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MCDA-C METHODOLOGY BASED PERFORMANCE EVALUATION OF SMALL AND MEDIUM-SIZED BUSINESSES AT THE CITY OF LAGES

Marcelo Nascimento
M.S. Degree in Administration by the *University from the South of Santa Catarina*
Professor at the *Borges de Mendonça Faculty,* Santa Catarina, Brazil
Mn_marcelo@yahoo.com.br (Brazil)

Fabricio Luis Colognese Haubert
M.S. Degree in Administration by the *University from the South of Santa Catarina*
Professor at the *Borges de Mendonça Faculty,* Santa Catarina, Brazil
fabricio.haubert@hotmail.com (Brazil)

Fernando Filardi
Doctorate Degree in Administration by the University of São Paulo
Titular Professor at the *IBMEC* Faculty, Rio de Janeiro, Brazil
filardi@usp.br (Brazil)

Marcus Vinicius Andrade de Lima
Doctorate Degree in Production Engineering by the Federal University of Santa Catarina
Professor at the Federal University of Santa Catarina, Brazil
marcus.lima@cse.ufsc.br (Brazil)

ABSTRACT

When employed in a focused manner, corporate performance evaluation has proven to be instrumental for entrepreneurs as an important tool that contributes with performance improvements at their organizations. The descriptive study herein, prepared as of a questionnaire comprising 46 queries, poses to analyse the performance of micro and small companies (MSEs) by employing the multicriteria methodology for constructive decision aiding (*MCDA-C*). As of respondent replies, *MCDA-C* descriptors were formed, shaping six prime groups so as to identify relevant factors that drive or hinder MSE success. The questionnaire was applied to managers in charge administering 25 small and medium-sized companies of Lages, a city within the Brazilian state of Santa Catarina. Study findings

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provide evidence as to the fact that (i) 24% of surveyed companies, tend to go bankrupt; (ii) managerial functions at the MSEs are the prime source of influence on negative outcomes; (iii) from a financial control standpoint, surveyed companies fall far shorter than the minimum level deemed necessary to qualify as satisfactory; (iv) those that present the best results, operate both within the domestic and international markets; (v) the study placed under the spotlight the group "Evolution Stage", evidencing the trend of ever increasing MSE expansion. This study revealed that corporate failure contributing factors are intensely interconnected and largely depend on the entrepreneur´s own performance, the prime contribution of findings residing in demonstrating that *MCDA-C* can be employed to analyse the performance of micro and small businesses.

Key-words: Performance evaluation. Business failure. Multicriteria evaluation. *MCDA-C*.

AVALIAÇÃO DE DESEMPENHO FUNDAMENTADA NA METODOLOGIA *MCDA-C* DE MICRO E PEQUENAS EMPRESAS NA CIDADE DE LAGES

RESUMO

A avaliação de desempenho das empresas tem sido de grande valia se aplicada de maneira objetiva servindo ao empreendedor como importante ferramenta para contribuir com a melhoria do desempenho de suas organizações. Com objetivo de analisar o desempenho de micros e pequenas empresas (MPEs) por meio da utilização da metodologia de avaliação multicritério de apoio à decisão construtivista (*MCDA-C*), este estudo teve caráter descritivo a partir de um questionário com 46 perguntas. A partir das respostas dadas pelos entrevistados, foram criados os descritores do *MCDA-C*, formando seis grandes grupos. Tais grupos buscam identificar fatores relevantes que levam as MPEs a obterem sucesso ou não. O questionário foi aplicado aos gestores responsáveis pela

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administração de 25 empresas de pequeno e médio porte da cidade de Lages, em Santa Catarina. Os resultados do estudo evidenciam que (i) 24% das empresas pesquisadas tendem à falência, (ii) as funções gerenciais nas MPEs são as que mais influenciam no resultado negativo, (iii) em relação ao controle financeiro, as empresas estão muito aquém do mínimo exigido para um controle satisfatório, (iv) as empresas com melhores resultados trabalham no mercado nacional e internacional, (v) o grupo que mais se destacou foi o Estágio da Evolução, o que mostra a tendência de que as MPEs estão cada vez mais se expandindo. Por esta pesquisa, foi possível perceber que os fatores contribuintes para a mortalidade estão bastante interligados e dependem em grande parte da atuação do empreendedor, a contribuição principal do estudo foi a de mostrar a possibilidade de utilizar o *MCDA-C* na análise de desempenho das micro e pequenas empresas.

Palavras-chave: Avaliação de desempenho. Mortalidade de empresas. Avaliação multicritério. *MCDA-C*.

1 INTRODUCTION

Failure, in terms of mortality rates at less than five years old Brazilian micro and small-sized businesses (MSEs) is deemed high, as evidenced by research conducted by Sebrae (2004), which reveals that approximately 70% of companies of the kind do not manage to overcome initial difficulties and close down during the first three and a half years of operations. Most often, these companies are family-owned and arise from a business idea or absence of formal employment. However, these "entrepreneurs" do not master administrative function knowledge or decision making process criteria, this being deemed as one of the factors that may drive companies to bankruptcy.

Factors that contribute to the early mortality of MSEs give rise to considerable risks thus, the ability to deal with risks call for top prioritization. Liberatore and Stylianou (1992) suggest that traditional decision science models – those that seek the best solution – ought to include in their decision processes uncertainties and multiple criteria procedures, in addition to simultaneously incorporating quantitative, qualitative and subjective variables within the analytical framework to ensure performance assessments.

Morgan and Strong (2003) deem that several reasons promoted performance evaluation to evolve towards a multidimensional perspective. In light of increasing difficulties to further extend profit margins, market-based performance took on a vital role as conductor of future growth, thus rendering greater value to variables that lie beyond corporate frontiers. Furthermore, given both analyst and investor rampant craving for more comprehensive information, employing methods featuring diverse facets would spotlight subtleties within subject organizations. Finally, one must take into account the ascendance of the role that the consumer plays and of innovations engendered by organizations to effectively address their needs.

It is within this riddled with uncertainties scenario that the need for performance evaluation tools arises to support management in the anticipation of issues that might trigger loss and damage and consequently place the entrepreneur in a situation whereby his company comes to rest at risk of further increasing MSE mortality rate statistics. This study poses to address the following queries: Is it possible to evaluate MSEs of the city of Lages by employing the

MCDA-C technique? Once taking their quantitative aspects into account, how can one evaluate the performance of MSEs at the city of Lages?

Given this context, the purpose of this paper is to contribute with the study of MSE performance evaluations as of the structuring of a *MCDA-C* model which takes into account the numerous factors involving perceived early mortality risks, for MSEs located at the city of Lages.

To implement the proposed model, the strategic approach elected was to employ the multicriteria methodology for constructive decision aiding (*MCDA-C*), given that this technique mitigates limitations encountered within traditional decision making science models. It is our understanding that, via the *MCDA-C* the study shall be able to identify perceived risks involving those factors that contribute with early MSE mortality; build ordinal and cardinal scales for mapped factors; outline the profile of evaluated MSEs within the perceived early mortality risk categories – high, undefined and low – and finally, identify the factors that call for improvement interventions.

This tool poses to offer management information that ought to support problem solving of issues that feature an assortment of characteristics and thus improve comprehension throughout decision making processes. Research resorted to interviews as a means of collecting data. Interview scripts were structured into a questionnaire comprising 46 closed questions which sought to gather information that were inherent to the company´s overall context. Thus, the analysis ranged from human resources, managerial functions, stage of evolution/maturity, growth strategies right through to finance and corporate facilities in terms of structure and so forth.

The MSEs chosen for the purpose of this study´s analysis are located at the city of Lages which lies in the interior of the Brazilian state of Santa Catarina and are deemed of great importance to the surrounding region´s economy.

This study´s virtue is ground on the increased relevance performance evaluation methodologies have acquired in corporate day-to-day life, particularly in light of environment turbulence. Dutra (2003) conceptualizes as core practice, amongst others, that of "management" since there is no effective management if a given organization´s manager does not resort to an organizational performance measurement process to conduct the function. Furthermore, from a practical standpoint, the study reinforces the contribution offered to those MSE´s of the city of Lages, in Santa Catarina, promoting the establishment of a

continuous improvement policy via personal and performance evaluations and training policies.

Henceforth this study presents concepts involving the decision making process, multicriteria decision and system validation. Subsequently, the methodology employed to validate the decision maker is introduced and pertaining functionalities to support decision and assist researchers in the analysis of decision making processes are described. Finally, the results of the validation conducted during the study qualifying the support offered by the system to decision making involving multicriteria issues and to enable the mapping of user decision processes is presented.

2 THEORETICAL REFERENCE

2.1 MICRO AND SMALL-SIZED COMPANIES

According to Gonçalves (1994) countries like Brazil which feature extensive regional inequalities, micro and small-sized companies may come to account for a vital role in terms of industrial decentralization. Koteski (2004) states that MSEs are one of Brazil´s most important pillars sustaining the country´s economy, whether due to their massive ability to generate employment or because of the uncountable number of geographically de-concentrated businesses.

Research conducted by Sebrae (2010) indicates that in May 2010, MSE´s were responsible for generating 71,3% of the net balance amount of employment positions. Most of this performance (48,0%) sprung from hiring at organizations that take on up to four workers, followed by those that hire 20 to 99 workers which account for 13,8% of the sum total. This evidence itself demonstrates the relevance of this segment in Brazil.

Da Silva (2003) understands that the bright side of counting on such a large share of SMEs in the country´s economic performance contrasts with the high mortality rate of these companies: amongst those that start operations, all in all, approximately 70% do not complete the second year of existence.

According to Sebrae (2010), 58% of small-sized companies close down before completing five years of operations. This alarming figure highlights the extent this high mortality rate factor itself burdens and hazards MSEs.

The prime reasons that lead to the termination of an MSE are pinpointed by Filardi (2006), namely: (i) poor management competency, low mandatory level schooling and scarcely experienced entrepreneurs; (ii) quality, innovation and competitive differential absent products and services; (iii) absence of planning; (iv) lack of knowledge as to laws, taxes and inspection rules that the company is subject to; (v) mediocre customer offering of products and servicing; (vi) similar or higher practicing of both quality and pricing levels; (vii) amateur and disorganized relations; (viii) unawareness as to duties and taxes the company shall have to collect; (ix) unawareness and unpreparedness before market political, economic, social and technological risks.

Research conducted by Nascimento (2011) indicates that the most frequent reasons, in descending order, according to entrepreneurs throughout a number of studies undertaken comprise: absence of working capital, absence of professional training (schooling), managerial incompetence and poor management, absence of strategic planning, absence of market knowledge, absence of pricing policies, products, publicity and distribution, high tax load, absence of qualified labour, poor access to credit and absence of business plans.

Authors such as Degen (1989), Dolabela (1999a; 1999b), Dutra (2002), Santos and Pereira (1995) emphasize that the development of the entrepreneurial potential and the application of the managerial function at the management of entrepreneurial companies are vital to the success of this kind of organization, yet Alves et al. (1999) Bedê and Azzoni (1999), Dutra (2002) and Dutra (2003) and Vale et al. (1998) pinpoint a set of socio-economic based reasons for business non-longevity. The absence of forecasting management, identified by the lack or deficient planning of the business, which was likewise noted by Zimmerer e Scarborough (1994) and the poor application of sound management practices, are two of the most evidenced findings, within the mentioned set of reasons.

It is as of this data that the need for greater managerial awareness and qualification of new entrepreneurs arises as a means of leveraging and sustaining the good performance of MSEs entrepreneurs.

The application of performance evaluation tools might contribute with the improvement of micro and small-sized company performance and consequently sustain them for a longer period of time on the market. The use of tools such as the *MCDA-C* – a multicriteria methodology that is ground on constructivism

because it seeks to structure the decisional context with views to the development of models whereby decision makers may base their decisions as of what they deem most adequate (Roy, 1990) – might support the manager at times of decision making.

As of the above mentioned data, one perceives the relevance of micro and small-sized companies to the country´s scenario. Nevertheless, there still remains a notable shortage of managerial knowledge amongst managers and this has been identified as being one of the prime factors driving the high mortality rates of these MSEs. The absence of performance evaluation tools results in these managers not knowing their own organizations and end up taking erroneous decisions or overlooking business opportunities that remain unnoticed given the fact that managers do not have information regarding their companies, readily, at hand.

2.2 PERFORMANCE EVALUATION SYSTEMS

In-company assessments are of core importance since only before evaluations, one may verify performance. Performance evaluations function based on three prime aspects: ensure conformity, verify and question.

The Balanced Scorecard developed by Kaplan e Norton (1992), ground on four perspectives – financial, internal, customer and innovation and learning – is a very important tool for any organization. Unfortunately, not all companies count on the necessary resources to acquire a system of the kind, but this does not imply that they are not in a position to evaluate performance.

Another important model that companies might utilize is that known as National Quality Foundation (FNQ, s/d) whose mission is to disseminate management excellence fundamentals to increase organizational and Brazil´s competitiveness.

Amongst tools employed to evaluate performance there is a multicriteria approach known as *MCDA-C* (*Multiple Criteria Decision Aid*) which is a set of methods that enables the gathering of several evaluation criteria according to a chosen order, prioritization and categories or the description of a set of alternatives by means of quantitative and qualitative analysis (see Bana and Costa, 1992; Roy, 1996; Dutra, 1998; Holz, 1999; Ensslin, Montibeller Neto & Noronha, 2001; Lima, 2003).

Thus, *MCDA-C* is a decision support tool comprised of a set of formal procedures that structure and evaluate performance which takes into consideration all of those directly or indirectly involved, in the decision making process.

According to Ensslin; Montibeller Neto and Noronha (2001), there are formal models, whether to support decision making (*MCDA-C*) or to take decisions (Multicriteria Decision Making Methodology – MCDM and Multicriteria Decision Analysis Methodology – *MCDA-C*). However, one must define the rules that shall be specifically employed to conduct the study, which methods can effectively be used, what is the desired objective and what is the problem to be solved.

The *MCDA-C* technique arose as of Operational Research (OR) and is deemed as an evolution of the same (Ensslin, Montibeller Neto & Noronha, 2001) incorporating perceptive aspects to decision making and thus shaping knowledge into being the interaction and the objective in search of the best possible solution to a given problem (Ensslin, 2002).

The *MCDA-C* technique rests on an assumption based on the concept that knowledge is produced as of player participation throughout the process. Thus, to this effect, there is no truth to be unveiled but rather, knowledge is built as of values, beliefs and objective systems revealed by those involved during the application of the methodology (Lima et al., 2006).

Lima (2003) understands that the *MCDA-C* shapes a new paradigm within the field of corporate decision context analysis given that it captures multiple analysis criteria from the scenario under study, despite the fact that from a mathematical standpoint, it is not deemed as having been well-solved and thus remains subject to some degree of concern.

According to Zago, Ensslin and Ensslin (2008), *MCDA-C* is a method that seeks to further player understanding, particularly that of the decision maker, in as much as a given context is concerned. This is effectively conducted by the facilitator who supports the decision maker to use his own values and preferences and identify, organize, measure and integrate those aspects he deems of relevance to the situation under analysis. Thus, knowledge is built at the decision maker´s level whilst comprehension will effectively mean to clearly visualize the consequences of existing and yet to be shaped alternatives, in

terms of the aspects the entrepreneur identified as being important for that situation at that particular moment in time.

Dutra et al. (2007) believe that the *MCDA-C* is a tool which supports decision making within a multicriteria context, ground on assumptions one may summarize as follows: (a) consensus as to the fact that decision issues involve multiple criteria; (b) consensus as to the fact that in substitution of the notion of best solution, the proposal is to seek a solution that best fits the needs of the decision maker and within the decisional context, as a whole.

According to Ensslin; Montibeller Neto and Noronha (2001), although there are formal models that support decision making (*MCDA-C*) one must define the rules that shall be employed during the engagement which in turn define what is deemed or not worth conducting, which methods can be employed, what is the desired objective and which is the issue that calls for resolution.

Lima et al. (2010) state that the *MCDA-C´*s grounding principles are effectively attained once three phases are implemented, namely: the structuring of the decisional context; the construction of an evaluation model for the company´s alternatives and the formulation of recommendations concerning possible adjustments that ought to be made to those aspects that the decision maker deems of vital importance.

Roy (1990) understands that the decision support activity is defined as that whereby a facilitator, resorting to scientific procedures, assists the gathering of response elements to queries proposed to players involved in a decisional process. These elements help clarify this decision and the purpose is to supply players with the most possible favourable conditions for the type of behaviour that shall increase coherence between, on one hand, the evolution of the process and on the other, the goals and/or value systems within which these players function.

Sheltered by the above described context, one might state that *MCDA-C* is a very useful managerial tool for the decision maker since it offers a number of needed subsidies to ensure adequate management thus fostering the generation of results that favour the organization.

The majority of traditional project analysis and selection methodologies pose to indicate the best or optimal alternative. Multicriteria decision support methodologies pose to generate recommendations, enabling the improvement of organizational systems, generating new and improved alternative actions,

defining areas that offer potentials and pinpointing situations that might come to be perceived as being the best (Ensslin, Montibeller Neto and Noronha, 2001).

Therefore, decision support processes may also help the identification of the best possible alternatives or the outlining of a subset of good ones and still, the ordering of these in descending order of preference (ranking) based on a set of objectives and judgement criteria (Casarotto and Kopittke, 1994, p. 277).

According to Bana and Costa (1995) decision support is a task for those who, resorting to clearly defined and somewhat formalized models, seek to gather response elements to queries made to someone who intervenes in a decision process. The purpose of such elements is to clarify decisions, recommend or simply favour a given behaviour that drives increased coherence between the evolution of the process and intervening party objectives and value systems.

Stewart (1996) understands that when one employs the *MCDA-C* for analytical purposes there is an underlying assumption concerning the existence of a set of alternatives – each described according to its performance before each identified criteria, attribute and objective – amongst which the decision maker has to come to a single choice. *MCDA-C´*s most relevant characteristic is that the tool offers support to the decision maker during the process of picking a choice amongst alternatives.

By supporting decisions, the intent lies in offering subsidies to the decision maker so that he comes to better understand the issue by formally and systematically examining the problem under analysis. The manner or approach employed to conduct and perform the decision support process characterize the distinct models involving decision theories, herein discussed.

3 RESEARCH METHODOLOGY

This section presents the study´s methodological framework, universe and research sample.

3.1 METHODOLOGICAL FRAMEWORK

This study features descriptive characteristics since it seeks to describe and analyse real life facts and phenomena from a qualitative standpoint,

developed as of the mapping of data gathered by means of applying a closed and open query questionnaire. This approach was selected with views to understanding the profile of both the managers and the companies subject to analysis and to pinpoint the critical success factors these organizations shared in common, by employing the Multicriteria Methodology for Constructive Decision Aiding (*MCDA-C*).

This study´s target audience comprised 25 companies that operate in the retail commerce segment at the city of Lages, in the state of Santa Catarina. The questionnaire was applied to the owners or managers of these businesses, on a personal, face-to-face basis, during the first semester of 2008. This was a non-probabilistic sample and for the sake of convenience, all questionnaires that returned during the data collection period were accepted.

The applied data gathering instrument was structured into 46 questions. To apply the multicriteria analysis tool, questions that pertained to the company (disregarding those related to the manager´s profile) were utilized.

3.2 INTERVENTION TOOL: *MCDA-C*

The act of evaluating is very important not only for the organization but for the entire system it is embedded within. According to Bana and Costa (1995) the decision support activity is comprised of structuring and assessment phases. Along the former, the objective is to build a structure that is commonly shared by those who intervene in the decision support system whilst during the latter stage an evaluation model is prepared, following an interactive, constructive and learning approach instead of a normative and optimal positioning one.

The *MCDA-C* technique – employed as a strategic and managerial tool to build a model that identifies and evaluates capabilities and in response to the study´s query – is a mapping, organizing and measurement of critical success factors (according to the perceptions and values of those engaged in the process) modality (Ensslin, 2002). The selection of this approach is justified by its scope, flexibility and ability to operationalize and integrate the company´s strategy in addition to measuring the same during performance assessments. According to Zago, Ensslin and Ensslin (2008) the *MCDA-C* technique comprises four distinct phases.

The first phase involves the characterization of the decisional context within which the diagnosis of the observed situation is conducted. During this phase, the problem is contextualized and the context within which whomever is dissatisfied and the reason that caused the same - in addition to the current and desired performance - are identified and described.

The second phase structures or formulates the problem and the operational result of this activity is the evaluation model. This is one of the most important phases of the decision support process because if the problem is not well and carefully structured, it will certainly drive imprecise assessments and decisions that are not in line with the reality of the problem at hand. However, structuring a problem in an adequate manner is by no means an easy task and is intrinsically related to the facilitator´s abilities (Alberton & De Souza, 2002). Furthermore, during this phase the cognitive map is analysed as of the identification of the map´s structural characteristics and content. Finally, a family of Fundamental Points of View (FPVs) is defined which basically represents those aspects that are feasible from a measurement (Keeney, 1992) and subsequently, evaluation standpoint (Ensslin, Montibeller Neto & Noronha, 2001).

The third phase comprises the evaluation of alternatives model which involves the building of the model in itself by constructing a local preference scale of each FPV action and defining the compensation and/or substitution rates in addition to identifying the action impact profile and overall assessment to subsequently move on to recommendations and actions (Ensslin, Montibeller Neto & Noronha, 2001). To this effect, Macbeth-scores (Bana and Costa & Vasnick, 1997) software, developed by Carlos A. Bana and Costa and Jean-Claude Vansnick, is employed. Macbeth features constructivist characteristics and as a pondering technique, it is considered an algebraic, decomposed and direct method. Furthermore, authors understand it is a technique that supports the construction of numeric interval scales based on the preparation of absolute semantic judgements concerning the difference in terms of attractiveness, between two actions (Detoni, 1996).

The fourth and last phase comprises recommendations and improvement actions in addition to the bettering of those criteria that do not address the expectations of decision makers. During this stage actions, before the reference problem, are defined. Furthermore, the sensitiveness of responses to the model before employed parameter variations are analyzed and strategies pertaining to

action and the analysis of the model´s sensitiveness *vis a vis* action performance are generated (Ensslin, Montibeller Neto & Noronha, 2001).

In light of that so far presented, one might come to the conclusion that not only does the *MCDA-C* technique´s primary purpose is to add value to those who take part in the decision process by fostering the understanding of the evolution of a decision making process, but also that the model´s methodology includes a facilitating function in the decision support process, driving a core concern as to finding a best committed solution that harmonizes with the decision maker´s perception and values.

3.3 RESEARCH PROCEDURES

This study was developed as of a questionnaire that was applied to 25 micro and small-sized companies at the city of Lages, whereby the managers accountable for the business´ management were interviewed. Forty six questions were applied to evaluate corporate performance and, as of responses, descriptors were defined, shaping six large groups.

Groups were divided into human resources, managerial functions, evolution(maturity) stage, growth stage, finances and facilities(structure). Within these prime groups, subgroups were defined to classify the original scale, where these were qualified within a normal to good range, according to each criteria grounding the procedure on the analysis of the questionnaire. Thus, one comes to the value of the scale adjusted according to the following formula:

$$A = \frac{100}{(B-N)} \qquad B = -(N.a) \qquad Y = a.x + b$$

The analysis of outcomes is based on the descriptors of both the set of criteria and of sub-criteria, as pictured in Figure 1.

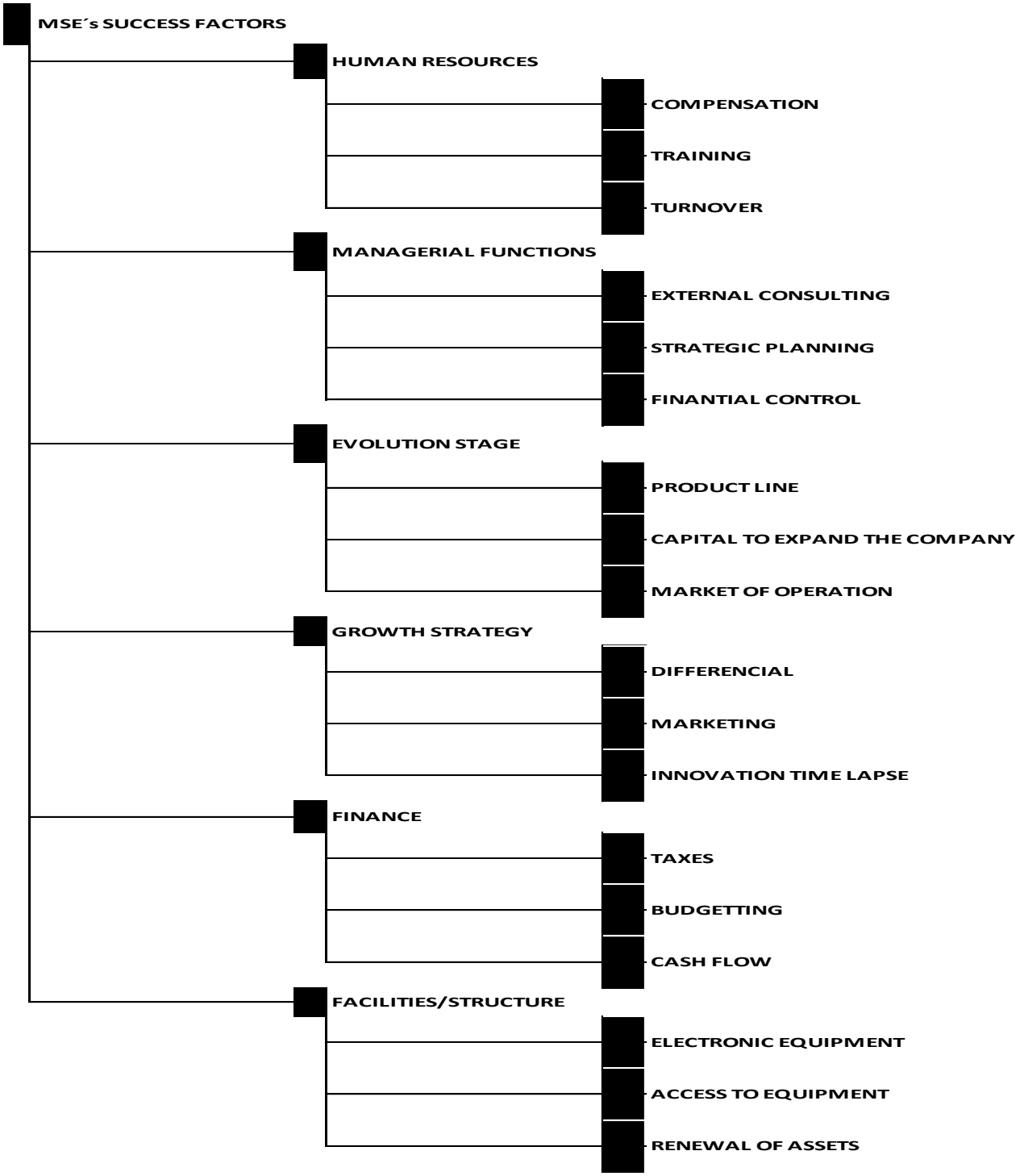


Figure 1: MSEs Success Factors

Source: Prepared by the authors

Managerial Functions emerged as the most relevant group of descriptors, comprising strategic planning and financial control sub-criteria and representing 30% of the sum total. Human Resources, Growth Strategy, Finances and

Facilities (Structure) accounted for 15%. The Evolution Stage classified representing 10% of the sum total.

Descriptors were prepared for each criteria as pictured in Figure 1. Nevertheless two sub-criteria are worth emphasizing: strategic planning within Managerial Functions and capital to expand the business, within the Evolution Stage.

In as much as the strategic planning descriptor of Managerial Functions – which was deemed of greatest relevance - is concerned, researchers Birley and Niktari (1996) state that the absence of planning, in conjunction with other factors which pertain to the entrepreneur´s profile, directly contributes with the mortality of organizations. An example of this is pictured in Table 1 where one notices that when a company does have a strategic plan but it is not documented, the company will present a neutral (N), i.e., 0 (zero) level of impact on its performance.

This level of impact evidences the fact that non-documented strategic plans are often encountered at the interviewed companies. However, good (G) performance as far as this descriptor is concerned is only graded to companies that present documented strategic plans with a 100 (one hundred) level of impact. Therefore when companies feature documented strategic plans, this evidences potential action, performance thus being graded as good.

Table 1: Strategic planning

MANAGERIAL FUNCTIONS				
N	**STRATEGIC PLANNING**	A	ORIGINAL SCALE.	ADJUSTED SCALE
N3	DOCUMENTED	G	100	100
N2	NOT DOCUMENTED	N	40	0
N1	NOT AVAILABLE		0	-67

Source: Prepared by the authors

The evolution stage criteria deems that the obtaining of resources using equity investments or own capital, grades as good (G) performance, N4, presenting a 100 point evaluation. However, companies that need financing from commercial banks, are graded with no more than 10 points and merely position at the N1 level, remaining short of the neutral (N) level, as pictured in Table 2.

The Neutral level is represented by N2 and at this level companies which resort to capital raised at development banks – which offer lower interest rates – are positioned. One can notice that the difference between companies that resort to commercial banks for capital and are positioned below the NO level and those that use capital obtained from development banks (level N) is no more than 10 points, which is thus deemed relatively small. However, for companies to shift from the neutral (N) level and progress to level G (good) the difference is very expressive – 80 points – demonstrating the relevance of the advantage of companies resorting to equity or own capital investments and not pay interest rates.

Table 2: Evolution Stage

EVOLUTION STAGE				
N	**CAPITAL TO EXPAND THE COMPANY**	A	ORIGINAL SCALE.	ADJUSTED SCALE
N4	EQUITY/OWN CAPITAL	G	100	100
N3	NEW PARTNERS		50	38
N2	DEVELOPMENT BANK FINANCING	N	20	0
N1	COMMERCIAL BANK FINANCING.		10	-13

*This analysis did not take into account the opportunity cost

Source: Prepared by the authors

Sub-criteria must be classified into Neutral or Good to ensure one arrives at the original scale and consequently, the adjusted scale. According to the authors, for a given company to have a greater chance to achieve success, each sub-criteria was classified per Chart 1 whereby Neutral is graded to the company that is not creating not destroying value, i.e., it is what one minimally requires for the company to operate per expectations. On the other hand, Good grades are applied to companies that position above an average qualified as being Neutral and are able to sustain a level of excellence, thus ensuring this company enhances the possibilities of being successful.

DESCRIPTORS HR		
N	**COMPENSATION R$**	**A**
N4	OWNER MONTHLY PAYMENT/FEE	**G**
N3	FEES	
N2	MONTHLY WITHDRAWLS – FINANCIAL CORPORATE PERFORMANCE	**N**
N1	MONTHLY WITHDRAWLS – PERSONAL NEEDS	
N	**TRAINING**	**A**
N4	VERY IMPORTANT	
N3	IMPORTANT	**G**
N2	MINOR IMPORTANCE	**N**
N1	INDIFFERENT	
N	**TURN OVER**	**A**
N4	SCARCE	**G**
N3	MINOR	**N**
N2	HIGH	
N1	VERY HIGH	
MANAGERIAL FUNCTIONS		
N	**EXTERNAL CONSULTING**	**A**
N4	YES, VIA CONSULTING SERVICES	**G**
N3	YES, VIA COURSES, LECTURES AND TRAINING	
N2	YES	
N1	NO	**N**
N	**STRATEGIC PLANNING**	**A**
N3	DOCUMENTED	**G**
N2	NOT DOCUMENTED	**N**
N1	NON EXISTENT	
N	**FINANCIAL CONTROL**	**A**
N4	PLANS, CONDUCTS FINANCIAL CONTROLS, EXECUTES BUDGETS AND EMPLOYS ACCOUNTING CONTROLS	
N3	FEATURES THREE OF THE ABOVE TOOLS	**B**
N2	FEATURES ONE TO TWO OF THE ABOVE TOOLS	**N**
N1	NON EXISTENT	

EVOLUTION STAGE		
N	**PRODUCT LINE**	**A**
N3	SEVERAL LINES	**G**
N2	ONE SINGLE LINE	**N**
N1	ONE SINGLE PRODUCT	
N	**CAPITAL TO EXPAND CORPORATE PRODUCTION**	**A**
N4	EQUITY/OWN CAPITAL	**G**
N3	NEW PARTNERS	
N2	DEVELOPMENT BANK FINANCING	**N**
N1	COMMERCIAL BANK FINANCING	
N	**MARKET OF OPERATION**	**A**
N4	BRAZIL AND ABROAD	
N3	BRAZIL	
N2	STATE	**G**
N1	LOCAL	**N**
GROWTH STRATEGY		
N	**DIFFERENTIALS**	**A**
N4	OVER 500	
N3	BETWEEN 100 AND 200	**G**
N2	UP TO 10	**N**
N1	NONE	
N	**MARKETING**	**A**
N4	YES, MORE THAN THREE COMMUNICATION MODALITIES	
N3	YES, FROM TWO TO THREE COMMUNICATION MODALITIES	
N2	YES, VIA ONE COMMUNICATION MODALITY	**G**
N1	NON EXISTENT	**N**
N	**INNOVATION TIME LAPSE**	**A**
N4	MONTHLY	
N3	ANNUALLY	**G**
N2	INNOVATES ACCORDING TO COMPETITION´S PRESSURE	**N**
N1	INNOVATION PROCESS IS NOT STEADY	
FINANCE		
N	**TAXES**	**A**

N4	PAYS CORRECTLY	**G**
N3	PAYS 50% TO 99%	**N**
N2	PAYS LESS THAN 50%	
N1	DOES NOT PAY	
N	**BUDGETS**	**A**
N4	COLLECTIVE OPINION OF ALL COLLABORATORS	
N3	UPPER MANAGEMENT OPINION	**G**
N2	MANAGER´S OPINION	**N**
N1	NON EXISTENT	
N	**CASH FLOW**	**A**
N4	COMPLETE	
N3	BETWEEN 70% TO 99%	**G**
N2	LESS THAN 70%	**N**
N1	NON EXISTENT	
	FACILITIES (STRUCTURE)	
N	**ELECTRONIC EQUIPMENT**	**A**
N4	HIGH TECHNOLOGY	
N3	MODERN	**G**
N2	OUT OF DATE	**N**
N1	PRECARIOUS	
N	**ACCESSIBILITY TO EQUIPMENT**	**A**
N4	ALL THE ORGANIZATION	**G**
N3	SOME LEVELS PLUS MANAGEMENT	**N**
N2	UPPER MANAGEMENT	
N1	OWNER	
N	**RENOVATION OF ASSETS**	**A**
N4	ANNUALLY	
N3	TWO YEARS	
N2	FIVE YEARS	**G**
N1	WHEN TOTALLY DEPRECIATED	**N**

Chart 1: Classification of descriptor sub-criteria
Source: Prepared by the authors

The compensation rate was calculated based on the six major groups. Thus the result of the impact generated by each question was obtained, utilizing

as calculation support method that known as Swing Weights, as pictured in Table 3. This method (Von Winterfeld & Edwards, 1986; Goodwin & Wright, 1991; Beinat, 1995) initiates as of a fictitious action employed on the performance of the Neutral level of impact encountered throughout all of the model´s criteria (Lima, 2003). To arrive at the Swing Weights percentage, the quantity of each descriptor´s points was divided by their respective group´s total.

Table 3: Swing Weights Method

SWING WEIGHTS	SCORE	%
A	80	0,35
B	100	0,43
C	50	0,22
TOTAL H.R.	**230**	**1**
E	90	0,32
F	100	0,35
G	95	0,33
TOTAL M.F.	**285**	**1**
I	50	0,20
J	100	0,40
K	100	0,40
TOTAL E.S.	**250**	**1**
M	45	0,20
N	80	0,36
O	100	0,44
TOTAL G.S.	**225**	**1**
Q	50	0,22
R	95	0,42
S	80	0,36
TOTAL F.	**225**	**1**
U	70	0,41
V	60	0,35
X	40	0,24
TOTAL F/S.	**170**	**1**

Source: Prepared by the authors

To calculate the compensation rate, the Swing Weights method was employed, multiplying the percentage graded to the descriptor by its group total. Subsequently, impact was calculated as of responses gathered via the questionnaire that was applied on managers.

Table 4: Compensation rate applied to company 24

COMPENSATION RATE – COMPANY 24									
	SWING WEIGHTS %		N4	N3	N2	N1	COMP. RATE	IMPACT	SCORE
COMPENSATION R$	35%	A	100	67	0	-50	5%	0	0
TRAINING	43%	B	125	100	0	-125	7%	125	8,152174
TURNOVER	22%	C	100	0	-200	-400	3%	100	3,26087
HUMAN RESOURCES	15%	D							1,711957
EXT. CONSULTING	32%	E	100	80	70	0	9%	80	7,578947
STRATEGIC PLANNING	35%	F		100	0	-67	11%	0	0
FINANCIAL CONTROL	33%	G	233	100	0	-433	10%	0	0
MANAGERIAL FUNCTIONS	30%	H							2,273684
PRODUCT LINE	20%	I		100	0	-29	2%	100	2
CAPITAL FOR EXPANSION	40%	J	100	38	0	-13	4%	100	4
MARKET OF OPERATION	40%	K	500	400	100	0	4%	0	0
EVOLUTION STAGE	10%	L							0,6
DIFFERENCIALS	20%	M	117	100	0	-50	3%	125	3,75
MARKETING	36%	N	143	129	100	0	5%	100	5,333333
INNOVATION TIME LAPSE	44%	O	188	100	0	-63	7%	188	12,53333
GROWTH STRATEGY	15%	P							3,2425
TAXES	22%	Q	100	0	-13	-25	3%	100	3,333333
BUDGETTING	42%	R	171	100	0	-114	6%	171	10,83
CASH FLOW	36%	S	267	100	0	-67	5%	267	14,24

FINANCE	15%	T							4,2605
ELETRONIC EQUIP.	41%	U	143	100	0	-143	6%	143	8,832353
ACCESS TO EQUIP.	35%	V	100	0	-75	-125	5%	-75	-3,97059
ASSET RENEWAL	24%	X	167	150	100	0	4%	150	5,294118
FACILITIES/STRUCTURE	15%	Z							1,523382

Source: Prepared by the authors

To calculate the total *MCDA-C* score, the following formula was employed:

Score= % of Group x [(Compensation Rate x Impact) + (...)]

4 PRESENTATION AND ANALYSIS OF RESULTS

Once calculations were conducted and results analyzed, evidence indicates that amongst those subject to study the company that presented the best performance was that numbered as 24, featuring a 13,6120 score, followed by company number 13 with 13,3395 and in third place, company number 20 scored 12,0309. Amongst those that presented the worst results, companies number 19 and 11 scored -9,0023 and -11,3324 respectively, whilst company number 22 presented the poorest amongst the 25 total, classification: -13,7084 (Table 5).

No single company was able to score the maximum figure that was set for this study, whereby 28,8986 points would have meant that the company addressed all best requirements, thus demonstrating that, although company number 24 topped the study´s ranking, it still has to implement improvements in a handful of aspects.

Table 5: *MCDA-C* Classification of studied companies

COMPANY RANKING		
Classification	Company Number	Score
1st.	24	13,6120
2nd.	13	13,3395
3rd.	20	12,0309

4th.	3	11,9431
5th.	9	10,5537
6th.	6	10,1522
7th.	14	10,0423
8th.	1	9,4424
9th.	16	9,1111
10th.	25	8,9500
11th.	10	8,7731
12th.	4	8,4347
13th.	15	8,0272
14th.	17	6,3869
15th.	5	5,8407
16th.	7	4,5827
17th.	21	1,0814
18th.	18	0,4822
19th.	8	0,4349
20th.	2	-1,1386
21st.	12	-4,6853
22nd.	23	-5,3347
23rd.	19	-9,0023
24th.	11	-11,3324
25th.	22	-13,7084

Source: Prepared by the authors

As of Table 5, one notices that six companies (24%) are facing an alarming situation given that they were found to be below the level deemed Neutral (zero score), which effectively represents the minimum requirement for these companies to function adequately. Along this same line of thought, the only organizations that attained replies that qualified at minimum level of that deemed Neutral were those numbered 13, 16 and 25 which ranked respectively in the 2nd., 9th., and 10th. positions evidencing that these companies are able to maintain an equilibrium across the various areas that were analysed.

Table 6 presents each company´s average age, reinforcing the findings of IBGE´s (2002) research which suggests that companies that face the greatest difficulties are those most recently set up.

Table 6: Average company age

RANKING	COMPANY	AVERAGE AGE (years))
1st.to 5th.	24, 13, 20, 3 e 9	30
21st.to 25th.	12, 23, 19, 11 e 22	16

Source: Prepared by the authors

In as much as the sum total score each descriptor attained as of the questionnaire (pictured in Table 7) one concludes that the Managerial Functions presented the lowest figures yet it is vital to companies that wish to plan out and have a full grasp over their activities.

Within this same group, the subgroup representing financial control comes to light in a negative manner as being that which obtained the lowest scores whilst investigating the use of the following tools: financial planning, cash flow, budgeting and accounting control. This demonstrates that managers turn a blind eye to such valuable tools that do effectively support decision making in a satisfactory manner and consequently reflect in the organization´s performance.

Table 7 further demonstrates that the most outstanding group was that coined as "Evolution Stage" which highlights the trend of MSEs ever increasingly seeking to expand, whether via a number of product lines or by extending the scope of markets they operate in. In fact, amongst the entire set of descriptors, the latter was the one that attained the highest score.

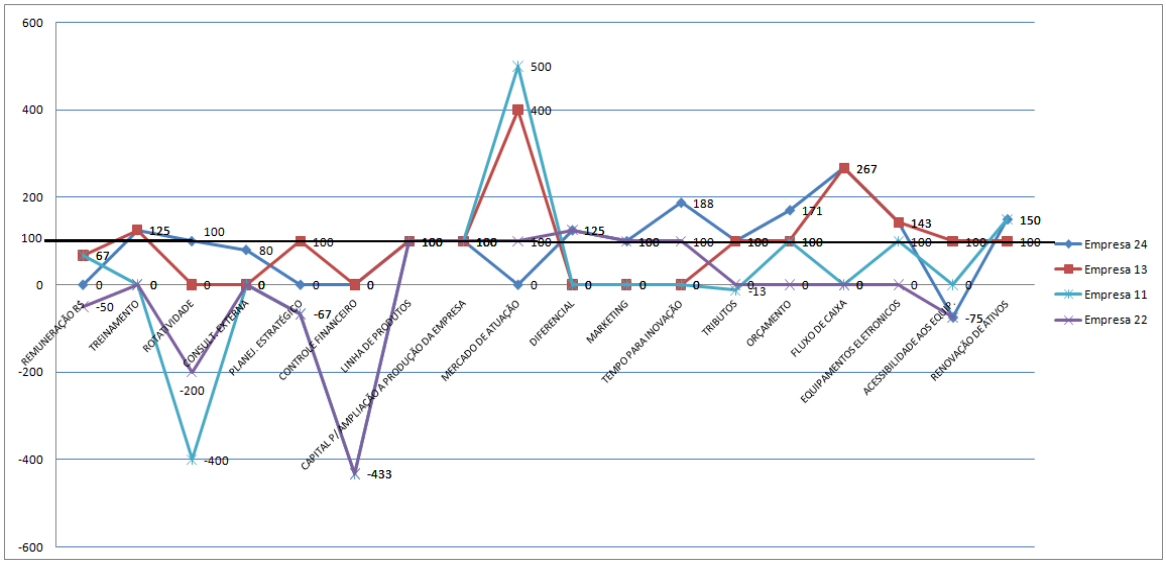
Table 7: Score per descriptor

DESCRIPTORS	SCORE TOTAL	RANK
COMPENSATION R$	536	13th.
TRAINING	1725	8th.
TURNOVER	-1300	17th.
HR	**961**	5th.o
EXTERNAL CONSULTING	720	11th.

STRATEGIC PLANNING	-3	16th.
FINANCIAL CONTROL	-2065	18th.
MANAGERIAL FUNCTIONS	**-1348**	6th.
PRODUCT LINE	2500	4th.
CAPITAL TO EXPAND THE COMPANY´S PRODUCTION	1699	9th.
MARKET OF OPERATION	3900	1st.
EVOLUTION (MATURITY) STAGE	**8099**	1st.
DIFFERENCIAL	475	14th.
MARKETING	2317	5th.
INNOVATION TIME LAPSE	1302	10th.
GROWTH STRATEGY	**4094**	4th.
TAXES	1874	7th.
BUDGET	557	12th.
CASH FLOW	2235	6th.
FINANCE	**4666**	3rd.
ELECTRONIC EQUIPMENT	2545	3rd.
ACCESS TO EQUIPMENT	125	15th.
RENOVATION OF ASSETS	3152	2nd.
FACILITIES (STRUCTURE)	**5822**	2a

Source: Prepared by the authors

Graph 1 pictures the impacts of descriptors at the two companies that presented the highest scores and at the two companies that attained the lowest scores.



Graph 1: Comparison between the best and the worst companies ranked according to the *MCDA-C*

Source: Prepared by the authors

In this study, researchers highlighted the group "Managerial Functions" - which accounted for 30% of the sum total score - as being vital to the success of the MSEs. Company 24 - much like others that attained the best results - was able to maintain a very regular average within the group. In opposition to the best placed companies those that presented the worst results tend not to maintain a standard of excellence in as much as their managerial functions are concerned.

Another relevant point Graph 1 depicts when comparing companies relates to the market they operate in, whereby, those that occupy the top positions deploy their activities both in Brazil and abroad and focus in the fields of commerce and services. On the other hand, those lowest ranked despite focusing in the same fields, basically operate within the local or regional market.

When asked about the percent of time managers devoted to planning, control, leadership and organization activities, results revealed that companies featuring the worst scores devote too much time to one of the activities, far too little time remaining for others. On the other hand, well positioned companies distributed time in a proportional manner across all activities, thus demonstrating greater knowledge of the various fields of the organization.

Still according to Graph 1, one notices that top ranked companies also excel in terms of the cash-flow attribute since they keep a strict registry of all

inflowing and outflowing resources and this is deemed vital to companies since, according to the Sebrae (1999), "in general, the most relevant difficulties faced by entrepreneurs refer to the absence of working capital (64% of active companies and 52% of those extinct". Outcomes of the kind are associated with the absence of circulating capital which usually occurs due to the absence of cash flows.

5 FINAL CONSIDERATIONS

According to studies that were recently conducted by Filardi (2006), Ribeiro Neto (2008), Da Silva (2008), Filardi and Santos (2012) and Nascimento (2011) there isn´t a specific factor that can be deemed solely held accountable for the early closure of an MSE´s activities. Nevertheless, one notices that mortality contributing factor risks are intensely interconnected and largely depend on the entrepreneur´s behaviour (problem owner), who tends to substantially influence the performance of these companies and their eventual survival or extinction. This study reinforces this statement since, once results were analysed, several issues prove to be directly linked to the leader.

By employing the multicriteria methodology aiding constructivist decision making (*MCDA-C*), this study was able to quantify some of these factors and the tool also enabled the shaping of an overall assessment of each surveyed company. In addition to this instrument, the model also allows for the preparation of recommendations comprising improvement actions with views to mitigating risks perceived by the entrepreneur, in addition to enabling the evaluation of impacts of the possible implementation of the suggested actions.

Amongst all groups evaluated that of Managerial Functions - comprising strategic planning and financial control – is vital for a company to be successful since these functions ground the well-functioning of the organization.

This study also demonstrated that many entrepreneurs do not seek external consulting services, i.e., abstain from a neutral perspective of the organization which most often is able to identify errors that were not perceived by the manager. Thus, if one adds this factor to that related to the absence of experience, the company becomes truly vulnerable to changes in the marketplace.

Another fact that is relevant for entrepreneurs resides in the selection of human capital, revealed by the high turnover rate of employees which in turn interferes in the company´s performance since it demands both time and costs in terms of training.

According to this study´s results, 24% of surveyed companies are facing an alarming situation a fact that demonstrates how a significant portion of companies tend to go bankrupt. Within this same context, it is worth noting that only three companies, i.e., 12% of the sum total surveyed, provided responses that corresponded to the minimum level of the grade deemed as being neutral, suggesting that the vast majority of surveyed companies are over focusing in some areas and overlooking others.

The areas that most lag behind required levels and thus call for MSEs managers´ more careful attention are: financial control, employee turnover rates and strategic planning. All are extremely important for the organization given that they are essential tools to ensure corporate short and long term planning.

Results reinforce the appropriateness of alerting MSE managers as to the fact that the descriptors that revealed the worst performance figures are in alignment with previously conducted research on MSE early mortality, indicating that some of the most relevant factors are precisely the absence of strategic planning and financial control (Filardi, 2012; Sebrae, (2004) and the care that must be taken when selecting human capital (Filardi, 2012).

Under this same theme, it is appropriate to spotlight the fact that having a sound cash flow to control all resource inflows and outflows is of core importance to companies since most of the difficulties faced by entrepreneurs relate to the absence of working capital which usually results from the lack of this kind of control routine. In fact, this study proves that the best ranked MSEs are those that devote efforts to prepare, make use and keep cash flows under strict control.

Another relevant point that was raised by this study lies in the fact that companies that operated in both the domestic and the international markets evidenced superior results as compared to those that solely focused on the local and regional markets, thus being less subject to regional seasonal fluctuations.

In as much as leadership´s time management is concerned, outcomes indicate that managers who devote their time across all activities in a well distributed manner are able to increase their level of excellence because they get

to know all of the company´s areas. The same does not hold true to those who devote too much time to one single activity or focus on a single area given that this places others in a less relevant priority level.

Finally, findings confirm that the purpose of this research was addressed given that the study´s prime contribution was attained, demonstrating the use of performance evaluations at MSEs as of the structuring of an *MCDA-C* model, which can inhibit companies from going bankrupt.

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