decision sort (class)[a]	Strategic	116	53.7%	69.5%
	Tactic	82	38.0%	49.1%
	Operative	18	8.3%	10.8%
Total		216	100.0%	129.3%
a. Dichotomy group tabulated at value 1.				

Source: I. Canco Dossier

Initially, it should be noted that the surveyed manager's perception is highly important regarding the necessity of using the analytical methods, as a main success factor in business. In order to evidence the manager's stance in business decision-making in the regional businesses the following analysis will serve this purpose.

➢ **Multicollinearity Analysis**

The correlation analysis brings to evidence the connection existing between various kinds of decision when using the analytical methods in decision-making. In table 11 we observe that the correlation coefficient between the use of analytical methods in strategic decisions and the application of these methods in tactical and operative decisions results to be negative. Specifically, this coefficient concerning the interrelation between the use of analytical methods in strategic decisions and the tactical decisions results to be $r = - 0.415$. Meanwhile, concerning the use of analytical methods in strategic decisions in relation to the operating decisions, the interrelationship amounts to $r = - 0.440$. The negative association is also observable regarding the use of analytical methods in decision-making in relation to the operational tactical ones. The coefficient in this case turns out to be (-0.032). As indicated, the table 11 data highlights the fact that via the use of analytical methods in strategic decisions and these methods's use in the tactical and operational decisions, a negative relationship exists. This relationship negativity refers to the fact that with the increasing use of analytical methods in strategic decisions, the use of analytical methods in tactic and

operative decisions decreases. Such a conclusion refers to the respective distinct specifications of these kinds of decisions.

Table 11: The correlation between the types of decision

The Correlation		Strategic	Tactical	Operative
Strategic	Pearson Correlation	1	-.415**	-.440**
	Sig. (2-tailed)		.000	.000
	N	167	167	167
Tactical	Pearson Correlation	-.415**	1	-.032
	Sig. (2-tailed)	.000		.678
	N	167	167	167
Operative	Pearson Correlation	-.440**	-.032	1
	Sig. (2-tailed)	.000	.678	
	N	167	167	167
**. Correlation is significant at the 0.01 level (2-tailed).				

Source: I. Canco Dossier

The correlation coefficients indicated in table 11, despite their obvious negativity evidence the strong connection between the type of decision and the use of analytical methods in decision-making. It enables the statistical analysis continuation via the multiple regressions in order to prove the raised hypothesis:

H$_6$: *The possibilities in using the analytical methods are influenced by the type of decision – the strategic, tactical and operative decisions.*

The diversity of a decision, including its three components, should be considered an available opportunity to the manager in order to accomplish a qualitative decision-making. To this reason, the type of decision must be considered a vital factor affecting the choice of the method used by the manager in the decision-making process. Thereof grows the perception that the decision type can affect the decisions made according to the analytical methods.

By focusing on the possible link existing between the type of decision and the use of analytical methods in decision-making, we refer to the regression analysis. Its conclusions are presented in the table 12, which emphasizes the relationship between the independent variables: the strategic, tactical and operative decisions and the dependent variable: the use of analytical methods in decision-making.

As noticed the R^2 it results to be 6.7% which means that the type of decision explains 6.7% of the variation in the dependent variable. Thus, 6.7% of the variation in the use of analytical methods in decision-making comes from the type of decision. The size of R^2 resulting from the analysis does not present a problem, as according to Figueiredo Filho, Silva and Rocha (2011): "The principal problem is that the variance in the population that the sample was drawn can strongly influence R^2 magnitude. Therefore, there is no guarantee that a high value of the coefficient of determination is synonymous with a good fit since the difference can be explained by sample variance".

From the data presented in the tables we can evidence the relationship between the independent and the dependent variables which can be expressed by the following equation:

$$y = 3,789 + 0.196*x_1 + 0.113*x_2 + e$$

y – decision-making method - analytical method

x_1 - strategic decisions

x_2 – operative decisions

e – random term

Table 12: Regression of independent variables- type of decision and the dependent variable-analytical methods in decision-making

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.258[a]	.067	.049	.36697
a. Predictors: (Constant), Type of decision 1. Operative, 2. Tactical, 3. Strategic				

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.567	3	.522	3.878	.010[b]
	Residual	21.951	163	.135		
	Total	23.518	166			
a. Dependent Variable: analytical						
b. Predictors: (Constant): operative, tactical, strategic.						

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.789	.086		44.170	.000
Strategic	.196	.078	.240	2.503	.013
Tactical	.113	.065	.151	1.747	.083
Operative	-.070	.106	-.058	-.666	.507
a. Dependent Variable: analytical					

Source: I. Canco Dossier

As noticed, the significance of the strategic decisions results statistically important. Regarding the tactical decisions their significance results to be 0.083, which in turn evidences a relative acceptability. Whereas the significance to the operational decisions will not be considered, as it is not statistically important. Under these conditions, the results are mainly significant only regarding the strategic decisions.

These conclusions have a simultaneously logical and explainable interpretation. The assessment resulting from the table data pertains to the explanation of the manager's trend in the use of analytical methods in strategic decisions. It represents an eloquent expression of a reality existing in the regional countries. The table data indicates that the coefficients for both components regarding the type of decisions have different sizes. The result legitimizes the fact that the problematic-spectrum of a strategic decision is more comprehensive compared to the problematic-spectrum of a tactical decision. So as observed, only two components of the type of decision, namely the strategic and the tactical decisions impact the use of analytical methods in decision-making. This result explains an evident fact which represents a necessity for which Hair ... [et. al], Money, Samouel, Page (2007) stated that: "Strategic and tactical decision often involve capital investment".

The analysis showed that type of decision affects the method used in decision-making. In the same conclusion have come other researchers. Elbanna, Child and Dayan consider other researcher's achievements and generalize that: "Leybourne and Sadler-Smith (2006), for example, report that more experienced managers may be more intuitive than less experienced ones. Similarly, Sayegh et al. (2004) argue that experience is critical in the use of intuition in the strategic decision-making process".

4.3.3 Business characteristics

Businesses constitute the main basis for the economic development of a country and therefore are considered as potential factor to the consolidation and expansion of this development. In this context, the analysis considers the business characteristics.

> ➢ **Business Size**

The collected data indicate that considering the total of the regional businesses operating in the respective capitals in the food industry the large businesses occupy 33.1% of the total businesses, meanwhile around 29% are medium-sized businesses and the remaining part belongs to the small businesses. Analyzed on country basis it results that the large businesses operating in Albania occupy the greater section, amounting to about 59.7% of the total operating businesses within the country's capital. Meantime in Montenegro and Macedonia the large businesses occupy a small share of 9.6% and 10.8% respectively.

A reverse situation to the above tableau is displayed by the presence of small businesses. In Tirana the small businesses make up only 11.7% of the total food industry businesses, in Podgorica they represent 65.4% and in Skopje 54.1% of the total operating businesses. While the medium-sized businesses in the three analyzed countries amount respectively to 28.6%, 25% and 35.1% of the total.

An overall view of the businesses structural reports, considering their size is presented in table 13.

Table 13: Clasification of businesses by state and size

			Country			Total
			Albania	Montenegro	Macedonia	
Your business is classified as:	Large	Count	46	5	4	55
		% within the country	59.7%	9.6%	10.8%	33.1%
	Medium	Count	22	13	13	48
		% within the country	28.6%	25.0%	35.1%	28.9%
	Small	Count	9	34	20	63
		% within the country	11.7%	65.4%	54.1%	38.0%
Total		Count	77	52	37	166

Source: I. Canco Dossier

Analyzing the businesses structural composition according to their legal status it shows that out of the total of the active business operating in the analyzed countries, the sole ownership businesses amount to the major part. On average the businesses having this status represent 63.5% of the total businesses in the region. In the higher extreme is positioned Montenegro reaching 69.8%.

Albania ranks the second with 61% of the total business, meanwhile Macedonia ranks the third with 59.5%. On the other hand, the partnership based businesses occupy a considerable weight. On an average level considering the entire region, the businesses having the legal status of "partnership" represent 28.1% of the total, meanwhile among the different countries there are obviously spotted variations. Thus, in Albania the partnership businesses amount to 31.2%, in Montenegro 17% and in Macedonia up to 37.8%. The businesses having a small share in the structure are those carrying the legal status of "corporation" with 6% out of the total regional businesses, meanwhile Macedonia is presented having the lowest weight by only 2.7%. The businesses having a different legal status from the above, as "ltd-s", occupy not a substantial weight amounting to 2.4% of the total business, as indicated in the table 14:

Table 14: Clasification of businesses by state and legal status

Business classification according to country registration form and relevance						
			Country			Total
			Albania	Montenegro	Macedonia	
Your business is registered as:	Sole Ownership	Count	47	37	22	106
		% within the country	61%	69.8%	59.5%	63.5%
	Partnership	Count	24	9	14	47
		% within the country	31.2%	17.0%	37.8%	28.1%
	Corporation	Count	6	3	1	10
		% within the country	7.8%	5.7%	2.7%	6%
	Other (specify)	Count	0	4	0	4
		% within the country	0%	7.5%	0%	2.4%
Total		Count	77	53	37	167
		% within the country	100%	100%	100%	100%

The presence of businesses having a multitude of characteristics is notable in Albania as well as in other regional countries. Pivotal to this study is to estimate the link between the business characteristics and the methods used in decision-making. The influence of business characteristics 'the independent variable' on the dependent variable 'the decision-making methods' can be summarized in the following hypothesis:

H$_7$: *The bigger the business, the higher the manager's interest in the use of analytical methods in decision-making.*

H$_8$: *The small and medium size business managers are expected to use more the intuitive methods in decision-making.*

The processing of collected data according to table 15 makes noticeable that the using rate of analytical methods in decision-making is greater in big businesses. On an average level, the manager's assessment on the use of the analytical methods in big businesses amounts to 4.1093 out of 5 points being the maximum assessment referring to the LIKERT scale. In the

second place having a score of 4.0671 point on the evaluation of analytical methods are listed the medium size business managers and at a score of 3.8995 point is the assessment made by the small size business managers. The data presented in the following table confirms the H7 above raised hypothesis.

Table 15: The impact of the business size on the analytical methods

Report			
Analytical			
Data on business: Your business can be classified as:	Mean	N	Std. Deviation
Big	4.1093	55	.40204
Medium	4.0671	48	.32072
Small	3.8995	63	.39898
Total	4.0175	166	.38841

Source: I. Canco Dossier

A reverse results' picture is presented by the data in the following table 16. The data indicates a lower use of the intuitive methods in decision-making on the part of the large scale business managers. The manager's assessment of these businesses concerning the intuitive methods use reaches up to 3.2212 point average. Compared to the medium-sized business, manager's assessment indicate that this assessment is less than 0.0705 points and furthermore compared to the small businesses assessment it goes to 0.3355 points smaller. The situation reinforces the view that while the business size increases, the interest in the use of intuitive methods in decision-making decreases. The assessment comparison on the average level depicted in the table 16 confirms also the H8 hypothesis. Elbanna, Child and Dayan (2013) accept that: "Small firms tend to be less formalized which may encourage a greater use of intuition".

Table 16: The impact of the business size on the intuitive methods

Report			
Intuitive			
Data on business: Your business can be classified as:	Mean	N	Std. Deviation
Big	3.2212	55	.66092
Medium	3.2917	48	.60749
Small	3.5567	63	.55819
Total	3.3689	166	.62260

Source: I. Canco Dossier

➢ **The Business Legal Status**

Another business feature expected to affect the manager's choice of the decision-making method is the business legal status. To evaluate this impact the below hypothesis is put forward:

H₉: *The business legal status affects the choice of the decision-making method.*

Referring to the evaluation according to the five levels LIKERT scale concerning the methods used in decision-making on the business legal status it is noticed that the businesses having the "corporation" legal status, have the highest appreciation on the use of analytical methods in decision-making by 4.2778 point average assessment. In the table 17 ranking the analysis proceeds with the businesses having the legal status as "other", which are predominantly ltd-s and "partnership" types. In the lowest level estimates on the use of analytical methods in decision-making are ranked the managers working in businesses having the legal status as "sole ownership" with 3.9464 points.

Table 17: The impact of the business legal status on the analytical methods

Report			
Analytical			
Your business is:	Mean	N	Std. Deviation
Sole Ownership	3.9464	106	.38577
Partnership	4.1164	47	.38576
Corporation	4.2778	10	.26836
Other (specify)	4.1667	4	.19245
Total	4.0194	167	.38801

Source: I. Canco Dossier

Another evaluation is presented in the table 18 with respect to the evaluation of intuitive methods in decision-making considering the business legal status. Therein ranked as leading are the businesses having the legal status of "sole ownership". Their manager's assessment to the intuitive methods reaches up to 3.4185 points. In the lowest level of evaluation are aligned the businesses having the legal status of "other".

Table 18: The impact of the business legal status on the intuitive methods

Report			
Intuitive			
Your business is:	Mean	N	Std. Deviation
Sole Ownership	3.4185	106	.59618
Partnership	3.2862	47	.69859
Corporation	3.3000	10	.61149
Other (specify)	3.0714	4	.18443
Total	3.3658	167	.62198

Source: I. Canco Dossier

The situation justifies the point of view that managers working in "sole ownership" businesses have a limited degree of freedom by the owner in selecting the decision-making method. Elbanna, Child and Dayan (2013) referring to the managers they interviewed state that: "One of the interviewed managers, for example, described the chairperson as being "self-opinionated, insisting on his point of view regardless of the other managers' opinions or feedback.", which is better explained taking into consideration the organization's culture, as it will be covered further on. Meantime in the businesses having other legal statuses due to the very approach of their organization, the possibility to orientate their decision-making activity towards the analytical methods is greater. The above approaches prove the H9 hypothesis on the impact of the business legal status in relation to the decision-making methods.

> **The Organization Culture**

Business organizations differ. This difference should be viewed as a conditioned interaction between factors such as the business organization values and culture. The organization culture is perceived as a method of approach by its members leading to reciprocity and towards the need to engage and cooperate in determining the method to be used in decision-making. Thus, the centralized business culture generally represents a denied opportunity for collaboration in the decision-making process. Therefore, the centralized culture increases the potential for the use of experience based methods on decision-making, which are the intuitive methods. The collaborative culture within the business organizations increases the availability of the human capacity in the decision-making process; accordingly it is hypothesized that the collaborative culture can enhance the opportunities for decision-making according to the analytical methods.

The business success is considerably dependent upon the organization culture in decision-making. The organization culture not only reflects the prevailing ideology of the managers in the decision-making process, among other perspectives, but it also has a significant impact on the business performance. To Cameron and Freeman (1991): "Many case studies of the culture- performance relationship exist". To this purpose, the culture definitely conveys a sense of identity orientating the managers on how to operate in decision-making. The organization culture is a feature that individualizes the business, thus constituting an obvious advantage. Thereby it is explained the fact that businesses have distinguishing cultures also in the decision-making process. For this it is necessary that the problem should be examined more in details.

> ➢ **Factor Analysis**

According to the indicators in table 19 results that the KMO index reaches the value of 0.532 which is within the set limits enabling us to further analyze the data through the factor analysis. Even the Bartlett's Test values which are smaller than 0.05 highlight the fact that the factor analysis could be potentially useful to our data. Thus, considering the KMO index value of 0.532 and the Bartlett test having $p < 0.001$ evaluated by the respective scholars as 'very highly significant', to this reason the factor analysis is appropriate.

Table 19: KMO and Barlett's Test regarding the organization's culture characteristics

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.532
Bartlett's Test of Sphericity	Approx. Chi-Square	31.075
	Df	6
	Sig.	.000

Source: I. Canco Dossier

Referring to the questionnaire assertions regarding the business organization culture in the decision-making process, the analysis considered the total explained variation and the Varimax rotation. As indicated by the table 20 it is evidenced that the total explained variation amounts to 63,331%, a value meeting the Kaiser criterion.

Table 20: Total Variance Explained regarding the organization's culture characteristics

Total Variance Explained									
Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1.Centralized Culture	1.476	36.902	36.902	1.476	36.902	36.902	1.283	32.080	32.080
2.Collective Culture	1.057	26.429	63.331	1.057	26.429	63.331	1.250	31.251	63.331
3	.828	20.702	84.033						
4	.639	15.967	100.000						
Extraction Method: Principal Component Analysis.									

Source: I. Canco Dossier

Based on the above stated we can proceed with the grouping of questionnaire assertions with respect to the business organization culture in the decision-making, according to the

correlative relationships among them. The grouping of assertions upon the culture aspect is presented as follows:

Table 21: Correlative relationship among the characteristics of the organization's culture

Rotated Component Matrix[a]

	Component	
	1-Centralized Culture	2-Collective Culture
1. Management hierarchy does not allow enough space in choosing the decision-making method.	.790	
2. When the organization culture envisions the decision-making made by the owner it is noticed a tendency for rapid decision - making.	.757	
3. The collective management organization culture orientates a consultation based decision-making.		.806
4. The organization culture in our business refers to decision-making by voting.		.733
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		
a. Rotation converged in 3 iterations.		

Source: I. Canco Dossier

Under these conditions the factor's designation is done as follows:

Factor 1: *The centralized business culture orientates the manager (owner's) concentration in the decision-making process* - This label may be best suited if we refer to the fact that all assumptions that may be included in this factor have as their main focus the hierarchical leadership role in determining the decision-making method. To measure the "centralized cultures" impact in decision-making two main statements are considered in the questionnaire. The principal components analysis resulted in a single factor. The allegations concerning this factor and their factorial weight are presented in the table 21.

Factor 2: *The collective organization culture enables decision-making based on (cooperation) consultation* -The assumptions included in this group consider cooperation as an important element in decision-making. To this factor two main statements are included in the questionnaire. The principal components analysis thereof resulted in a single factor. The included suppositions concerning this factor and their factorial weights are presented in the table 21.

➢ **Multicollinearity Measurement**

The correlation coefficient between the two components of the organization's culture regarding decision-making is evaluated as statistically important as to p   0.05. This coefficient turns out to be negative, namely the value r = (- 0.188) which means that the strengthening of one component leads to the weakening at the same proportions of the other component. Namely, the strengthening of the organization's collective culture reduces the centralized organizational culture (the owner's influence).

Table 22: Multicolinearity measurement for the organization cultures components

Correlations		Centralized Culture	Collective Culture
Centralized Culture	Pearson Correlation	1	-.188[*]
	Sig. (2-tailed)		.016
	N	165	165
Collective Culture	Pearson Correlation	-.188[*]	1
	Sig. (2-tailed)	.016	
	N	165	165
*. Correlation is significant at the 0.05 level (2-tailed).			

Source: I. Canco Dossier

As demonstrated above, the decision-making method is influenced by the components of the organization's culture. Thus, Cameron and Freeman (1991) consider that: "Cultural congruence is present in an organization when the dominant characteristics, leadership style, organizational glue and strategic emphasis all are consistent with one another; for example, they may all be indicative of a clan culture type".

Notwithstanding the foregoing, the connection existing between the components of the organization's culture and business decision-making methods will be statistically verified. To this regard we refer to the hypotheses raised for the purpose. The centralized organization culture creates little or no opportunities for members of the business to contribute to decision-making. This situation is addressed by other researchers. "Our Chairman is a dictator. He is a good listener but he does not react to what he listens to. We know this fact well and accordingly act!" Elbanna, Child and Dayan (2013) referring to the managers surveyed in their study.

➢ **Confirmatory Factor Analysis (CFA)**

The decision-making process should be analyzed within the organizational environment where this process is implemented. This makes evident how organizational culture factors impact the decision-making process and specifically the decision-making methods. To this aim it is drawn the diagram indicating the relationship between the organization culture characteristics and the methods of decision-making, as depicted in figure 11.

Conceptual Model Culture >Decision method
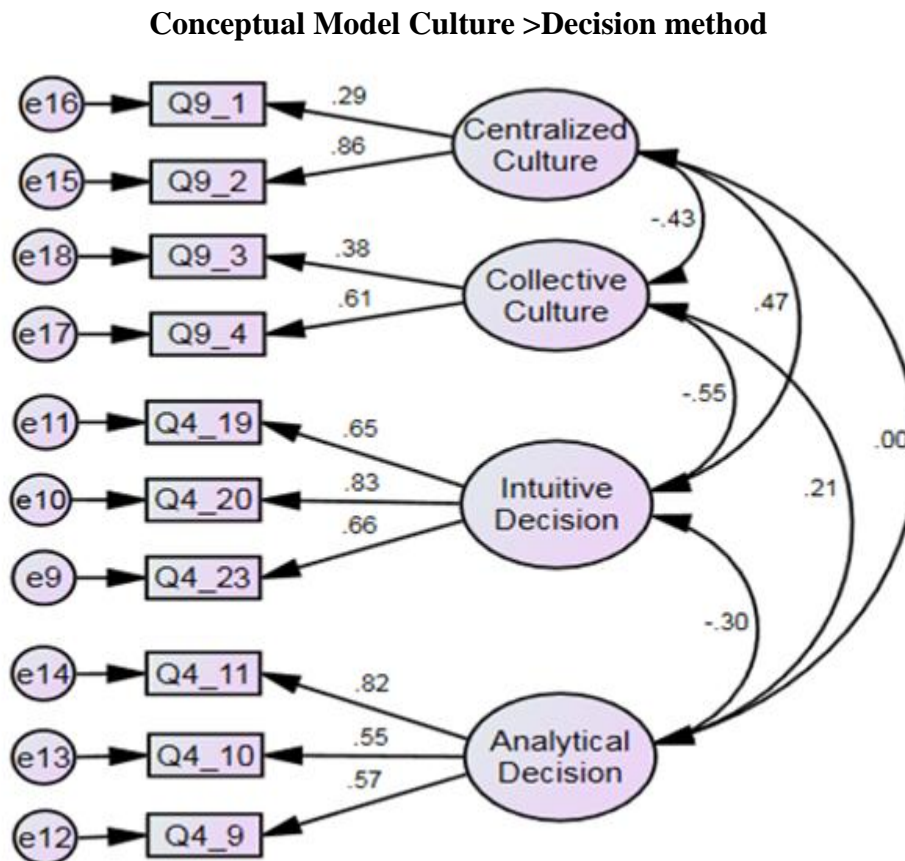
Figure 11: The final hypothesized model of the organisation's culture characteristics, (Source: I. Canco Dossier)

Note: Q9_1: Management hierarchy does not allow enough space in choosing the decision-making method.
  Q9_2: When the organization culture envisions the decision-making made by the owner it is noticed a tendency for rapid decision -making.
  Q9_3: The collective management organization culture orientates a consultation based decision-making.
  Q9_4: The organization culture in our business refers to decision-making by voting.
  Q4_19: I usually make quick decisions because I consider what is valid in the moment of decision-making.
  Q4_20: I always base on my intuition when making decisions.
  Q4_23: I make decisions independently.
  Q4_11: I appreciate the analytical methods because they enable a successful management of the productive resources.
  Q4_10: I appreciate and use the analytical methods because I feel protected from risk.
  Q4_9: I appreciate the analytical methods because they take into consideration the simultaneous influence of many factors in decision-making.

The model indicators:

Chi-square =45.162; DF=29; P=0.028; CMIN/DF= 1,557; CFI= 0.94; RMSEA=0.058

Referring to the above indicators it results that it is a good model, fitting to the study data which means that we can proceed with the further step to empirically test the relationships among the factors.

The indicators of the conceptual model are presented as follows:

Chi-square =45.162; DF = 29; Albright (2009) admits that: "The overall model fit is not great, with a 2 statistic of 35.329 (df=8) large enough to reject the null of a good fit".

P=0.028; represents a satisfactory statistical significance;

Chi-square - Based on the fact that chi-square depend by probability Teo et al (2013) conclude: "For this reason, the 2 cannot be used as a sole indicator of model fit in SEM".

CMIN/DF=1,557; this indicator is within the acceptable parameters, a fact supported by various other researchers as: Gouzet, Otis and Pelletier (2006), Hoe (2008) based upon Kline (1998) achievements, etc. After some years, Kline (2005) recognizes that this report, and specifically when ^{2}/df 3 the model compatibility is guaranteed. While for Mande, Ishak, Idris, and Ammani(2013): "A common level of ²/d.f. ratio is below 5 (though below 3 is better)" Meanwhile, Peters and Templin (2013) also based on the approaches of other authors and specifically in Byrne studies, suggest the same for the indicator CMIN/DF 3, although in their study this indicator reaches a higher value. This is evidenced when they claim that: "The overall fit of this model was fair (CMIN/df = 3.02; CFI = .93; RMSEA = .081)"

CFI= 0.94; evidences a satisfactory compatibility if we refer to Hair et. al (2009) having the limit .90 while in Suhr (2006) study this indicator has a CFI value of ((0.8069), etc.

RMSEA=0.058, represents a good indicator according to Hu and Bentler (1999) or to Hair et. al (2006), Padilla and Eguia (2010) - .075, etc.

The value of RMSEA to Kline (2011) is 0.28. While Chan, Lee, Lee, Kubota and Allen (2007) accept that: "For RMSEA, a value of 0 is interpreted as an exact fit; values less than .05 are a close fit, values between .05 and .08 are a fair fit, values between .08 and .10 are a mediocre fit, and values more than .10 are a poor fit." Bashir Mande, Zuani Ishak, Kamil Idris, Sahiba Ammani (2013) admit that: "Also, the Root Mean Square of Appropriation (RMSEA) should be 0.60 or below". Meanwhile Albright and Park (2009) considering the suggestions of Arbuckle (2005) highlight that: "The Amos User's Guide suggests that "a value of the RMSEA of about 0.05 or less would indicate a close fit of the model in relation

to the degrees of freedom", although "this figure is based on subjective judgment" and "cannot be regarded as infallible".

As indicated the above conceptual model evidences a substantial compatibility.

> **Testing the hypotheses of the model:**

Working in businesses the employees strive to meet their economic and social needs through the emotional support and the cooperation in achieving their objectives. To this purpose, the business organization must cultivate a specific organization culture as to achieve an equilibrium between the labor productivity and meeting the employee's individual needs. This approach makes possible the clarification of the future vision of the business organization, simultaneously giving to the members of the organization security for their future. This is enabled, among other things, through the decision-making and the methods used. For a more in-depth analysis the below hypotheses are raised:

H$_{10}$: *The centralized organization culture is expected to positively affect the use of intuitive methods in decision-making.*

H$_{11}$: *The centralized organization culture offers few opportunities for the use of analytical methods in decision-making.*

H$_{12}$: *The collective culture enables the use of analytical methods in decision-making.*

H$_{13}$: *The activity of a collective culture organization adversely affects the use of analytical methods in decision-making.*

The regression weights are indicated in the table 23.

Table 23: Standardized regression weights for the organisation's culture characteristics

			Estimate	S.E.	C.R.	P	Label
Intuitive_Decision	<---	Centralized_Culture	.66	.764	2.460	.014	**
Analytical_Decision	<---	Centralized_Culture	.51	.408	2.196	.028	**
Analytical _Decision	<---	Collective_Culture	.86	.585	2.758	.006	**
Intuitive_Decision	<---	Collective_Culture	-.75	.838	-2.729	.006	**

Source: I. Canco Dossier

The above table 23 indicates the path coefficients that evidence the direct effect of the type of culture in the decision-making method. Since all the coefficients presented in table 23 have a *highly and very highly* significance, they are statistically significant and we can further proceed with the analysis.

As noted, the path coefficient depicting the impact of a centralized organization culture in the use of intuitive methods in decision-making results to be .66. The centralized organization culture has a lower coefficient in the use of analytical methods in decision-making consisting in .51. Meanwhile, the collective culture has a higher effect on the use of analytical methods in decision-making. This is evidenced by the path coefficient of the organization collective culture in the use of analytical methods in decision-making equal to 0.86. Quite significant is the fact that the organization collective culture results in a low path coefficient (- .75) which evidences the negative effect of the type of the organization collective culture in the use rate of the intuitive methods in decision-making.
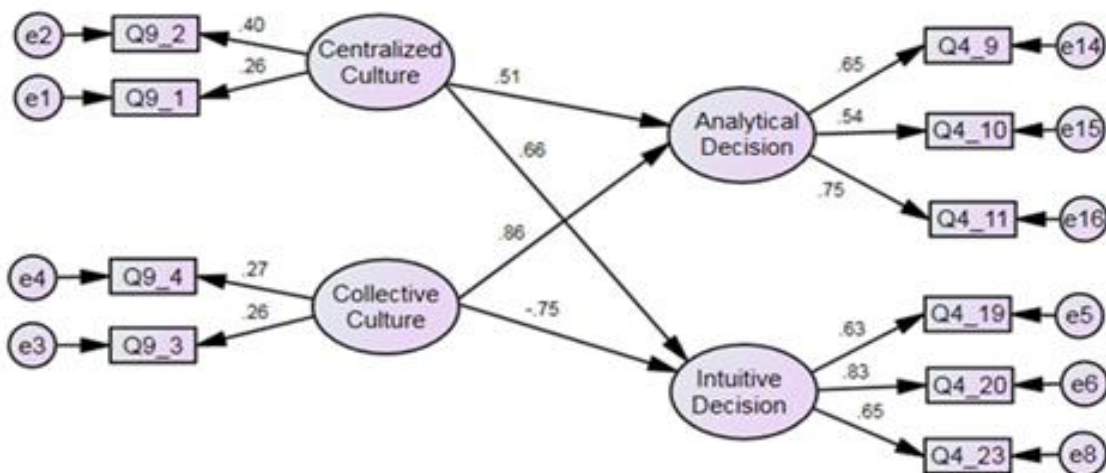

Figure 12: The hypothesized full structural equation model of the organization's culture characteristics, (Source: I. Canco Dossier)

Referring to the table 23 and the figure 12 it results that all the relations are statistically significant, therefore:

The Centralized Culture influences the use of analytical method in decision-making because CR or t-value is greater than the value ± 1.96 (2,196) and the P value is smaller than 0:05 (0.028).

The Centralized Culture influences the intuitive method in decision-making, because CR or the t-value is greater than the value ± 1.96 (2.46) and the P value is smaller than 0.05 (0.014).

The Collective Culture influences the analytical method in decision-making because CR or the t-value is greater than the value ± 1.96 (2.758) and the P value is smaller than 0.05 (0.006).

The Collective Culture influences the intuitive method in decision-making, because CR or the t-value is greater than the value ± 1.96 (-2729) and the P value is smaller than 0.05 (0.006).

The impact of the organization's culture in the decision-making methods as above analyzed, supports the hypothesis raised for this purpose.

With reference to the above, it should be noted that in most cases in the collective culture organizations voting is intensely used in decision-making. Voting enables increased employee participation in the decision-making process and improves the quality of the decision, but this is not always the case because: "Voting is rated low because it involves judgment, but not analysis" Peniwati (2007). It is highly important to be pointed out the fact that organization's culture is influenced by the national culture. So, Cheng, Rhodes and Lokc (2010), emphasize that: "the Chinese have specific characteristics in this area (Yates and Lee, 1996) which explain the adaptability of and perceived risk in making strategic decisions (Nutt, 1986). Chinese managers exhibit patience in making decisions, lack a sense of urgency, and can be informal and insensitive to time in the decision process (Wengrowski, 2004).

It should be noted that the position managers retain towards the organization's culture aspects as evidenced above, stems from a strong connection to tradition. Recognizing the fact that the three regional countries come from a centrally planned economy, but with varying degrees of centralization, the concept that 'organization culture' meaning is mainly based on the orientation of what is judged important to the organization, is not yet entirely assimilated by the managers.

➢ **Discriminant and convergent validity analysis**

The results of the discriminant and convergent validity analysis are presented in table 24.

Table 24: Composite Reliability and Average Variance Extracted of cultural organizational characteristics

	CR	AVE
Intuitive Method	0.760	0.516
Centralized Culture	0.529	0.411
Collective Culture	0.396	0.257
Analytical Method	0.691	0.436

Referring to data in the Table no. 24 generally speaking CR manifests the qualities of a good indicator. In the majority of the analyzed cases in the study regarding the influence of organizational culture in the decision-making methods, CR results within the accepted up to the satisfactory limits. In respect to this we also refer, as above, to Farrell and Rudd (2009) who considering the study of Tellis, Yin and Bell (2009) recommend the limits set in several levels by Byrne (1998), Diamantopoulos and Siguaw (2000) and Sharma (1996). With respect only to the 'Collective Culture' CR results in a lower value, thus CR = .396. This proves once again the fact that managers are not yet detached from the centralized management mentality that is a characteristic of post-dictatorial societies. Meanwhile the study results point out that AVE is within good limits referring to Byrne (1998), Diamantopoulos and Siguaw (2000) and Sharma (1996) who according to Farrell and Rudd (2009) in relation to this aspect have considered the study of Tellis, Yin dhe Bell (2009).

➢ Discriminant validity is presented in table 25.

Table 25: Correlation fixed to 1 and freely estimated between pairs constructs for organization's culture characteristics

Pairs	Correlation fixed to 1	Correlation estimated freely
Centralized Culture ⇔ Analytical Decision	Chi-square = 139.840 P=0.000	Chi-square = 17.011 P=0.017
Collective Culture ⇔ Analytical Decision	Chi-square = 102.638 P=0.000	Chi-square = 3.182 P=0.528
Centralized Culture ⇔ Intuitive Decision	Chi-square = 72.326 P=0.000	Chi-square = 6.639 P=0.156
Collective Culture ⇔ Intuitive Decision	Chi-square = 161.344 P=0.000	Chi-square = 11.707 P=0.020

The indicators of table 25 emphasize the fact that discriminant validity is attained.

4.3.4 Decision-Makers Characteristics

The business organizations have to respond to the continual fluctuations of the external and internal environment. The materialization of these changes is conditioned on the composition and quality of the human resources. To this rationale it is claimed that the decision-maker's characteristics influence the decision-making process. Tversky & Kahneman (1986) assess the role of decision-makers in many aspects of the decision-making process by emphasizing that: "Framing is controlled by the manner in which the choice problem is presented as well as by norms, habits, and expectancies of the decision maker." On this basis, the H14 hypothesis is raised:

H_{14}: *The manager's demographic characteristics are expected to influence his/her decision-making methods.*

➢ **The age of decision-makers**

Based on the generated data results the decision-makers belonging to the age group of over 40 years old are predominant. The decision-makers of an average age of over 40 years old make up 64.1% of the total number of decision-makers. While regarding the regional countries Albania, Montenegro and Macedonia the decision-makers of over 40 years old of age amount to 61%, 66.1% and 67.6% respectively. Meantime, the managers under the age of 40 comprise on average about 35. 9% of the interviewed managers total. The greater load of the indicator on about 41.3% of the managers belongs to the 41-50 years old age range. The three countries of the region are represented having a minimal deviation from the average level. Likewise, a small number of managers that on an average level amounts to 3.6% of the total are the managers over 60 years old age group.

Considering inter alia the role of decision-makers age in determining the method to be used in decision-making it becomes necessary waging a more detailed analysis on the impact of this demographic characteristic. To this aim it is analyzed the assessment of analytical methods in decision-making based on age groups. The data of the analysis are presented in the table 26. The table 26 infers the surveyed manager's estimation on an average level for each age group. The higher appreciation to the use of the analytical methods in decision-making results coming from the managers of up to 30 years old age group and specifically 4.1528 points. It constitutes an acceptable reality to this age group as:

- The young people are more willing to try and engage in innovative activities even if it will entail a considerable risk.
- Moreover, the young people are more prone to new technologies and quickly

assimilate them.

Compared to the other age groups assessment, it is evidenced that among these age groups are not observed significant statistical differences with regard to the dependent variable.

Table 26: The influence of the manager's age in the use of the analytical method in decision making

What is your age?	Mean	N	Std. Deviation
up to 30 years old	4.1528	18	.31199
31 - 40 years old	3.9765	42	.39164
41 - 50 years old	4.0068	69	.40620
51 - 60 years old	4.0313	32	.38823
over 60 years old	4.0000	6	.38490
Total	4.0194	167	.38801

Source: I. Canco Dossier

All the above reasoning testifies that no difference is noted between the various age-groups concerning the impact on the dependent variable. As noticed the interviewed managers use the same logic in evaluating the analytical methods in decision-making and it constitutes an estimable reality.

> ➢ **Education level**

Developing a business in general and developing its certain elements in particular are two closely interrelated features of education. Education is an indispensable condition even with respect to determining the decision-making method as it directly relates to the professional competence of the manager. Al-Tarawneh (2012) referring to Harrison (1975) considers very important the managerial decision-making competence. To this regard Al-Tarawneh (2012) admits that: "Decision-making is an integral part of the management of any organization. More than anything else, competence in this activity differentiates the manager from the non-manager and, more importantly, the good manager from the mediocre manager". To draw the analysis on how the education level affects in determining the decision-making method, we refer to the table 27.

The data on the manager's education level highlight the fact that on an average level, a little more than half of them, about 50.3% have a university degree education, 29.9 % have completed the Master's program studies and 4.8% hold the PhD. title. Only 15 % of the managers have high school education. Generally this group includes small businesses owners/managers belonging to the Clan Culture.

Table 27: The impact of the manager's education level in the use of analytical method in decision-making

Report			
Analytical			
Please choose your highest level of education:	Mean	N	Std. Deviation
High school	3.8800	25	.44666
University degree	4.0200	84	.38076
Master degree	4.0489	50	.36896
PhD degree	4.2639	8	.26519
Total	4.0194	167	.38801

Source: I. Canco Dossier

The table indicates that on average the managers holding a PhD. degree have the highest appreciation for the analytical methods. Specifically, their assessment amounts to 4.2639 points. The lowest assessment level on 3.8800 points refers to the managers of high school education. To this regard Musso and Francion (2012) referring to a series of studies of other researchers agree that: "Previous studies have reported that also decision-maker's demographic characteristics, and in particular the person's educational level, can strongly affect strategic decisions" (Gilbeus, et al., 2009; Hitt & Tyler 1991; Papadakis, 2006; Papadakis & Barwise, 2002; Papadakis, et al., 1998).

➢ **Manager's Education Background**

The manager's education background is an important demographic characteristic related to the manager's engagement in decision-making and specifically on the tendency towards the use of decision-making methods. Referring to the Table no. 28, resulting from the questionnaires collected data, it is noted that in the three countries nearly about 30% of the decision-making managers have a non-economic education background such as engineers, political scientists, etc., a fact that is reflected in their choices towards the use of decision-making methods. The remaining part of the managers has an economic education background in closely related profiles such as economics, finance, marketing, etc. The relationships between different countries display the same trend.

Considering the average rating of the manager's education backgrounds it results that there are no differences between the various education fields of study.

Table 28: The impact of the manager's education backgrounds in the use of analytical method in decision-making

Report			
Analytical			
Please choose the level of your study field	Mean	N	Std. Deviation
Economics	3.9386	38	.45466
Finance	4.0656	29	.34321
Marketing	4.0983	26	.34900
Business Administration	4.0899	21	.27130
Other (specify)	3.9826	51	.41418
Total	4.0189	165	.38798

Source: I.Canco Dossier

➢ **Managerial Experience**

Among the substantial demographic characteristics is aligned the manager's experience. Generally the decision-making managers on about 67% of them have up to 16 years of experience. In this group, the largest part of the share is occupied by the managers having 6-15 years of experience. They represent 51.5% of the managers total operating in the food industry in all the region; after them are ranked the managers having 16-25 years of experience, who comprise up to 26.3% of the respondents. At the lowest level remain the managers having over 35 years of experience and concretely they make up to 0.6 of the accounted manager's total.

Table 29: The impact of the manager's experience in the use of analytical method in decision-making

Report			
Analytical			
What is your experience as a manager	Mean	N	Std. Deviation
up to 5 years	4.0246	26	.31567
6 - 15 years	4.0199	86	.39963
16 - 25 years	3.9924	44	.42489
26 - 35 years	4.1000	10	.33722
over 35 years	4.2222	1	.
Total	4.0194	167	.38801

Source: I. Canco Dossier

As witnessed the higher evaluation on the analytical methods refers to only one manager, having an experience of over 35 years. Experience is a valued parameter. Kahneman (2011), the Nobel Prize winner agrees that: "Expert intuition strikes us as magical, but it is not. Indeed, each of us performs feats of intuitive expertise many times each day".

According to the above observed difference which was conditioned by the characteristics of the decision-makers the hypothesis H_{14} is confirmed. This was the conclusion reached also by Nygren and White (2002) when accepting that: "Our results suggest that individual differences leading to a propensity toward use of one decision-making style over another can affect performance on some complex tasks". Further, Nygren and White (2002) agree: "Our initial findings suggest that human performance levels on high workload tasks may benefit if we can discover when a more intuitive and flexible decision style or when a less flexible, analytical decision-making style may be best for the adaptive decision maker". Edhe Al-Tarawneh (2012) based in the opinion of other researchers (Donnelly et al., 1998) evidences the importance of the decision-maker characteristics as a condition to a good decision-making process.

Phase II

4.3.5 Analysis according to the decision-making methods

The second phase refers to the problematics of the decision-making methods and their impact on business performance. The contribution of decision-making methods to the sustainable development of the business concerns the business protection from competition, assistance in employment, support in the mobilization of other production resources and as well assistance in the increase of business profits. The increase in business productivity requires focusing on the problem of quality improvement in decision-making. The very enhancement of the decision-making quality starts from the selection of the decision-making method, aiming at the most efficient methods. Therefore, improving the decision-making methods as a reflection to the contemporary changes is an ongoing subject of the manager's activity. The development process that the manager in the region has encountered has made him/her more critical, more demanding and highly selective with respect to choosing the decision-making method. In the regional countries the decision-making methods related problems remain unexplored, as from the theoretical and the applicative perspectives simultaneously. Thereof, the decision-making method analysis was targeted in order to evidence the influencing factors and the interrelations among them.

The aim of the study is to study and analyze the manager's perceptions on the decision-making methods and their impact on business performance.

> ➢ **Exploratory Factor Analysis**

The collected data are presented in the Table no. 30, wherein it results that the KMO index reaches the value of 0.704 and therefore it enables us to group the data in smaller group-sets according to the factors considered as influencing. Thus, it makes us believe and ensures that the study context data supports the use of factor analysis. Likewise, the reciprocal correlation check is considered. To this the Bartlett's Test is used. The relevance level of 0.5 shows that factor analysis could potentially be useful for our provided data. The value smaller than 0.5 of the importance level indicate that the factor analysis could be potentially useful for our provided data. Bartlett's test study data result in $p < 0.0001$ which is considered extraordinarily significant.

Based on the above, considering the KMO index value of 0.704 and the Bartlett's test wherein ($p < 0.001$) which evidences a highly significant level, it can be concluded that the factor analysis is appropriate (table 30).

Table 30: KMO and Barlett's Test on the decision-making methods

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.704
Bartlett's Test of Sphericity	Approx. Chi-Square	215.920
	Df	15
	Sig.	.000

Source: I. Canco Dossier

The further stage of analysis is considered to be the analysis based on the explained variation and the Varimax rotation, in order to minimize the number of variables having a peak weight according to the factors. In the following table are indicated the Eigen values, the explained variation and the Varimax rotation. Kaiser (1958) orients upon the fact that: the number of factors to be analyzed should be equal to the number of Eigen values, thus being greater than 1. Likewise, according to Brown (2006) "The Kaiser Guttman rule (also referred to as "the Kaiser criterion", or "the Eigen values 1.0 rule") it is very straightforward". That is due to the fact that an Eigen value is the variance size explained by one furthermore factor. In this context, it is meaningless and therefore unnecessary to add factors that explain in less variance, compared to what is contained in a variable. The total explained variation results to be 64.808% (referred to the sum value of the factor 2). Therein, the Kaiser criterion of choice is met. According to Kaiser (1958): "The normal Varimax criterion is shown to be a two-dimensional generation of the classic Spearman case i.e., it shows perfect factorial invariance for two pure clusters", the Varimax rotation

minimizes the number of variables, which in turn have a high load to each given factor. The total variance explained is presented in the table 31.

Table 31: Total Variance Explained on the decision-making methods

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1 –Intuitive	2.399	39.976	39.976	2.399	39.976	39.976	2.045	34.091	34.091
2 – Analytical	1.490	24.832	64.808	1.490	24.832	64.808	1.843	30.716	64.808
3	.663	11.053	75.861						
4	.550	9.174	85.035						
5	.477	7.949	92.985						
6	.421	7.015	100.000						
Extraction Method: Principal Component Analysis.									

Source: I. Canco Dossier

On this basis was conducted the grouping of the questionnaire assumptions, which in turn considers "the decision-making methods" according to a correlative relationship between them as presented in the following table 32:

Table 32: Correlative relationships between the decision-making methods

Rotated Component Matrix[a]		
	Component	
	1-Intuititive	2-Analytical
1. I always base on my intuition when making decisions.	.845	
2. I usually make quick decisions because I consider what is valid in the moment of decision-making.	.819	
3. I make decisions independently.	.764	
4. I appreciate the analytical methods because they enable a successful management of the productive resources.		.821
5 .I appreciate and use the analytical methods because I feel protected from risk.		.789
6. I appreciate the analytical methods because they take into consideration the simultaneous influence of many factors in decision-making.		.709
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		
a. Rotation converged in 3 iterations.		

Source: I. Canco Dossier

Thus, the components denomination proceeds as below:

Factor 1: *The role of intuitive methods in decision-making.* The group consists of assertions that consider the evaluation of the decision-making managers when asked concerning the intuitive methods impact in decision-making. The factor analysis of the principal components resulted in a single factor. All the component's weights resulted of high value, greater than 0.40, which is considered as a partition point because Brown (2006) suggests: "In applied research, factors loading greater than or equal to .30 or .40 are often interpreted as salient that is, the indicator is meaningfully related to a primary or secondary factor". The assertions included in this component and the respective factor weights are reflected in table 32. The Explained Variation resulted in 34.091%.

The factors herein grouped highlight the assessment degree of the questionnaire assertions referring to the intuitive methods, from the optics of the manager as a professional. The evaluation in this case underlines a professional responsibility. In this context Elbanna, Child and Dayan (2013) emphasize that: "Frantz (2000) sees intuition as a mental process but not a conscious analytical-logical, step-by-step, and reasoned way of thinking. Eisenhardt and Zbaracki (1992) state that intuition refers to the incremental adaptations based on deep and intimate knowledge of the situation faced by decision-makers". Meanwhile Dane and Pratt (2007) stress out that: "research suggests that intuition is good in some situations but not in others".

Factor 2: *The evaluation and use of analytical methods in decision-making.* This labeling may be the most appropriate considering the fact that all the assertions included in this factor address the surveyed manager's attitude to the evaluation of analytical methods in decision-making. The principal components factor analysis resulted in a single factor. All the factor weights result over 0.40. The involved assertions regarding to this component and their respective factor weights are indicated in the table 32. The Explained Variation resulted in 30.717%.

> ➤ **Multicollinearity Measurement**

The analysis continues with measuring the multicollinearity, which defines the correlation between the predicting variables. Measuring the multicollinearity constitutes a necessity in order to avoid the imprecise forecasts.

Table 33: **Measuring multicolinearity for the components of decision-making methods**

Correlations			
		Analytical	Intuitive
Analytical	Pearson Correlation	1	-.218[**]
	Sig. (2-tailed)		.005
	N	167	167
Intuitive	Pearson Correlation	-.218[**]	1
	Sig. (2-tailed)	.005	
	N	167	167
**. Correlation is significant at the 0.01 level (2-tailed).			

Source: I. Canco Dossier

The correlation coefficient between the analytic and intuitive decision-making methods results highly significant statistically as p = .005. The value of this coefficient results negative, namely r = - .218 as depicted in table 33. This result evidences a quite significant fact. Thus increasing the use of analytical methods in decision-making reduces the use of intuitive methods in the same proportions. The correlation coefficient is within the scientifically acceptable limits. Nevertheless the value r = - .218 should not be a concern. Most decisions are not based entirely on analytical methods or based entirely on intuitive methods. To this regard, Bjork and Hamilton (2011) based on Hammond considerations admit that: "Hammond does not view analysis and intuition as distinct cognitive systems. He offers instead the idea of a cognitive continuum where analysis and intuition are located at each end point". The value of r = - .218 refers also to the known fact that managers generally use the intuitive methods in addition to the analytical methods within the same decision-making process. The use of analytical methods coordinated with the use of intuitive methods is present even in the case of strategic decision-making, which bears risk. Thus Delaney,

Guidling and McManus (2014) admit that: "In support of earlier studies by Mares (1991) and Butler et al. (1993), Van Cauwenbergh et al. (1996) found that evaluation of a strategic investment proposal can include the rational dimension, such as formal financial assessment, as well as intuitive judgement".

4.3.6 Performance Analysis

Performance represents a key issue of the business activity, as positive performance creates new opportunities in order to meet the business needs. It is well known the fact that decision-making focuses the performance of the business therefore the following analysis is performed under the optics of the decision-making methods impact on the business performance. To this Elbanna and Child (2007) emphasize that: "The potential influence of firm performance on decision-making rationality has attracted particular attention (e.g. Bateman and Zeithaml, 1989; Eisenhardt, 1989; Fredrickson, 1985; Miller and Friesen, 1983). Some authors find empirical support for a positive correlation between performance and the rational processes of decision-making (e.g. Jones et al., 1992; Smith et al., 1988)". Given the fact that the decision-making methods are characterized by diversity and variability it can be assumed that their impact on business performance is also different. Thus, this remains to be proved through the analysis.

Performance is a more complex issue. Its complexity refers to the components and the factors they are conditioned upon. The business performance has two main components. Specifically, it consists of the non-financial performance and the financial performance, which in turn confirm the business success.

> **Non-Financial Performance**

The non-financial performance is a vital component of the general business performance. To Behn and Riley Jr. (1999) non-financial performance is a useful predictor of the financial performance. From this perspective it is initially analyzed the impact of the decision-making methods in the non-financial business performance. On this basis, the analysis considered the relevant below hypothesis.

H_{15}: *The use of intuitive methods in decision-making is expected to negatively influence the non-financial business performance.*

The use of different methods in decision-making focuses on the general business performance, and specifically on the financial and non-financial business performance. The manner and extent of impact is important to be evidenced and measured. To consider the

impact of the intuitive methods in decision-making in the non-financial business performance we refer to the table 34.

Based on these data we can refer to the regression analysis results, which evidence the relationship between the independent variables "the intuitive methods use in decision-making" and the dependent variable: "the non-financial business performance". According to the analysis results, we can conclude that the intuitive methods used in the decision-making explain 7.4% of the dependent variable variation. The regression model statistically results highly significant ($p < 0.001$). Thus, the relationship between the independent variable and the dependent variable is expressed via the below equation:

$$y = 4.369 - 0.155 * x_1 + e$$

y – non-financial business performance

x_1 - the intuitive methods use in decision-making

e – random factor

Given that the regression coefficient is negative, consequently a negative relationship between the independent variable and the dependent variable is evidenced. It means that with the increase of the independent variable's levels, namely with the increase of "the intuitive methods use in decision –making" the non-financial performance does not appear promising. The above analysis testifies that the use of intuitive methods considering experience does not bring positive results in the non-financial business performance.

The ANOVA test addressing the following table resulted significant to the control level of 0.05. As a result the R^2 value does not represent a chance result, the independent variables are capable of explaining the dependent variable variation. A support to this regard is established by the statistical "t" test concerning the individual regression coefficients control, indicating that this model coefficient is different from zero $t = (- 3.625)$ and $p < 0.001$, which means that the variables give significant contribution to the model and consequently the raised hypothesis H_{15} above is accepted.

Table 34: Independent variable regression-intuitive methods in decision-making and the dependent variable non-financial performance

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.272[a]	.074	.068	.48125

a. Predictors: (Constant), intuitive

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.044	1	3.044	13.142	.000[b]
	Residual	38.214	165	.232		
	Total	41.257	166			

a. Dependent Variable: non-financial

b. Predictors: (Constant), intuitive

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.369	.148		29.550	.000
	intuitive	-.155	.043	-.272	-3.625	.000

a. Dependent Variable: non-financial

Source: I. Canco Dossier

H$_{16}$: *The non-financial business performance is expected to be positively influenced by the use of analytical methods in decision-making.*

If we refer to the regression results analysis presented in the Table no. 35 it is obvious that between the independent variable "the use of analytical methods in decision-making" and the dependent variable "the non-financial business performance" a connection exist. Furthermore, according to the results of the questionnaire data analysis it can be evidenced that the use of analytical methods in decision-making explains 5% of the dependent variable variation. The regression model statistically results significant. Therein, the relationship between the independent variable and the dependent variable can be expressed via the below equation:

$$y = 3{,}133 + 0.179 * x_1 + e$$

y - non-financial business performance

x_1 – the analytical methods use in decision-making

e – random factor

As observed, the regression coefficient is positive, which is an indicator to the positive correlation between the independent variable and the dependent variable. It means that an increase in the independent variable's levels, namely with the increase of "the analytical methods use in decision-making" the non-financial performance is expected to be more promising, therefore better, compared to the period when these methods were not utilized. The analysis testifies that the use of analytical methods is expected to bring positive results to the non-financial business performance. Thus, using the analytical methods in decision-making the managers have a higher level of assurance concerning the business financial performance. In order for the expectations not to be impaired by the non-financial performance quality, the managers are careful in respecting the requirements that constitute the non-financial performance.

By the ANOVA test resulted that the value of R^2 does not represent a chance result. The independent variables are capable to explain the dependent variable variation. The statistical "t" test regarding the control of the individual regression coefficients indicated that these coefficients are different from zero. In this case t = 2.933 and p < 0.001, which represents a similar outcome to the conclusion resulting from the ANOVA test and which means that the variables give a significant contribution to the model, and consequently the raised H_{16} hypothesis is accepted.

Table 35: Independent variable regression-analytical methods in decision-making and the dependent variable non-financial performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.223[a]	.050	.044	.48750

a. Predictors: (Constant), analytical

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.044	1	2.044	8.600	.004[b]
	Residual	39.214	165	.238		
	Total	41.257	166			

a. Dependent Variable: non-financial

b. Predictors: (Constant), analytical

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.133	.248		12.658	.000
	analitike	.179	.061	.223	2.933	.004

a. Dependent Variable: non-financial

Source: I. Canco Dossier

> **Financial Performance**

The nonfinancial performance analysis is followed by the financial performance analysis. To Itter and Larcker (2003): "The original purpose of non-financial performance measures was to fill out the picture provided by traditional financial accounting".

The business financial performance is certainly a multifaceted concern because: "Businesses that do not scrupulously uncover the fundamental drivers of their units' performance face several potential problems" (Itter and Larcker, 2003). The interest on the financial performance goes beyond the mere business development perspective. It does bring to the center of interest the business leaders, the employed workers and the very government structures at central and local levels. The executives are concerned about the business financial performance as they have invested considerable assets and reasonably expect positive outcomes. Furthermore a positive performance depicts greater chances to be established longer in the market. The individuals employed in the business are closely related to the business performance, as in this way they are included in the labor market. Reasonably the positive financial performance grants the employees a sense of security about their future. Meanwhile, the government structures are sensitive to the business financial performance as a factor related to the economic growth and the continuous improvement of the citizen's welfare.

Performance is characterized by several indicators which make it assessable, measurable and altogether expressive. To this aim, the financial performance analysis is specified according to the various indicators characterizing it.

> ❖ **Quick Ratio (Liquidity Ratio)**

The financial situation considering the "Liquidity Ratio" indicator, generally for the three analyzed countries is presented having considerable fluctuations. In particular, by analyzing the situation on country to country basis, the financial performance of the considered countries is depicted as follows:

- In Albania, the largest share of the business food industry displays a poor financial

performance. Thus 57 businesses or 74.03% of the total businesses in Tirana, capital of Albania, have a liquidity ratio of less than 1, considering inhere extremely low levels of this indicator which shows an imbalanced financial condition. The situation compels the business not to fully comply with paying the current obligations. To 7.79% of the businesses the liquidity ratio is smaller than 1.27, which represents a financial state that needs to be kept under control. The same number of businesses, 6 businesses or 7.79% has achievements in the liquidity ratio in the interval of 1.5-1.7, which indicates a satisfactory economic situation. Only 10.39% of the businesses have managed to achieve a greater than 2 liquidity ratio, which indicates an optimal financial situation.

- In Macedonia, judging on the achieved liquidity ratio report of the businesses results that about 26 businesses or 70.27% of the total businesses have a poor financial performance, of which 32.43% have an unbalanced financial condition, thus having a liquidity ratio of less than 1 and 37.84% of them need to be kept under control after their liquidity ratio amounted up to 1.27. A small number of businesses, only 2 businesses or about 5,41 % of the total businesses are depicted having a satisfactory performance and 24.32% of them are presented having an optimal financial performance, because their liquidity ratio is higher than 2.

- In Montenegro, the majority of the businesses representing 51 businesses or more than 95% of them are characterized by a weak financial performance. 37 businesses or about 69.8% of them have their liquidity ratio smaller than 1 and the remaining part or 26.4% of the businesses have achieved a liquidity ratio of less than 1.27%. Meanwhile the businesses whose performance may be deemed satisfactory and optimal represent respectively 1.9 % of the total business.

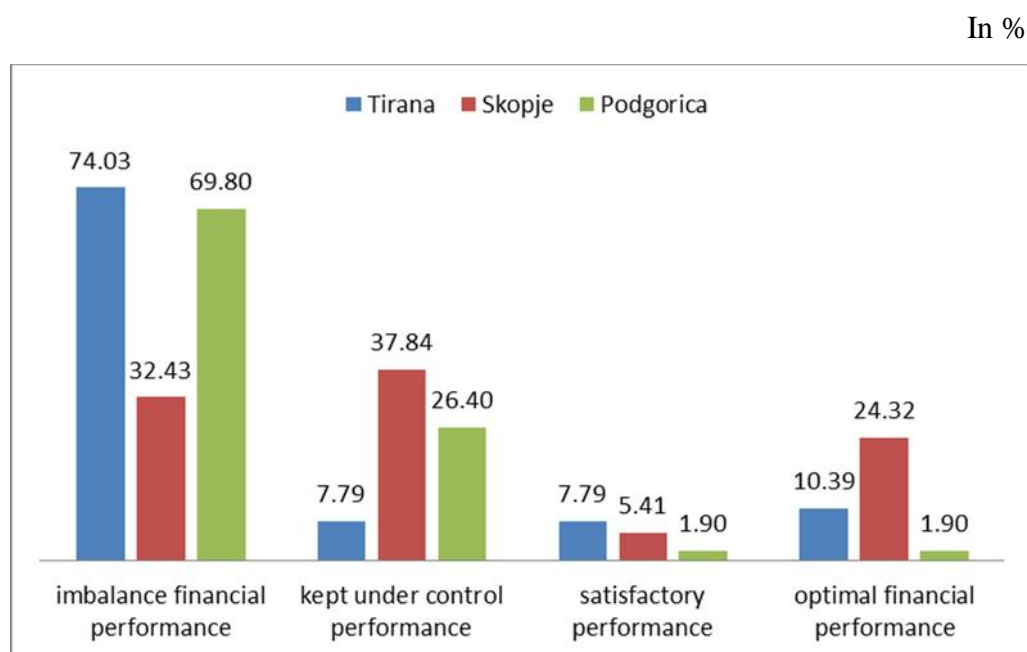Graphically the situation is presented as follows in figure 13:

In %

Figure 13: Quick Ratio (Liquidity Ratio) on the regional countries, (Source: I. Canco Dossier)

❖ **Return on Assets Rate (ROA)**

The business performance is conditioned upon the manner how the assets are used, which is evidenced by the "Capital Intensity" indicator – ROA. Papadakis, Lioukas and Chambers (1998) based on the opinions of other researchers define that: "return on assets (ROA) is viewed as an operational measure of the efficiency of a firm with regard to the profitable use of its total asset base (Bourgeois, 1980)". By using ROA as a comparative indicator we may analyze the financial situation of the businesses being object of study in the capitals of the three regional countries. The actual structural reports on country basis are presented as following:

- In Albania, 6 businesses or 7.79% of the total businesses have a negative return on assets rate. A considerable part of these businesses 40 of them or 51.94% have achieved a return on assets rate of over 5%. While the remaining part of 31 businesses or 40.27% have a return on assets rate smaller than 5%, which testifies that a large number of businesses have a low wealth intensity.

- In Macedonia, in the structural reports terms a more positive situation is noticeable. 25 businesses or 67.6% of the businesses have a return on assets rate higher than 5%, thus they have a high wealth intensity. Meanwhile 9 businesses or 24.3% of the total businesses have a poor achievement as their ROA results to be less than 5%. Only 3

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businesses or 8.1% of them result in a negative return on assets rate.

- In Montenegro is evidenced a situation that can be considered relatively optimistic. We say relatively because 17% of the businesses have a negative return on asset rate, while 77.4% of the total businesses have good accomplishments to this indicator since their return on asset rate results to be over 5%. The remaining part of the businesses, amounting to 5.6% result having a return on asset rate of lower than 5%.

Generally speaking, the business accomplishments referring to this indicator evidence a not very positive financial situation. Analyzing in structural terms as abovementioned, the graphical presentation according to countries is displayed as follows (figure 14):

In %
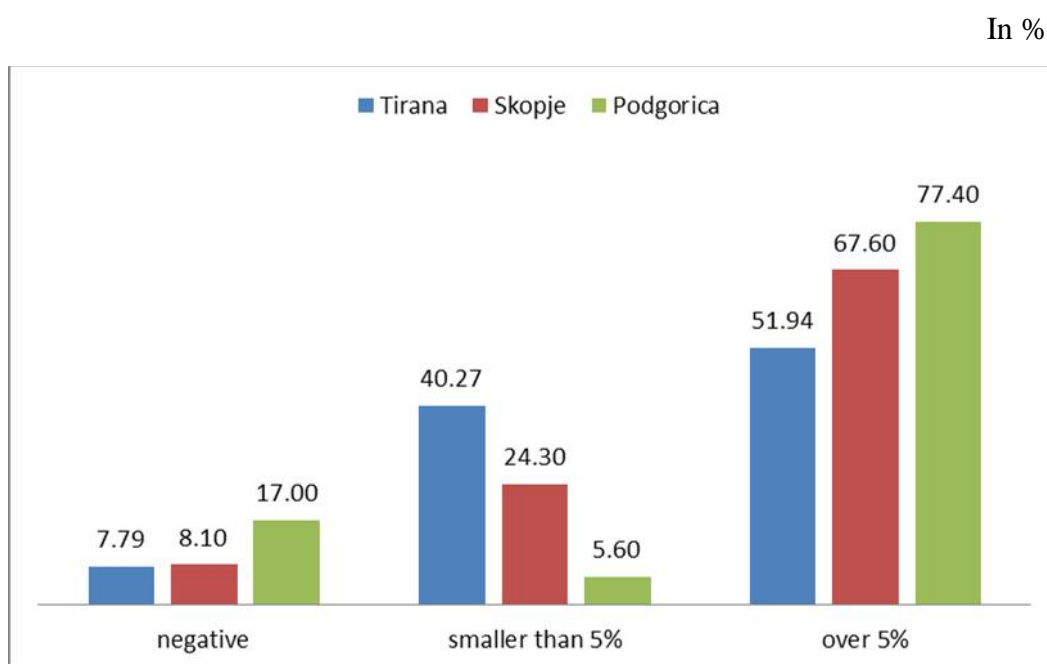
Figure 14: ROA on the regional countries, (Source: I. Canco Dossier)

ROA is a characterizing indicator of the business financial performance, since it accentuates the wealth intensity. If ROA expressing the return on assets rate is lower than 5%, which evidences a high wealth intensity, means that under other unchanged conditions a higher wealth intensity degree requires injecting larger amounts of money to business reinvestment in order to ensure future profits. The situation attracts the manager's interest in focusing on the factors that positively or negatively influence upon ROA. One of the influencing factors is decision-making based on the style the decision-maker chooses so as to cooperate with the subordinates in order to obtain useful preliminary information.

❖ **Total liabilities to assets ratio**

Business management success is also reflected in the "total liabilities to assets ratio" indicator, which defines the ratio in which the business assets are financed by debt. By analyzing this indicator on the three states, the results are presented as following:

- In Albania, only around 10.4% of the businesses are presented as having a favorable financial structure conducive to a normal business development, as the 'total liabilities to assets ratio' indicator of these businesses is smaller than 0.33. For a significant number of businesses around 25.9% of them, the report ranges from 0.34 to 0.55, which expresses a good financial structure yet, but having a tendency to change, considering values slightly higher than 0.50 resulting in some businesses. Meanwhile for the major part of the businesses which represent 63.7%, the indicator is greater than 0.56 which testifies of an unbalanced financial structure. To their composition the businesses comprise 18.2% of the total businesses, whose "total liabilities to assets ratio" fluctuates in the ranges of 0.56-0.66 which depicts an unbalanced financial situation, still not pathological, that needs to be kept under constant control. While to the vast majority, in about 45.5% of the businesses this ratio is greater than 0.66 denoting a deteriorating financial situation, having predispositions to the deepening of financial-economic imbalances.

- In Macedonia about 35.2% of the businesses are presented having a promising financial structure towards a stable business development as the "total liabilities to assets ratio" indicator amounts to the value 0.33. Likewise, in a good situation but having tendencies to change are presented 24.3% of the businesses. They have a "total liabilities to assets ratio" ranging from 0.34 to 0.55. To 13.5% of the businesses the financial situation cannot still be considered pathological, but must be kept under control since the 'total liabilities to assets ratio' varies between 0.56-0.66. In a considerably precarious financial situation having an increased ratio of over 0.66 is found to be 27% of the businesses.

- In a difficult condition and a considerably strained financial situation appear to be around 54.7% of the businesses in Montenegro. Within this group 11.2% of the businesses are in a non-pathological financial situation, considering the fact that the 'total liabilities to assets ratio' of these business ranges in between 0.56-0.66. Meanwhile, another major part of the businesses having a deteriorating financial

situation are the businesses wherein the "total liabilities to assets ratio" is over 0.66 and 43.5% of the businesses are included in this group. In a relatively good financial situation, but having tendencies to change are found 34% of the businesses in Podgorica, wherein the "total liabilities to assets ratio" varies within limits to be considered as: 0.34 to 0.55. While 11.3% of the businesses remain at a favorable financial situation.

In comparative terms the regional businesses considering the "total liabilities to assets ratio" financial indicator are presented in the below figure 15:

In %
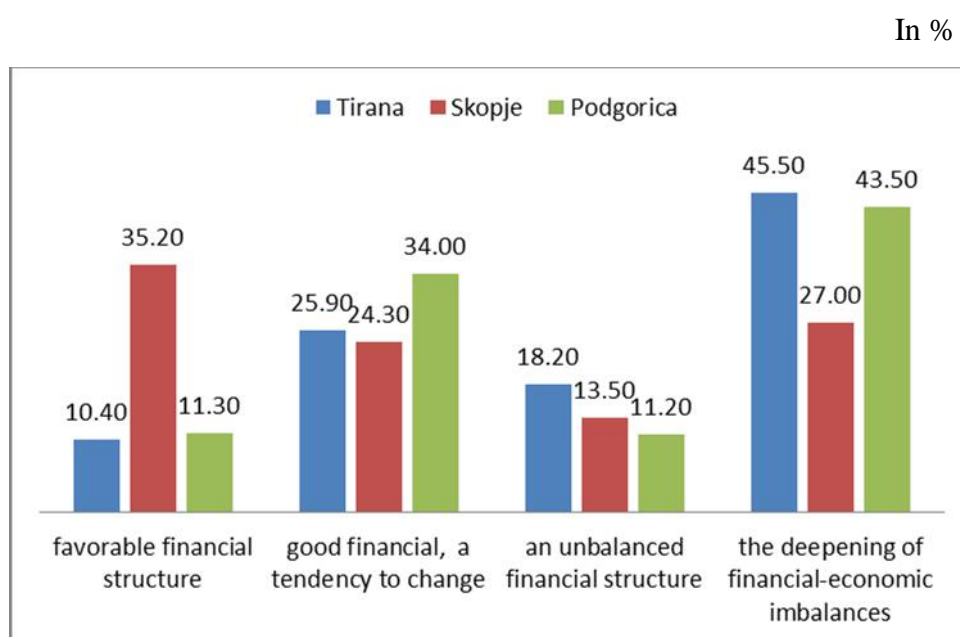
Figure 15: Total liabilities to assets ratio on the regional countries, (Source: I. Canco Dossier)

❖ **Return ratio – Inventory turnover**

The business economic development cannot be achieved dis-considering the speed of inventory turnover, which is measured by the "inventory turnover" indicator. This indicator evidences the managerial commitment through decision-making in order to ward off as much as possible the inventory stock. The rapid inventory turnover, generally considered in business and in the analyzed food industry, takes a considerable importance since these businesses are particularly exposed to the inventory expiry risk. Various businesses within the same country and in various countries likewise perform inventory turnovers at different ratios. Considering the return ratio (inventory turnover) analyzed at the average industry level of the analyzed businesses for the same reference period the results as presented as below:

- Albania on average has a return ratio of 7.53 times. Around 26% of the businesses

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have performed lower in the return ratio compared to the industry average and 5.2% have a poor financial performance with a return ratio of less than 1 times, what evidences a risk for unsold inventory. Meanwhile, 68% of the Albanian businesses perform in a return ratio that stands over the average industry report.

- In Macedonia the financial business performance considering this indicator appears even weaker. This due to the fact that 45.9% of the businesses appear to have a non-promising performance as their return ratio is lower than the industry average. In this group are also included 5.4% of the businesses having a low return ratio, less than 1 times. Whereas, 54.1 % stand above the average level of this report.

- The businesses in Montenegro likewise those in Macedonia are characterized by a poor financial performance, although no business results to be under the return ratio of less than 1 time. Thus, 45.3% of the businesses have their return ratio lower than the average, amounting to 3.9 times and 54.7% of the businesses demonstrate a good performance because their return ratio is over compared to the average ratio.

As discussed above we can conclude that businesses keep more inventories in stock. The excess inventory is certainly unproductive; it represents an investment having a zero-return rate. In this relatively low turnover it is evidenced the fact that businesses are holding up stocks that jeopardize their operations.

❖ **Net profit**

Businesses are highly concerned about the financial performance referring to the "Net Profit" indicator. The "Net Profit" provides information about the financial condition of the business and represents a major objective for the future of the business. To this Papadakis, Lioukas and Chambers (1998) state: "growth in profits indicate the trend in profitability improvement". Therefore it is of interest to get insight if any connection exists between the "Net Profit" indicator and the methods used in decision-making.

The financial situation of businesses in the region characterized by the "Net Profit" indicator is not at all satisfactory, what evidences a fragile towards a poor economic condition. We believe that this pessimistic financial situation to a considerable degree is due to the intuitive method used in decision-making. Elbana, Child and Dayan (2013) based in the approaches of other researchers are of the opinion that: "However, this does not mean that intuition and rationality are necessarily the two opposite extremes of a single dimension, for Hodgkinson and Sadler-Smith (2003), and Leybourne and Sadler-Smith (2006) found a non-significant correlation between intuition and rationality".

Based on the financial performance analysis of the businesses in the regional countries it is evident the fact that as per specific and general indicators the financial situation is not at all optimistic. This relates to a number of factors such as the manager's perception as well as to a number of economic, organizational and policymaking problems. Among the key factors that have contributed to this situation we can list:

- The small businesses, as it was pointed out above, generally belong to the family-type and in the majority of cases have a Clan organization culture. Given that the staff consists of family members a general negligence is noticed in keeping accurate records which will reflect the economic and financial situation of the business. The financial document constituting a legal obligation towards the tax administration for this businesses category is: "The Statement of Incomes and Expenses". In this context, the lack of accounting data results in the fact that the managers of these businesses do not depict a clear and consolidated overview on the financial performance of the business and on the impact of decision-making methods they have used during a given period.

- The medium business executives aiming at minimizing administrative costs generally do not have a well-organized management structure, having separate operational units that are professionally competent to perform specialized functional tasks. This hampers the decision-making manager's duties in establishing a professional cooperation regarding the provision of financial data indispensable for a contemporary decision-making approach. Meanwhile the large businesses have a completed organizational structure (organigram).

- Notwithstanding the above, the large businesses cooperate with relevant Accounting Offices in order to extract the financial results. The Accounting Offices are specialized and licensed units by the *National Accounting Council* for carrying out accounting on the economic activities and extracting the financial results. These offices are known and assessed by the tax administration. This represents a division of duties based on specialization, which has parted the business management from accounting. In this way the decision-making manager is consistently provided with insufficient information regarding the accounting (financial) situation of the business throughout the fiscal period. The only information on the financial performance of the business they can acquire is the financial results of the fiscal year.

- The above results coming from the manager's perceptions are also a consequence of the high degree of informality in Albania, as well as in the countries of the region. This in turn has lead to fiscal evasion being considerable widespread which prevents a real evaluation of the present financial situation reported near the tax administration.

- In the period of when the study was carried out, the VAT in Albania was 20%. The actual level of VAT creates the due conditions for informality not only because of the highest level of VAT, but also due to the fact that regarding the basic products VAT amount is not escalated. While in Macedonia and Montenegro operate with escalated VAT under which the services and food industry are charged with VAT amounting 5%-7%; Macedonia and Montenegro also operate with the VAT escalated ranging up to 7%.

- In Albania the small businesses having an annual turnover up to 2,000,000 ALL, own to the state an amount of 25,000/year as an income tax. This value is not co-measured considering the actual income coming from the business, thus the small businesses do not pay VAT. Meanwhile they charge the products or services with a VAT up to 20%. This situation constitutes a legislated (open) informality as the customer pays the VAT while the state doesn't collect it. During the study was observed that the way the control over the business is organized from the tax administration does not create the due conditions for a comprehensive professional examination. The current control resembles more to a routine activity of the tax administration rather than to a control from an institutional perspective.

- This situation, regarding the spread of the phenomenon should be changed as after the reduction of the level of the informality economy affects positively the reduction of the public debt, which is also high in the regional countries. Thus, in recent years the public debt in Albania reached up to 72.5% of GDP; in Montenegro in Macedonia 59.5% and 31.4%. The present informality level has led to a weakening of the correlation among the business financial performance on the business decision-making methods used.

- Although the division of labor is an important requirement, it constitutes a deprivation to the decision-making manager. This hampers the accurate perception of the questionnaire assumptions by the managers. Using this mode of operation for generating the financial data the role of accounting experts increases. Nevertheless the manager's role in selecting the method of decision-making in compliance with

the problem that focuses the decision is decisive. The dilemma addressed in this case is related to the possibility given to the manager to determine the impact of the method used in decision-making and to reason about this impact on the financial performance of the business. As such, this practice does not motivate the manager to logically analyze the facts the reality of doing business. This is one more argument to be convinced that *the path may be statistical, mathematical, etc., but the logic should always remain economic*. The logic represents a significant ingredient to decision-making having a positive and direct influence on the business financial performance. Focusing on the importance of logic Watts (1802) defines that: "Logic is the art of using Reason well in your inquiries after truth, and communication of it to others". Logic is an attribute of the human mind that develops through the years. According to Smullyan (2014): "Aristotelian logic flourished through the ages". All the above reasoning creates the conviction that the use of logic in decision-making has a positive impact, this due to the argumentative force of the manager, which constitutes a necessity.

- The financial performance situation presented in the study is also a reflection of the global financial crisis impact. The 2008 financial crisis spread throughout the world impacted not only the developed economies, but the less developed economies and those in transition as well. Therefore the Western Balkan countries, Albania and the regional countries being relatively limited economies and open mainly to European Union countries were affected by the consequences of the crisis. Indicators such as production downfall, decline in exports, imports, financial resources, and increases in the unemployment level evidenced that the Western Balkan countries were confronted to the consequences of the global crisis. Thus in Albania, in 2012 GDP totaled in 0.97 in the year 2013 it amounted to 1.86%. The unemployment rate to the respective periods was 13.6% and 16.8% having an increasing trend in the following years. The trade balance expressed in terms of coverage rate in 2012 totaled in 40.3% and in the year 2013 amounted to 47.6%. Almost the same situation prevailed in the regional countries. The effects of the financial crisis shocked the businesses in Albania and in the regional countries, reflecting the consequences of the global crisis such as illiquidity, firm's bankruptcies, stock decline, the decrease in foreign remittances from the emigrants, etc. The liquidity ratio decline represents one of the indicators that inevitably affect other indicators such as the return on assets, profits,

etc. Deterioration of any and similarly all the indicators characterizing the businesses financial performance severely affect the business decision-making. This macroeconomic scenario bearing microeconomic impact caused by the financial crisis has debilitated the perception ability of the managers related to the impact of the decision-making methods in the businesses financial performance.

Notwithstanding the above, the situation requires in-depth studies to this regard. Thus, some analytical decision-making models are going to be presented for the same business.

4.4. Application of some analytical methods of decision-making

The decision-making problems are generally of a non-exhaustive character. Therefore, there remain problems to be emphasized and paid the due attention. Addressing the problems of this character requires preoccupation and persistence on the part of researchers.

As the experts have recorded, the prevalent methods in decision-making businesses in Albania and the regional countries are the intuitive methods. We are convinced to reason and believe that the business managers besides making use of the intuitive methods should orientate their decision-making activity towards the use of analytical methods. Thereby the decision-making process would have a more argumentative character and the impacts on business performance would result positive. In this context, the use of some analytical methods in decision-making in a randomly chosen business was considered to be applied. The use of some of the analytical methods in decision-making in unchanged business conditions on the one hand evidences the role of each of the used methods in business performance and on the other hand these applications are presented as a guide recommended to the managers for a successful business performance in the future. This perspective is supported by the analysis conducted in one of the big businesses in Tirana, Albania "Stefani & Co" Company.

The company "Stefani & Co" has a business activity of over 20 years in the beer market. The decision-making manager interviewed alleges that the relatively long experience accumulated has served as a considerable support to a successful decision-making process. Therefore this being the reason that the manager does not impart the due caution to the modernization of decision-making through improving the methods to be used in decision-making. There are numerous analytical methods that can be used in decision-making. In the study, based on the data collected from company serving as the object of study, the below applications are implemented:

- Autoregressive – Moving - Average (ARMA) Model

- Data Envelopment Analysis (DEA)

- Decision-making tree

- Analytic Hierarchy Process (AHP)

In this context, we gathered the historical data (in time series) for a period of 13 years, concerning production, the number of workers, the investments, etc., as presented in the table 36:

Table 36: Historical data of "Stefani & Co" Company

Year	Production	No. of Workers	Assets	Promotion	Investment
2003	97864	112	831244	10510	9957
2004	110231	110	832187	10210	10234
2005	109734	110	829650	9620	9523
2006	121439.4	106	825980	11689	8980
2007	81788.4	110	826840	9963	10150
2008	107062.6	112	827360	10780	9870
2009	107289.1	112	835600	11052	11560
2010	103428	101	863500	9420	10789
2011	107070	101	860000	9820	10876
2012	102880	101	859200	9350	10889
2013	112625	90	865000	9760	11078
2014	136812	85	852000	10025	0
2015	138127	85	865000	9460	0
2016	100000	80	874000	6967	0

Source: "Stefani & Co" Company

The above depicted data represent a somewhat contradictory reality. This since a considerable amount of production is obtained by a small number of employees, utilizing no additional capital investments compared to the previous years and having low promotion expenses. This situation is depicted comparing the data pertaining to the years 2014, 2015 to the data of the years 2007, 2006, 2003, etc., the conclusions serve as an incentive to delve further in the issue to obtain a more consolidated opinion to this regard. Issues of this nature inevitably require intellectual commitment. The results of the scientific research vary depending on the method used to analyze the data, a fact which will be following evidenced. Thus, the historical data collected from business (in time series) were processed using different analytical methods, namely:

1. Autoregressive – Moving - Average (ARMA) Model

2. Data Envelopment Analysis (DEA) - as a nonparametric method used in operations research and economics for the estimation of production frontiers.

- **ARMA model**: Historical data was analyzed by the ARMA Model. From the data processing based on ARMA model results that:

Table 37: ARMA model results

Dependent Variable: Q
Method: Least Squares
Date: 10/13/16   Time: 12:34
Sample: 2003 2015
Included observations: 13
Convergence achieved after 20 iterations
Backcast: 2001 2002

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-375007.0	101755.4	-3.685377	0.0062
INVESTIME	-3.124821	0.514591	-6.072436	0.0003
ASETE	0.469402	0.091905	5.107453	0.0009
PROMOCION	11.46029	3.124476	3.667909	0.0063
MA(2)	-0.979278	0.000352	-2785.738	0.0000
R-squared	0.927442	Mean dependent var		110488.5
Adjusted R-squared	0.891163	S.D. dependent var		15017.79
S.E. of regression	4954.432	Akaike info criterion		20.13768
Sum squared resid	1.96E+08	Schwarz criterion		20.35496
Log likelihood	-125.8949	F-statistic		25.56421
Durbin-Watson stat	2.183667	Prob(F-statistic)		0.000131
Inverted MA Roots	.99	-.99		

ARMA Model:
Q = -375006.9961 - 3.124821382*IN + 11.46029449*PR + 0.469402073*A + [MA(2)= -0.979278401,BACKCAST=2003]

Table 38: Prognosis according to the ARMA model

Pronosis	Fact	Difference	Dif%
101455.277	97864	-3591	-3.5
98318.2891	110231	11913	12.1
98439.6532	109734	11294	11.5
106942.354	121439.4	14497	13.6
84515.081	81788.4	-2727	-3.2
91860.8467	107062.6	15202	16.5
110431.796	107289.11	-3143	-2.8
89677.2215	103428	13751	15.3
110310.885	107070	-3241	-2.9
87964.9981	102880	14915	17.0
111435.229	112625	1190	1.1
125207.083	136812	11605	9.3
138275.066	138127	-148	-0.1
103729.843	100000	**-3730**	-3.6

On the above, the results deriving from processing the data via this model testify that the increase in inputs such as investments and in the number of employees negatively affect the production size.

The results deriving from this model reflect a reality that can be hardly accepted by formal logic, wherein as a rule an increase of inputs should amount to a positive impact on production. Therefore, the results deriving from the ARMA model do not pertain to the common sense that can be supported and justified by the economic logic. The outcome makes us even more convincingly believe in the interpretative philosophy, which is far more appropriate in these cases because the approach may be mathematical, but the logic is and must remain economical. From this perspective, the models used are supportive instruments functional to the context of the economic logic.

Consequently, the results deriving from the processing of data through the ARMA model constitute a factor prompting our interest to the further interpretation of the realities provided by the historical data (the time series) of Stefani & Co Company. In this context, a comparative study was undertaken using another method, specifically the DEA model analysis.

- **DEA model:** The choice of this model to analyze the data is not accidental but referrs to the literature review. The data processing by the DEA model is presented in the following tables:

Table 39: DEA model results

Years	Units	Output	Input1	Input2	Input3	Input4	Weight	Weight
Y.	U.	Production	No. Employees	Capital	Expenses/ advertisement	Investments	Value	%
2003	1	97864	112	831244	10510	9957	**0.000**	**0%**
2004	2	110231	110	832187	10210	10234	**0.000**	**0%**
2005	3	109734	110	829650	9620	9523	**0.000**	**0%**
2006	4	121439.4	106	825980	11689	8980	**0.000**	**0%**
2007	5	81788.4	110	826840	9963	10150	**0.000**	**0%**
2008	6	107062.6	112	827360	10780	9870	**0.000**	**0%**
2009	7	107289.1	112	835600	11052	11560	**0.000**	**0%**
2010	8	103428	101	863500	9420	10789	**0.000**	**0%**
2011	9	107070	101	860000	9820	10876	**0.000**	**0%**
2012	10	102880	101	859200	9350	10889	**0.000**	**0%**
2013	11	112625	90	865000	9760	11078	**0.000**	**0%**
2014	**12**	**136812**	**85**	**852000**	**10025**	**0**	**0.715**	**72%**
2015	13	138127	85	865000	9460	0	**0.000**	**0%**
2016	14	100000	80	874000	6967	0	**0.000**	**0%**

The composition values	97864.00	60.80	609450.40	7171.06	0.00
Extra Inputs Used	0.00	51.20	221793.60	3338.94	9957.00

Years	Units	Output	Input1	Input2	Input3	Input4	Weight	Weight
Y.	U.	Production	No. Employees	Capital	Expenses/ Advertisement	Investments	Value	%
2003	1	97864	112	831244	10510	9957	0.000	0%
2004	2	110231	110	832187	10210	10234	0.000	0%
2005	3	109734	110	829650	9620	9523	0.000	0%
2006	4	121439.4	106	825980	11689	8980	0.000	0%
2007	5	81788.4	110	826840	9963	10150	0.000	0%
2008	6	107062.6	112	827360	10780	9870	0.000	0%
2009	7	107289.1	112	835600	11052	11560	0.000	0%
2010	8	103428	101	863500	9420	10789	0.000	0%
2011	9	107070	101	860000	9820	10876	0.000	0%
2012	10	102880	101	859200	9350	10889	0.000	0%
2013	11	112625	90	865000	9760	11078	0.000	0%
2014	12	136812	85	852000	10025	0	0.598	60%
2015	13	138127	85	865000	9460	0	0.000	0%
2016	14	100000	80	874000	6967	0	0.000	0%

81788.40	50.81	509339.22	5993.11	0.00
0.00	59.19	317500.78	3969.89	10150.00

Table no. 39 illustrates that the most problematic years in the data time series are the years 2003 and 2007, as they are the years wherein the weight ratio of output / input is lower compared to the other years of the series. Specifically, the ratio is 0.73% for the year 2003 and 0.62% for the year 2007. The situation is explicable if we compare the actual achievements that the time series depict for these years to the conclusions presented in table 39 regarding the year 2003 and in the table 39 for the year 2007, which present the respective "values of composition".

The data presented in these tables evidence that the analyzed business has utilized more inputs than necessary compared to the quantity of the outputs the business has actually produced. Thus, in the year 2003 the quantity of production could be achieved by the work of nearly 61 employees compared to 112 employees that were effective that year. The business has used 831.244.000 ALL capital to support production or 221.793.000 ALL more.

The same approach is followed regarding the expenses on promotion and investment (a notable increase in promotion and investment expenditures) etc.. The same situation applies to the year 2007. All these extra expenses incurred by the decision-making manager aiming at increasing production didn't result in an optimistic business performance.

- **The decision-making tree:** The political system changes in the 1990s caused the country's economy to face a thorough collapse. Many enterprises were forced to close due to the lack of financial means. The agricultural cooperatives broke down and the land was distributed to families in small plots. This scenario led to an increase in unemployment. Thereof, by the end of the year 1992 unemployment rose to 25% and by the end of the year 1993 the unemployment figures went up to over 30%. Under these circumstances the Albanian families were confronted to a great and onerous test. In this period, there was an uncontrolled migration of the population towards the big cities. Consequently, the population of the capital, Tirana tripled.

  Confronted to this situation, "Stefani & Co" company aimed to increase its market share, which is by no means not an easy process. Therefore, making the decision to increase the market share also posed a lot of hardships to the staff. According to the manager of the production department, reaching this decision was achieved after discussions on the managerial level. The lack of sufficient economic arguments augmented the degree of difficulty. According to the managers, the expectations of the market share growth were not satisfactory and did not duly justify the incurred expenses.

  The quandaries of the created situation would be significantly reduced if the staff would make use of the analytical methods in decision-making. One of such methods to be recommended to the company is the "Decision-making Tree" method. Based on the data provided by the business, decision-making is presented graphically and the empirical reasoning proceeds as follows (figure 16):
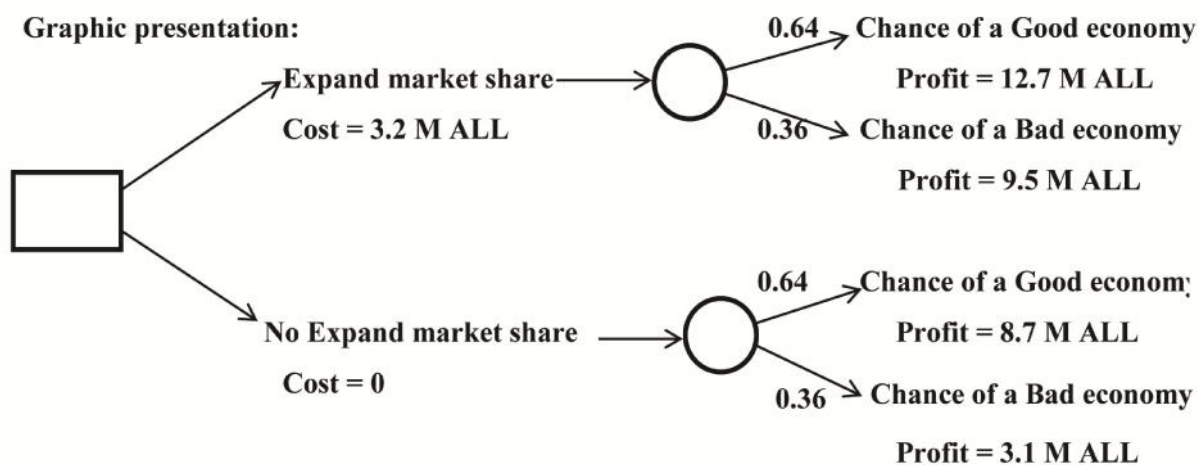
Figure 16: Decision tree (Source: I. Canco Dossier)

Economic Argumentation:

$NPV_{expand} = (0.64*12.7 + 0.36*9.5) - 3.2 = 8.348$

$NPV_{no\ expand} = (0.64*8.7 + 0.36*3.1) = 6.684$

8.348   6.684

As can be observed, the decision to increase the market share yields positive results. However, the revenues claimed to be obtained by the decision to increase the market share compared to the data on the decision not to increase the market share are not satisfactory. Concerning the above reasoning, if the business executives would have used this decision-making method, they would have been clarified in advance on the decision outcome. Further on we believe that this decision-making would have been more well-argued and achieved if it was accompanied by other analytical methods. To this regard we would have suggested the use of AHP method.

- **Analytic Hierarchy Process:** In the context of the above described situation, "Stefani & Co" company should have raise the claim that within the framework of market share growth, the company should have accompanied this policy by introducing a new beer product to the market, possessing a comparatively improved

quality to the existing product. Taking into consideration this pretense, it prompted our interest in using another analytical method, more specifically the AHP method. To this regard we asked "Stefani & Co" company to provide us with further indispensable information for decision-making based on this method.

Marketing Department has prepared three beer alternatives, labeling as follows to this preliminary stage: "Stela 1" (A_1), "Stela 2" (A_2) and "Stela 3" (A_3). The differences among them were mainly focused on three features (criteria):

➢ C_1 – Production Cost

➢ C_2 – Taste

➢ C_3 – Consistency

The choice among the three beers alternatives, if actualized by staff, based solely on their personal experience would be accompanied not only with difficulties, but would bring into question its results on the market. We claim in a more successful solution using the AHP analytical method.

Decision-making according to the AHP method, developed by Saaty (1970), can be graphically presented as follows:
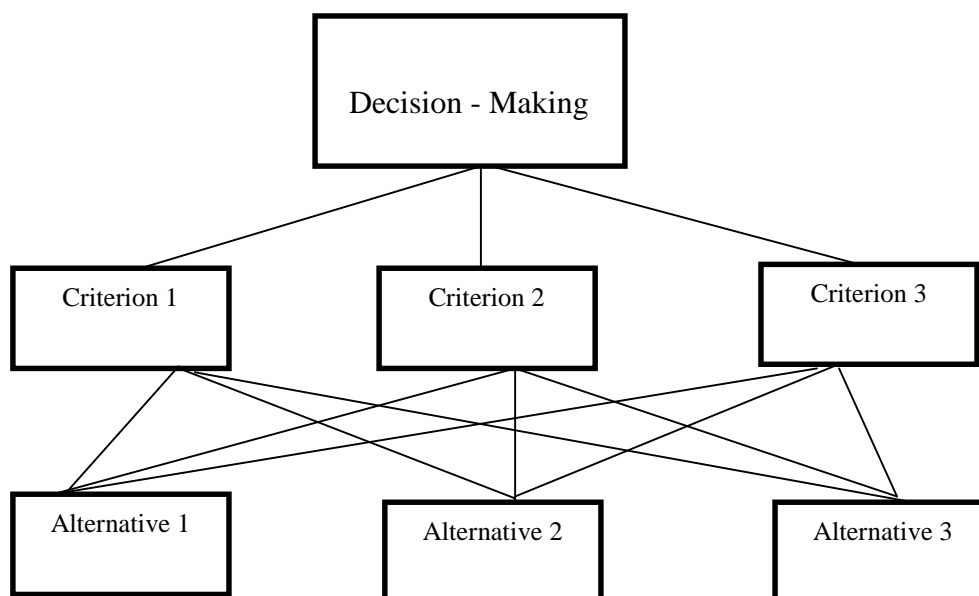

Figure 17: Connections between criteria and alternatives (Source: I. Canco Dossier)

Decision-making considers a comparative surveying from the part of decision-maker on the alternatives and the respective criteria. Generally these comparative criteria pertain to different types. Herein are included the criteria expressed via the qualitative opinion of in-the-field-specialists and also the quantitative nature criteria, expressed in various

measurement units depending on the specifics of each criterion. Therefore, their entirety should be expressed in a single co-measurable unit. Conversion to a single unit is a vital issue of the multi-criteria analysis. It requires the use of quantitative equivalents of the comparative criteria among them. Accordingly the estimates are made in respect to the Saaty estimates rate, which represent an approach of numerically escalating the relative importance of the compared elements. The relative importance scale suggested by Saaty (2005) predicts values ranging from 1 to 9 depicted as follows:

Table 40: Saaty Scale of Relative Importance

Scale	Numerical Rating	Reciprocal
Extremely Preferred	9	1/9
Very strong to extremely	8	1/8
Very strongly preferred	7	1/7
Strongly to very strongly	6	1/6
Strongly prefrred	5	1/5
Moderately to strongly	4	¼
Moderately preferred	3	1/3
Equally to moderately	2	½
Equally preferred	1	1

Source: Saaty, 2005

Local weights related to criterion 1

In support to the expert's assessments the comparisons matrix is designed for the criterion C_1:

$$A_1 = \begin{bmatrix} 1 & 3 & 7 \\ \frac{1}{3} & 1 & 5 \\ \frac{1}{7} & \frac{1}{5} & 1 \end{bmatrix}$$

$\widetilde{\omega 1} = \sqrt[3]{1 * 3 * 7} = 2.7582$

$\widetilde{\omega 2} = \sqrt[3]{\frac{1}{3} * 1 * 5} = 1.1853$ $\qquad\qquad S = 2.7582 + 1.1853 + 0.3067 = 4.2502$

$\widetilde{\omega 3} = \sqrt[3]{\frac{1}{7} * \frac{1}{5} * 1} = 0.3067$

$_1 = \frac{2.7582}{4.2502} = 0.64895,$ $\qquad _2 = \frac{1.1853}{4.2502} = 0.27888,$ $\qquad _3 = \frac{0.3067}{4.2502} = 0.07216$

Sum of Columns

$S_1 = 1 + \frac{1}{3} + \frac{1}{7} = \frac{31}{21},$ $\quad S_2 = 3 + 1 + \frac{1}{5} = \frac{21}{5},$ $\quad S_3 = 7 + 5 + 1 = 13$

$$\lambda_{\max} = \frac{31}{21} * 0.64895 + \frac{21}{5} * 0.27888 + 13 * 0.07216 = 3.0673$$

Consistency index for matrix A_1 is:

$$CI = \frac{\lambda\max - n}{n - 1} = 0.0336$$

While the consistency coefficient will be determined according to the below formula:

$$RC = \frac{CI}{RI(n)}$$

The respective values of the *random consistency index* (RI) are defined by Saaty (2005) based on the number of evaluated criteria according to the following table (table 41):

Table 41: Random Consistency Indices

N	1	2	3	4	5	6	7	8	9	10
RI	0	0	0.58	0.9	1.12	1.24	1.32	1.41	1.45	1.49

Source: Saaty, 2005

Regarding the above rationale for the matrix A_1 the consistency coefficient "RC" as a quantitative expression of the tolerance determined by Saaty results in:

$$RC (A_1) = \frac{0.0336}{0.58} = 0.05 \text{ ose } 5 \%$$

$$RC (A_1) \quad 10 \%$$

This shows that the matrix A_1 has a good consistency coefficient. To this regard $_1$, $_2$ and $_3$ represent the weights of the alternatives A_1, A_2 and A_3 referring to the criterion C_1.

Local weights related to criterion 2

Matrix of mutual importance comparisons for the criterion C_2:

$$A_2 = \begin{bmatrix} 1 & 2 & 5 \\ \frac{1}{2} & 1 & 4 \\ \frac{1}{5} & \frac{1}{4} & 1 \end{bmatrix}$$

$$\overline{\omega 1} = \sqrt[3]{1 * 2 * 5} = 2.155$$

$$\overline{\omega 2} = \sqrt[3]{\frac{1}{2} * 1 * 4} = 1.254 \qquad S = 2.155 + 1.254 + 0.365 = 3.774$$

$$\overline{\omega 3} = \sqrt[3]{\frac{1}{5} * \frac{1}{4} * 1} = 0.365$$

$$_1 = \frac{2.155}{3.774} = 0.5710, \qquad _2 = \frac{1.254}{3.774} = 0.3323, \qquad _3 = \frac{0.365}{3.774} = 0.0967$$

Sum of Columns

$$S_1 = 1 + \frac{1}{2} + \frac{1}{5} = 1.7, \quad S_2 = 2 + 1 + \frac{1}{4} = \frac{21}{5}, \quad S_3 = 5 + 4 + 1 = 10$$

$$\lambda_{\max} = 1.7 * 0.5710 + 3.25 * 0.3323 + 10 * 0.0967 = 3.0177$$

$$CI = \frac{3.0177 - 3}{2} = 0.0088$$

$$RC\ (A_2) = \frac{0.0088}{0.58} = 0.015 \text{ or } 1.5\%$$

$$RC\ (A_2) \quad 10\ \%$$

This disparity demonstrates good consistency for the matrix A_2. To this regard ω_1, ω_2 and ω_3 represent the weights of alternatives A_1, A_2 and A_3 according to the criterion C_2.

Local weights related to criterion 3

Matrix of alternative comparisons for the criterion C_3:

$$A_3 = \begin{bmatrix} 1 & 4 & 7 \\ \frac{1}{4} & 1 & 5 \\ \frac{1}{7} & \frac{1}{5} & 1 \end{bmatrix}$$

$$\widetilde{\omega 1} = \sqrt[3]{1 * 4 * 7} = 3.036$$

$$\widetilde{\omega 2} = \sqrt[3]{\frac{1}{4} * 1 * 5} = 1.077 \qquad S = 3.036 + 1.077 + 0.305 = 4.418$$

$$\widetilde{\omega 3} = \sqrt[3]{\frac{1}{7} * \frac{1}{5} * 1} = 0.305$$

$$\omega_1 = \frac{3.036}{4.418} = 0.6817, \qquad \omega_2 = \frac{1.077}{4.418} = 0.2437, \qquad \omega_3 = \frac{0.305}{4.418} = 0.069$$

Sum of Columns

$$S_1 = 1 + \frac{1}{4} + \frac{1}{7} = \frac{39}{28}, \quad S_2 = 4 + 1 + \frac{1}{5} = \frac{26}{5}, \quad S_3 = 7 + 5 + 1 = 13$$

$$\lambda_{max} = 0.6871 * \frac{39}{28} + 0.2437 * \frac{26}{5} + 0.069 * 13 = 3.1212$$

$$CI = \frac{3.1212 - 3}{2} = 0.06$$

$$RC\ (A_2) = \frac{0.06}{0.58} = 0.103 \text{ or } 10.3\%$$

Consistency of matrix A_3 results satisfactory. Therefore the values ω_1, ω_2 and ω_3 are the weights of alternatives A_1, A_2 and A_3 according to the criterion C_3.

Assessment of weights of the criteria chosen by the decision-maker

The comparison matrix of the criteria union is presented as follows:

$$A_c = \begin{bmatrix} 1 & 3 & 6 \\ \frac{1}{3} & 1 & 4 \\ \frac{1}{6} & \frac{1}{4} & 1 \end{bmatrix}$$

$$\widetilde{\omega 1} = \sqrt[3]{1 * 3 * 6} = 2.617$$

$$\widetilde{\omega 2} = \sqrt[3]{\frac{1}{3} * 1 * 4} = 1.1 \qquad S = 2.617 + 1.1 + 0.35 = 4.067$$

$$\widetilde{\omega 3} = \sqrt[3]{\frac{1}{6} * \frac{1}{4} * 1} = 0.35$$

$$_1 = \frac{2.617}{4.067} = 0.643, \qquad _2 = \frac{1.1}{4.067} = 0.2704, \qquad _3 = \frac{0.35}{4.067} = 0.086$$

Sum of Columns

$$S_1 = 1 + \frac{1}{3} + \frac{1}{6} = \frac{9}{6}, \quad S_2 = 3 + 1 + \frac{1}{4} = \frac{17}{4}, \quad S_3 = 6 + 4 + 1 = 11$$

$$\lambda_{max} = \frac{9}{6} * 0.643 + \frac{17}{4} * 0.2704 + 11 * 0.086 = 3.0602$$

$$CI = \frac{3.0602 - 3}{2} = 0.0301$$

$$RC\ (A_c) = \frac{0.0301}{0.58} = 0.051 \text{ or } 5.1\%$$

Thereof the matrix A_c has a good consistency coefficient. Thereupon:
$_c$ = (0.643, 0.2704, 0.086) that is the vector of weights of the three criteria taken into consideration.

Assessment of the global weight of alternatives

In support to the weights of the above outlined alternatives it results that:

$$^* = \begin{bmatrix} 0.6490 & 0.5710 & 0.6817 \\ 0.2789 & 0.3323 & 0.2437 \\ 0.0722 & 0.0967 & 0.0670 \end{bmatrix} * \begin{bmatrix} 0.6430 \\ 0.2704 \\ 0.0860 \end{bmatrix} = \begin{bmatrix} 0.6297 \\ 0.2873 \\ 0.1181 \end{bmatrix}$$

The greatest global weight is $_1 = 0.6297$ corresponds to alternative "Stela 1" beer, which is one of the competitive alternatives the company is claimed to introduce in the market. Hence, the decision-making of "Stefani & Co" managers is well-argued, and thus launching the beer will ensure stability in the market and make it more competitive.

In conclusion, taking into account all the applications discussed in the study it can be concluded that if the company "Stefani & Co" had used the analytical methods in decision-making, its performance would have resulted considerably better.

The above approaches stand as firm grounds that, without denying the role of intuitive methods in decision-making, managers must orientate business activity towards the analytical methods in decision-making. It is because the power of intuition cannot delve deep in detailed analysis to accurately determine the extent and impact of various factors in decision-making process. The intuitive methods can serve even less in performing input optimizations to boost production efficiency. Therefore, the use of analytical methods in decision-making enables a decision-making process that at large gives reassurance to the manager and furthermore provides him/her a guarantee for a positive business performance.

5. **Conclusions and Recommandations**

This scientific study is an endeavor to validate some theoretical achievements on decision-making and their respective assessment in the business decision-making practice of the food industry in Albania and in the region. Exploring in this new reality, substantial theoretical and practical conclusions are naturally obtained and some valuable recommendations are also provided for businesses and policymakers simultaneously.

The first main contribution of the study is the audacity to engage in this scientific research pertaining to the reality of Albania and the regional countries, as these countries decision-making activity is a relatively new managerial endeavor starting after the years '90 and therefore it is portrayed as a yet unconsolidated activity. In this context, the decision-making activity is not duly studied depicting the reality of these countries. Moreover, the major part of the terms, concepts and variables of this scientific study are not covered in any form in the Albanian literature up-to-date. To this regard the field of decision-making needs to be enriched by undertaking studies pertaining to the Albanian reality, having empirical analysis and relevant research findings. A research of this nature consists in a potential information-hub that can be used by managers and executives in order to meet the growing needs for professionalism in the managing businesses, aiming at the successful achievement of their objectives. This is an indispensable need referring to the actual reality in the region and moreover in the spectrum of the European integration of the business and society in general.

5.1 Conclusions

The theoretical research indicates that:

Decision-making is a widespread activity, as we can conclude that it is a ubiquitous activity, extending through the levels of –macro, meso and micro (Jeurissen, 1997). The historical analysis leads us to conclude that decision-making has a long history through the centuries. Its traces are found since the 6th century BC. The evolution of the decision-making process is related to the names of prominent scientists and philosophers like Aristotle, Confucius, Alexander the Great, the Nobel Prize winner Herbert Simon, Peter Drucker, etc. (Buchanan and O'Connell, 2006). Decision-making is pervasively influenced by economic, social and developmental factors of the society in general. In this context, decision-making has experienced increased quantitative and qualitative improvements.

Decision-making as a managerial commitment undertakes risks. It coordinates challenging realities, professional competence issues, time restrictions, etc. Thereof decision-making is presented as a synthesis of the three "C" - Conflict, Consideration, Closure (Garvin and

Roberto, 2001) or Competence, Context and Commitment (Mullins 2010, referring Vroom and Yetton). Thus, decision-making must be strongly supported and guided by judgment. Being strongly based on judgment decision-making is deemed as "risk-taking judgment" (Kourdi 2003 referring to Drucker). This places the manager in the role of a thinker. So, the basis of successful decision-making is thinking, to this regard are pronounced Edward de Bono (1985), Anderson (2002), Adair (2007).

Successful decision-making emphasizes the need of developing the decision-making process, while rigorously respecting the stages or steps making up the decision-making cycle orientated by the theoretical research of Earl (1995) Krajewski and Ritzman (2005), Adair (2007) and Anderson, Sweeney, Williams, Camm & Martin (2011).

This study provides a specific evaluation of the decision-making methods referring to the theoretical approaches of a considerable number of researchers (Simon, 1959) Paul Erdos (1974), Krajewski, Ritzman and Malhotra (2013), etc. The researchers have amassed the decision-making methods into two groups: the intuitive method and the analytical method (Covina, Slevin and Heeley (2001), Nygren and White (2002), Dane, Rockmann and Pratt (2012). The decision-making methods have differentiations and barriers concerning the extent of their use. Choosing the appropriate method in accordance to the respective problem for which the decision is taken is a highly serious managerial responsibility and an opportunity for the ongoing development of the business.

To actualize the study, the quantitative and qualitative techniques are used. In this context, the study confirmed the structural equation model, which offers a great potential in analyzing the relations among the hidden variables. From this perspective, it is concluded that SEM serves as an effective tool in analyzing the relations among the constructs in the field of decision-making by providing logical and acceptable results.

The analysis of the obtained data supports the theoretical approaches of the study. In this context, the empirical results prove that:

The research finds that the experts admit that the analytical methods positively impact the business performance, but currently the dominant decision-making method in the businesses having their activity in Albania and in the region are the intuitive methods. In some cases, these methods have also provided a satisfactory business performance. This is possible to be achieved mainly when the manager has a prominent professional profile (specializes in a field). This conclusion is fully consistent with the hypothesis raised in the study, supported by other researchers as Dane and Pratt (2007) referring to (Dreyfus & Dreyfus, 1986; Klein, 1998, 2003; Prietula & Simon, 1989; Simon, 1987, 1992, 1996).

The environment wherein the business operates, being it an uncertainty or hostility environment is alleged to be an influential factor in the method used in decision-making. The analysis evidenced that the interest of managers to use analytical methods in decision-making in a hostility environment is considerable. Thus, the hypothesis is based only on the positive impact of the analytical methods in decision-making when operating in hostility environment. It should be highlighted that the link between the environmental characteristics –uncertainty or hostility and the decision-making methods is not statistically sustained in other cases. Consequently, the hypothesis delineating these links do not result validated (supported).

These findings allow us to generalize that our expectations regarding the environmental impact on the choice of decision-making methods do not match reality. This discrepancy results due to the fact that the environment where businesses operate generally depicts a complex reality to be simultaneously understood and interpreted by the managers. This conclusion emphasizes the critical perspective on the understanding of the environmental impact on decision-making being consistent with the accomplishments of researchers as Simon (1959), Courtney Kirkland and Viguerie (1997), Goll and Rasheed (1997) and Bocana Anca (2012) in their studies. Environment and its impact on decision-making is a subject not much studied by researchers, which in turn grants promising perspectives to future research.

The study identified and afterwards confirmed that the type of decision constitutes one of the main factors determining the stance of the managers towards the methods to be used in decision-making. The sensibility of the managers towards the use of analytical methods in decision-making appears oriented mainly in respect to the strategic decisions, a fact confirmed by the positive attitude of the managers to this regard. A conclusion having altogether a logical and explicable interpretation and representing a significant tableau of the actual reality in the countries whose businesses were subject of study. It is further on justified by the fact that the problems constituting a strategic decision are all-comprehensive (Elbanna, Child and Dayan, 2013).

The findings on *the impact of the business size on the method to be used in decision-making* reinstate our belief that with the increase of the business size, the interest of managers in the use of analytical methods in decision-making is enhanced, a conclusion achieved by Child and Mansfield (1972). In contrast to this standpoint is presented the stance of the managers of small and medium size business who are inclined to use the intuitive methods in decision-

making. The finding in question supports the hypothesis raised in the study and is moreover corroborated by other researchers as Elbanna, Child and Dayan (2013). Particularly when the small business managers are professionals in the field, they find of interest the use of intuitive methods in decision-making.

The response of the managers concerning the methods used in decision-making confirms that the managers working in business 'having a sole-owner' have a curtailed degree of freedom in selecting the method of decision-making. The propensity of these managers regarding the decision-making methods is inclined towards the intuitive methods. This because in many cases the decision-making is actually the expression of the owner's will, a reality also covered by Elbanna, Child and Dayan (2013). The legal status dimension seems of paramount importance in selecting the method of decision-making. In businesses having other legal statuses due to their organizational character, the potential of orienting the decision-making activity towards the analytical methods is greater.

The orientation this study entails to undertake regarding the choice of decision-making methods should not only refer to the preceding business characteristics, it is also a mentality issue. In Albania as well as in the regional countries the mentality of managers towards running a business and the methods used in decision-making are characterized by their dominant approach, particularly in the case of small businesses and businesses with a sole owner. This fact refers back to the mentality these countries inherited from the past dictatorships. Under the circumstances, the study is indispensable as it aims to orientate the managers directing their activity towards a successful contemporary management.

The close relationship between the organization culture and the methods of decision-making is supported by the results of the research. Thereon, the study found out that a centralized organizational culture has the lowest impact on the use of analytical methods in decision-making, while orientating the manager towards the use of intuitive methods in decision-making. Meanwhile the collective culture has a higher impact on the use of analytical methods in decision-making and identifies the reverse, negative effect on the rate of use of the intuitive methods in decision-making. The importance of using analytical methods in decision-making under the optics of influencing the business performance requires a greater attention to be devoted to the culture of the organization. This is an end-result that can be obtained by educating the managers exploring and implementing the elements of the collective culture in the organization.

The manager's sensitivity towards the decision-making methods provides valuable information for the researchers in terms of the demographic characteristics of the decision-

making manager influencing the evaluation of the methods of decision-making. Notable conclusions the study brings into attention are those highlighting the linkage between the assessment of the analytical methods in decision-making and the demographic characteristics of the manager. These conclusions are considered vital as the manager represents the key factor in the process.

Noting the impact of age, as a demographic characteristic of the decision-making manager, it is concluded that the managers pertaining to the age group of up to 30 years old have the highest appreciation for the analytical methods in decision-making. The young age-groups are easily involved in innovative activities, although in various cases the orientation towards the innovative activities represents a critical point for the business and the professional career of the manager.

Another conclusion logically acceptable and statistically provable the study brings into attention is the fact that the manager's appreciation of the analytical methods in decision-making manifests an ascending trend, in parallel to the education degree. The highest rating for the analytical methods in decision-making, in an average rating, pertains to the qualified managers having a Ph.D. degree. The skills development in-line with the continuous education and the enhancement of the professional competences of the individual result in a professional success having an ascending progression of economic, social and other benefits. In the decision-making context, the professional competences become indispensable in relation to the type of decision. These approaches achieved in the study are furthermore endorsed in previous periods by various researchers as Chen and Dahlman (2004), Musso and Francioni (2012) referring to Gilbeus, et al., (2009), Hitt & Tyler (1991), Papadakis (2006), Papadakis & Barwise (2002); Papadakis, et al. (1998) and Al-Tarawneh (2012).

The results regarding the manager's field of study evidence that the field of study is presented as a factor having a positive impact on the evaluation of analytical methods in decision-making. A considerable part of the managers are also the business owners. The respondent managers pertain to various fields of study. The highest appreciation for the analytical methods is observed among the managers graduated in Marketing and Business Administration. This conclusion justifies the expectations on the professional competence in all its aspects as in terms of decision-making, in terms of the conceptual aspect, the rational and ethical aspects as well. Thereby it becomes viable for the manager to use the know-how, skills and personality functional to the attainment of the specific goals and objectives. The prominence of the professional competences amounts to the fact that the managerial

involvement in decision-making is a result of all the levels of competence: the technical levels, the cognition level of good management practices and designing of strategies. It is inevitably required that the due attention is paid to the theoretical knowledge, the professional skills, the attitudes and values in order to guarantee success in decision-making. The impact of the field of study on the managerial orientation regarding decision-making methods is studied and substantiated by Chen and Dahlman (2004).

Among the most prominent demographic characteristics is the manager's experience. The experience enables that the education gained knowledge be converted into conviction. Thereby the experience is not considered simply a characteristic. It provides the manager with a constantly increasing technical and psychological maturity. In this context experience helps in facilitating the efficient combination of production resources within the business. Thus, experience is depicted as an individual value/trait predicting the business reality expectations, enabling a more contemporary decision-making process. A similar conclusion was obtained by Cheng, Rhodes and Lok (2010).

All the analyzed factors emphasize their impact upon the decision-making methods. The analysis indicated that in the current economic and social development state of Albania and the regional countries the intuitive methods have an extensive dissemination scale. Notwithstanding the current reality, the managers claim for a change in this situation, a fact evidencing an increasing accountability on their part.

The decision-making methods are considered as having a pivotal impact on the business performance. From this standpoint, the study reaches some important conclusions.

The impact of the decision-making methods on business performance is a phenomenon highlighted by other researchers. To this regard Elbanna and Child (2007), based on the achievements of Bateman and Zeithaml, (1989); Eisenhardt, (1989); Fredrickson, (1985); Miller and Friesen, (1983) and Jones et al., (1992); Smith et al. (1988) delve upon this fact in their studies.

The findings of this scientific study refer to the two aspects of performance: financial and non-financial performance. The reasoning why the non-financial performance is included is that the non-financial performance is the forerunner of the financial performance. Hereupon it is vital to draw conclusions on the impact of the decision-making methods in the non-financial performance. So, the analytical methods positively affect the non-financial business performance; meanwhile the intuitive methods, considering experience, do not bring positive results to the non-financial business performance.

The research found that the financial performance of the businesses in the three analyzed countries does not depict an optimistic business situation. A result indicating a significant reason, as the way of doing business in the market economy is highly different from the management of enterprises in the centralized economy. Doing business in a market economy involves the economic, social, environmental and ethical aspects. The availability of the manager's know-how on the issues of decision-making and in particular on the impact of the decision-making methods in business performance is to be also considered.

The findings justify the challenges facing the managers in business decision-making regarding the ongoing accessibility of the accounting information, in all types of businesses. In small businesses, generally pertaining to the 'Clan' organizational culture, the staff consists of family members and is accompanied by a general carelessness in keeping accurate records of the economic and financial business information. The medium-scale businesses, aiming to minimize the administrative costs, generally lack a well-organized management structure having professionally competent and responsible operational units, accountable for the accomplishment of specialized functions. Moreover, even the managers of big businesses generally operate in a lack of a continuous access to the financial statements. They lack cooperation with the accounting offices, which are specialized and licensed units by the National Accounting Council, in carrying out accounting operations of the economic activities and compiling the financial statements. These units are recognized and evaluated by the tax administration. This division of labor, based on specialization, has created a detachment of the business management from business accounting. Generally a parting in time is observed from producing the accounting information to making use of this information. As a result the decision-making manager is consistently pursuing his/her duty with insufficient accounting information of the accounting (financial) business state. Performance management results successful when managers possess the indispensable accounting information.

The results of the financial business performance based on the data provided by the General Tax Directorate of each respective country do not depict the real situation of these businesses. A situation impacted by the presence of informal economy. According to the CIA-s Fact Book, the scale of the informal economy in Albania continues to remain above 50% of GDP, meanwhile according to cea.org.mk the informal economy in Macedonia is around 47% and in Montenegro around 40%. The high informality scale is also reflected in

the present unoptimistic financial situation reported by the businesses near the Tax Administration Office.

Decision-making based on analytical methods is a new and arduous reality for the managers in the region. Regarding the time frame the research is developed another difficulty is noted concerning the impact of 2008 financial crisis. This led to a decline in the dependence degree of financial performance on the methods used in decision-making. On the one hand the analytical methods used in decision-making logically represent a supportive tool for a successful business performance, but on the other hand the consequences of the global financial crisis still remain, acting as a braking system and exacerbating the business performance. This reality that can easily be considered confusing has an inevitable impact on the financial results submitted by businesses near the General Tax Directorate.

5.2 Contribution of the study

The study is the first of its kind comprising Albania and the regional countries extended through a considerable time-frame, which includes both the period of centralized economy and the period when these countries economy is oriented towards the free market. As such the study brings numerous contributions of various facets, specifically a theoretical, a practical and a methodological contribution.

Theoretical contribution: From the theoretical point of view the study should be appraised for the presentation of a conceptual model and the valid theoretical approaches of the decision-making issues. In this context, the research stands as a good opportunity to be exploited by other researchers who intend to advance their studies in the field. The study engages and explores the possible interlinks among the factors affecting decision-making methods and afterwards the influence of decision-making methods in achieving business success. Theoretically an original approach is observed. The conceptual model presented in the study is an integrated transfusion of factors. As such, the model enables a thorough inquiry among the factors and the methods and further on the methods related to the business performance. Moreover, an important spot is devoted to the empirical evaluation of the analyzed theories. It can and should be accentuated the assertion that: social capital, business and management represent indispensable chain-links to obtain a successful performance. In this context, the study considered and tested the relevant measuring instruments so as to empirically assess the treated theories on the factors affecting the decision-making methods and their impact on the business performance.

The practical contribution is referred to the importance of the research conclusions related to the benefits that business gains from the due orientation of the managers towards the methods of decision-making. Actually, the study indicates that the methods used in decision-making are not very promising for the business success. Therefore the managers need to be aware that they can not be sufficiently successful confined to the use of intuitive methods. In this context, the study constitutes the supporting grounds for the establishment of the managerial reputation.

The methodical contribution offered by the study amounts to the fact that it utilizes and presents a method used for the first time in measuring a chain of impacts, analyzed in two stages: Firstly, conditioning factors $\rightarrow$ decision-making method and secondly, decision-making method $\rightarrow$ business performance. The method used in this study can be employed to measure and operationalize the manager's stance towards other innovative processes requiring their initiative.

Analyzing the links between the factors and the decision-making methods, for the first time in Albania and the countries of the region in a scientific study of these dimensions, the EFA and CFA have been used to test the validity and reliability of the model. The same can be stated regarding SEM as a analyzing tool, which serves as a novelty to the economic literature of these countries. Moreover part of the search is also the interview, which has enabled us in gaining more indepth cognition. In this context the conclusions drawn from the study must be translated into concrete actions in order to enable the implementation of innovative schemes.

The study entitled "The contribution of decision making methods to business success" in addition to some crucial achievements, opens up new research perspectives. In this context, the study provides the empirical evidence for potential studies of other researchers in the future.

5.3 The limitations of study

The study, as any scientific research, in spite of the due rigor cannot be assumed to have an exhausting, all-inclusive character. Given the topic it addresses the significant fact that it is the first study of these dimensions in the field, in addition to the valuable conclusions, it creates the due premise for instigating debate among the researchers and moreover the due space for furthering the studies in the field, which also constitute the limitations of the study. The limitations of the study refer to its character, the problems it focuses and the reality wherein the study is undertaken. Some of the main limitations refer to:

The first limitation stems from the very specific and subjective character of the study. The measurement in the greater part of the study is carried out by individual perceptions. Considering the reality and peculiarities of the regional countries culture, it cannot be claimed to have been obtained precision in this regard. But on the other hand, no hesitance that the approach utilized in measuring is inevitable in studies of this kind. Therefore, it can be concluded that the measurement through individual perceptions is the only way to measure the manager's assessments.

In this context, the manager's personality characteristics also constitute a restriction, which is similarly worth mentioning.

The manager's lack of willingness to be cooperative, observed during the survey, constitutes an essential restriction. The cause of this situation has generally been the manager's lack of credibility that their anonymity will be observed. Moreover, the manager's reluctance is also conditioned by the fact they have had a limited participation in studies of these kind wherein their participation was required.

A not less important restriction refers to the period of the study, which coincides with the period after the global financial crisis of the year 2008. The post-crisis period is considered problematic for the economy of developed countries. Meanwhile for the post-socialist countries and their fragile businesses it should be considered highly problematic.

Another limitation refers to the formal data provided by the authorized institutions in the respective countries, which in a future perspective, under different socio-economic conditions need to be updated providing us a different indispensable tableau to be studied.

Moreover, the analysis of the impact of the decision type considering only the decisions according to purpose constitutes another limitation of the research. The analysis of the impact of other decision types opens up prospects for further studies to be undertaken in the future, in the field of decision-making.

5.4 The recommendations of the study

The conclusions, as a logical consequence of the reasoning done during analysis, contain approaches that refer to the critical review of the analyzed situations. In response to these approaches the below recommendations aim at the short-term and long-term improvement of the current situation. The recommendations are addressed specifically to the managers and the policymakers.

> *Recommendations for the managers*

Given that the countries involved in the study are post dictatorship countries, doing business is a new business environment starting after the 90s, means that this is still an

unconsolidated activity to their reality. In this context, it is necessary to increase the number of Albanian and regional studies of this character providing the empirical analysis and findings in order to undertake future research. This duly constitutes the necessity for increasing the number of publications on the specific issues of decision-making, a need that is currently evident. Also, it is worth mentioning that it is necessary to adapt in Albanian language psychometric tests in order to enable increasing the variety of measuring perceptions in this area.

The decision-making problems, under the manager's perspective, evidenced the necessity of influencing through various forms of intervention. The interventions aim at encouraging and promoting the courage and belief that using analytical decision-making methods the possibility for taking better decisions, in compliance with the given circumstances, is increased. Therefore, it is recommended drafting long-term strategies, through various forms of qualification in order to promote the continued cultivation of manager's professionalism having a western vision. In this context it should be considered the establishment of a consolidated and effective structure for consistently training managers and not limiting the training to short-term campaigns.

Improving the quality of the ongoing accounting information available to the managers is a condition for an upgraded performance of the businesses. Thus, it will be possible for managers to act as proactive agents and not confine their operation to being reactive.

  ➤ *Recommendations for the policy makers*

The recommendations concerning the policy-makers are mainly related to the creation of a favorable environment for the business. Specifically, the recommendations proceed as follows:

- Taking measures to reduce the level of informality in Albania and in the regional countries should be considered an emergency. To this regard we recommend the below policies:

Better tax administration. The claim that the tax administration staff can examine in detail any tax statement is not justifiable in the current reality of Albania and the regional countries. It is indispensable the establishment of an integrated system, connecting through an operative network the business fiscal cases, the Tax Offices, the National Registration Center, the Local Government and the Customs Offices to a powerful server in order to monitor any economic activity carried out by the businesses. It inevitably requires a considerable investment. In this respect the reality in the regional countries differs as

Macedonia has already started establishing this investment in 2015. Meanwhile Albania and Montenegro have not yet made any similar effort.

Scaling up VAT to the smallest business chain, referring to the experience of Macedonia and Montenegro.

Abolishing the ceiling amount (exclusion limit) of 2,000,000 ALL on which basis the small businesses in Albania are exempted from tax. A suggestion made to the Tax Administration might be that these businesses must pay VAT in escalating levels. Meanwhile in Montenegro and Macedonia small businesses pay taxes despite the annual income and the exclusion limit is not applied.

Another way to reduce the level of informality is educating the citizens to necessarily take the tax receipts in all their purchases. In the regional countries, it is generally operated with coercive measures. This practice must be given an end as we recommend that it should be operated with incentives in order to motivate the citizens to take the tax receipt by refunding VAT in the amount 2%-3% of the receipt value. This practice will help in educating the citizens and raising their awareness in abiding by the law.

All the recommendations for reducing the size of informality initially will amount to a modest benefit, but undoubtedly promising to the future, as the mitigation of informality affects the public debt reduction.

A smart decision must be undertaken on the part of policymakers regarding the change on the tax payment deadline that actually the payment is required to be immediately effectuated. We recommend that the tax liability payment be deferred up to the end of the appeal process. The extension of time limit must be postponed to the moment when the appeal decision for the tax liability payment becomes final. This decision will reduce the business debt to the state and would promote business well-functioning and generate more income.

- The taxpayers (businesses) are facing financial hardships, which leads to inability to pay their tax obligations. Therefore, we recommend the following measures be taken:

Payment of tax obligation to be made in installments, the first installment consisting in a lower amount. We consider the first installment be reduced from 30% actually, at 10%.

To not apply fines or delay interest payments in the cases when the tax liability payment is not paid within the deadline. If the fines or delay interest payments will be replaced by establishing interest rates on the business tax liability in accordance to the interest rates

applied by the National Bank of the relevant state, this approach would amount to a considerable support for the financial situation of the businesses.

The imposition of sanctions for tax administration employees who make wrong decisions that intentionally or unintentional results in an economic damage to the businesses. We suggest the sanction to amount up to 30% of the damage caused by the wrong/improper decision. The practical application of this recommendation would increase the tax administration accountability in professionally accomplishing their duties.

Albania and the regional countries are fragile democracies aspiring to join EU membership. The democratic governing is confronted to incessant challenges to continuously improving the institutional practices and principles. Institutions are crucial to serving and benefiting the respective community. In this context, we recommend creating or set to full operation the Business Ombudsman in order to establish and intensify the business community communication to the government.

The study also targets and orientates new challenges to decision-makers in education, proposing to the Ministry of Education that the Faculty of Economics program/ curricula must contain a module on decision-making and decision-making methods, in order to prepare managers having a Western vision, skilled to efficiently face the practical challenges of decision-making.

Annex 1

QUESTIONNAIRE

Your participation in this questionnaire is voluntary and confidential. Your cooperation is highly important. The aim of this study is to explore on the use level of modern methods in business decision-making and the conditioning factors herein.
Through your participation in this questionnaire you are granting your help and contributing to the further enhancement of the know-how developments on decision-making.
I will be at your disposal to grant answers to your interest, concerning the study results.

I. Business Data

Based on the law, your business can be classified as:
- ❍ large
- ❍ medium
- ❍ small

Your business is managed by:
- ❍ sole ownership
- ❍ partnership
- ❍ corporation
- ❍ other (specify) _____

II. Decision-making methods

Please indicate the degree of acceptance or rejection on the following claims related to your business.

Claims	Total rejection (1)	Rejection (2)	Neutral (3)	Acceptance (4)	Total acceptance (5)
1. I appreciate the analytical methods because they take into consideration the simultaneous influence of many factors in decision-making.	○	○	○	○	○
2. I appreciate and use the analytical methods because I feel protected from risk.	○	○	○	○	○
3. I appreciate the analytical methods because they enable a successful management of the productive resources.	○	○	○	○	○
4. I usually make quick decisions because I consider what is valid in the moment of decision-making.	○	○	○	○	○
5. I always base on my intuition when making decisions.	○	○	○	○	○
6. I make decisions independently.	○	○	○	○	○

III. Decision type

The analytical methods are more frequently used in the preparation of decisions, being:
❑ Strategic decisions
❑ Tactical decisions
❑ Operative decisions

IV. Environment

Please indicate the degree of acceptance or rejection on the following claims related to your business

Claims	Total rejection (1)	Rejection (2)	Neutral (3)	Acceptance (4)	Total acceptance (5)
1. The government policies affect the use of analytical methods in decision-making.	○	○	○	○	○
2. The dynamic environment forced me to gather additional data on decision-making.	○	○	○	○	○
3. Informality level in domestic economy instigates interest in the use of analytical methods in decision-making.	○	○	○	○	○
4. Fiscal policies condition the method used in decision-making.	○	○	○	○	○
5. The technological changes in the international market condition the use of analytical methods.	○	○	○	○	○
6. Customs policy orients decision-making based on analytical methods.	○	○	○	○	○
7. The exchange rate forecast has forced me in selecting the decision- making method.	○	○	○	○	○

V. Organization culture

Please indicate the degree of acceptance or rejection on the following claims related to your business.

Claims	Total rejection (1)	Rejection (2)	Neutral (3)	Acceptance (4)	Total acceptance (5)
1. The managerial hierarchy does not allow enough space in choosing the decision-making method.	○	○	○	○	○
2. When the organization culture envisions the decision-making made to the owner it is noticed a tendency for rapid decision-making.	○	○	○	○	○
3. The collective management organization culture orients decision-making based on consultation.	○	○	○	○	○
4. The organization culture in our business refers to the voting decision-making.	○	○	○	○	○

VI. Non-financial performance of business

Please indicate the degree of acceptance or rejection on the following claims related to your business.

	Total rejection (1)	Rejection (2)	Neutral (3)	Acceptance (4)	Total acceptance (5)
1. Manger makes frequent improvements to the production processes targeting the customer's demand.	○	○	○	○	○
2. Manager takes care on the business social responsibility.	○	○	○	○	○
3. Manager is oriented toward meeting employees' satisfaction.	○	○	○	○	○
4. Manager encourages employees to improve their performance.	○	○	○	○	○

VII. Financial performance of business

	(1)
What is the liquidity ratio in your business?	
What is the rate of return on assets (ROA)?	
What is the ratio of total liabilities to the assets ratio?	
What is the return ratio –inventory turnover?	
What is the net profit of the business?	

VIII. Demographic Data

1.   What is your age:
❍ up to 30 years old
❍ 31 - 40 years old
❍ 41 - 50 years old
❍ 51 - 60 years old
❍ over 60 years old

2.   Please choose the highest level of your education:
❍ High school
❍ University degree
❍ Master degree
❍ Ph.D degree
❍ Other (specify) _____

3.   What is your field of study:
❍ Economics
❍ Finance
❍ Marketing
❍ Business administration
❍ Other (specify) _____

4.   On how long, your experience as a manager consists in?
❍ up to 5 years
❍ 6 - 15 years
❍ 16 - 25 years
❍ 26 - 35 years
❍ over 35 years

If you have anything else to add to this problem, you are kindly asked to proceed
_____
_____
_____
_____
_____

Thank you!

Annex 2

Interview with the experts

In the framework of the study entitled "The contribution of decision making methods to business success" it is important to acknowledge the expert's opinion on the problem that preoccupies the business. As far as I know, you are thoroughly familiar with the decision making issues, so I would like to delve upon the issue. I would kindly ask you to allow me some time to jointly discuss, as your opinion is substantial to the study. Some of the questions are:

1. How much contact have you had with decision making?
2. Do you do any research about decision making before?
3. What types of research did you do?
4. Which method are used more in decision making in business
5. What is the difference between the methods of decision making?
6. What skills are necessary for a manager to possess for a good decision?
7. What is the impact of decision-making method on performance of business?

If you have anything else to add to this problem, you are kindly asked to proceed
_____
_____
_____
_____
_____

Thank you!

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