

ANTECEDENTS AND OUTCOMES OF THE CEO ROUTINE ENGAGEMENT PATTERNS

By

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A thesis submitted for the degree of Doctor of
Philosophy

at the Norwich Business School
University of East Anglia

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To Ingrid, Daniel, Sara and my parents.

With my love, gratitude and apologies.

Abstract

This thesis contributes by articulating and testing theory on routines and managerial action of CEOs, proposing an approach that focuses on the engagement patterns of CEOs in routines that have to do with information, resource and strategy management. It follows the trend to bring managers back into the scope of research taking place within the streams of the resource-based view and routines theory. This thesis also answers the call to study actual, rather than potential, contributions of the CEO to an organization.

This thesis develops a framework and tests eight propositions and sixteen hypotheses, which have to do with the specifics of the engagement patterns of CEOs in six different routines (scanning of the environment, information diffusion, resource allocation, mentoring, strategy implementation and strategy regeneration) according to causal antecedents rooted in the individual (tenure, functional experience and education), and outcomes observed in the organization (strategy and performance). Data to test the propositions and hypotheses were collected using the survey method conducted with a sample of CEOs of Mexican SMEs.

The results corroborate the applicability of the concept and framework proposed to empirically study the role of top managers in the organization. The measures developed to make this approach operational for empirical application proved to be reliable and valid, thus enhancing their potential use in future research. Furthermore, the differences in the patterns of engagement of CEOs were generally according to expectations. When related to individual level antecedents, the engagement patterns of CEOs were congruent with the prescriptions regarding particular tenure ranges, the specifics of functional expertise and the advantages of graduate education.

When related to organizational outcomes, engagement in some routines was contingent with the strategy of the SMEs, while engagement in others was quite prevalent among different organizations. The results shed light on a way of defining elements of SMEs regarding strategy, structure and survival related with the specifics of managerial action. Finally, the results show that managerial efforts devoted to information and strategy related routines were particularly relevant to performance outcomes within this sample of SMEs, supporting the logic that posits managerial efforts as valuable resources for organizations.

Acknowledgements

I would like to thank my supervisors, Professor Naresh R. Pandit and Professor Nikolaos Tzokas, for their constant support, enthusiastic encouragement and guidance. In particular, I want to thank their clear, challenging, creative and generous involvement provided throughout the project. Professor Yehuda Baruch and Professor Mustafa Ozbilgin, both faculty members from the Norwich Business School, provided helpful comments in different stages of the research project. To my colleagues at IPADE Business School, Francisco Arenas Ballester, Alfonso Bolio Arciniega, José Antonio Dávila Castilla, Carlos Ruiz González and Julián Sánchez García, and the faculty of the business policy area, I want to say thank you for their support and patience during the time of my studies. Also, I want to thank this Institution for the access provided to collect data, and the funding granted; the same applies for the funding provided by CONACYT. Finally, I would like to express my gratitude for the help, support and suggestions received from Catherine Baker, Georgina Fabro, Kemi Faloye, David Hurtado, Cristina Izaguirre Mora, Roland Kaye, Fiona Lettice, Nicki Lehrer, Federico Lunello, Ingrid Molina González, Cesar Molina Romero, Christian Morales, Toshiko Namimatsu, Fabio Novoa, Abdullah Opute, José Luis Paredes González, Mariana Paredes Izaguirre, Mauricio Paredes Izaguirre, Leezett Timpe, Laura Rodríguez Juárez, Joana Vassilopoulou and Manuel Vásquez.

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Chapter 1: Introduction

1.1 Introduction

The action of CEOs is the central concern of this thesis. The general proposition addressed in this study is that variation in the routine engagement patterns of CEOs is contingent on constructs observed at different levels of analysis. Specifically, the focus of this study is placed on antecedent constructs at the individual level of analysis, and outcome constructs at the organizational level of analysis. Thus, it is expected that this line of research will contribute to expanding knowledge regarding the link between the engagement in specific activities on behalf of the CEO, and individual and organizational idiosyncrasies.

The motivation for this study is based on the recent trend in strategic management to bring managers back into the scope of research, specifically within the theoretical streams of the resource based view of the firm (RBV) (e.g., Holcom *et al.*, 2009; Mahoney 1995) and organizational routines (e.g., Felin and Hesterly, 2007; Felin and Foss, 2005). The study follows the invitation to push for constructs that reflect actual, rather than potential contributions of top managers, and their effects on the organization (e.g., Carpenter *et al.*, 2004; Lawrence, 1997). The motive for this study is also based on the call to conduct research that produces implications for practitioners working in the business world (e.g., Priem *et al.*, 1999).

This thesis aims to contribute to a deeper understanding of the influence of CEOs in the organization by:

- Providing a synthesis of research in managerial action and linking this work with related research within the RBV and organizational routines theory

- Proposing the concept of CEO routine engagement patterns as a unit of analysis to study the action of CEOs
- Providing a framework to apply this concept in empirical research
- Contributing to the understanding of the influence of CEOs in the organization by conducting empirical research following the proposed framework

The first two contributions were achieved through a review and synthesis of relevant literature of the theoretical perspectives in question. Then, the concept of CEO routine engagement patterns is defined highlighting its managerial and organizational importance. To apply the concept in empirical research, a framework is developed by linking the specifics of the engagement patterns of the CEO with several causal antecedents rooted in the individual and with outcomes observed in the organization. Finally, in the empirical study, propositions and hypotheses are derived and tested regarding the specifics of the engagement patterns of CEOs along six different routines, in accordance with some of the causal antecedents and organizational outcomes initially proposed in the broader framework.

The patterns of action considered in the empirical study were those related with the scanning of the environment, information diffusion, resource allocation, mentoring, strategy implementation and strategy regeneration. The causal antecedents considered were those related with the accumulated experience of the CEO (tenure, functional experience and graduate education), and the organizational outcomes considered were organizational strategy and performance. This empirical study also represents an answer to the call to develop approaches that characterize routines in ways suitable for statistical analysis (Winter, in Murmann *et al.*, 2003).

Methodologically, the study is placed in a realist philosophy, as research informed by theories such as the RBV should be (Godfrey and Hill, 1995). Regarding knowledge creation, the study follows a hypothetico-deductive model (Popper, 1972) to derive propositions and hypothesis to be corroborated empirically. In the empirical study, eight propositions and sixteen hypotheses were developed according to theory about the antecedent and outcome constructs mentioned in the previous paragraph. The study relied on a multilevel of analysis perspective to enhance the validity of the proposed framework (Denzin, 1970).

Quantitative data were gathered through a cross-sectional, self-administered questionnaire applied to a number of CEOs of Mexican SMEs. Several analyses were conducted on the dataset to ensure its parametric suitability. After the assessment, a data reduction procedure was conducted on some items of the dataset to develop the final scales for the routine engagement pattern constructs. Then, several statistical techniques were used to test the hypotheses regarding the variation in the routine engagement patterns of CEOs among several subgroups derived from the different antecedent and outcome constructs of study.

The rest of this chapter goes deeper into detail regarding the introduction of this thesis. Thus, section 1.2 discusses the theoretical, methodological and managerial factors that motivated this research initiative. This is followed by a discussion of the objectives and expected contributions of the thesis in section 1.3. Section 1.4 outlines the research methods considered in the empirical study. Finally, section 1.5 presents an outline of the structure of the thesis.

1.2 Motivation

The strategic management field has become a branch of the social sciences within the last half century (Hoskisson *et al.*, 1999), which is interested in explaining how organizations and its managers succeed within a competitive environment (Nag *et al.*, 2007). During this time, research on top managers has been wide and diverse in the approaches to study the phenomena (e.g., Cannella and Monroe, 1997; Davis *et al.*, 1997; Pettigrew, 1992). However, the motives behind this thesis have to do with theoretical, methodological and practice-oriented calls to research top managers focusing on the idiosyncrasies of their action. With regard to theory, the thesis is in line with the current trend of the strategic management field to study managers following the theoretical streams of the RBV and organizational routines.

The RBV has become a dominant approach to explain organizational differentials and firm success (Acedo *et al.*, 2006; Nerur *et al.*, 2008; Newbert, 2007; Ramos-Rodriguez and Ruiz-Navarro, 2004). This strategic approach succeeded in switching the attention of academics and managers from seeking and defending a competitive advantage based on privileged market positions within industries, to the study and development of the firm specific assets that lead to growth and better performance over time (Barney, 1991; Nelson and Winter, 1982; Penrose, 1959; Wernerfelt, 1984).

The work of Ambrosini and Bowman (2010), Castanias and Helfat (2001), Eisenhardt and Martin (2000), Holcomb *et al.*, (2009), Ray *et al.*, (2004) and Sirmon *et al.*, (2007) exemplify recent developments within the RBV that follow the claims to use less aggregate ways to measure the contribution of a firm's resources and capabilities (Bowman and Ambrosini, 2000; Coff, 1999), and to clarify the way resources and managers interact to

create differential rents (Mahoney, 1995). Instead of looking for specific assets and capabilities, research should focus on the actions that top managers engage in to create value for their organizations (Holcomb et al., 2009).

In line with the logic of the RBV, routine theory identifies organizational routines as the basic components of organizational behaviour (March and Simon, 1958; Cyert and March, 1963, Nelson and Winter, 1982). This approach to studying organizations has provided the basis for studying how collective repetition and learning drive towards firm heterogeneity and rent differentials (Teese *et al.*, 1997), a superior competitive position (Hoopes and Madsen, 2008) and organizational change (Becker *et al.*, 2005; Feldman, 2000; Nelson and Winter, 1982; Teese, 2007).

However, according to the work of Felin and Hesterly (2007) and Felin and Foss (2005), research on organizational routines should take into account the weight and importance that key individuals have on this inherently collective phenomenon. These authors argue that theory and research on organizational routines have neglected the role played by individual idiosyncrasies, focusing only on collective ones to explain differential organizational outcomes. As pointed out by Felin and Foss (2005, p. 441), “to fully explicate organizational anything one must fundamentally begin with and understand the individuals that compose the whole (...)”.

Furthermore, Felin and Hesterly (2007) argue that individual effects remain an alternative explanation in most strategy related studies based on collective constructs: “Current collectivist explanations may in some cases merely capture what are really the effects of differing individual inputs in skills and knowledge” (p. 207). As noted by Aldrich (in Murmann et al., 2003, p. 27), in the extreme, this emphasis on the collective has important

implications for research conducted in the field: “If we truly focused on routines, competencies, practices, and so on, we [researchers] would NOT follow people anymore in our research. Instead we would follow how competencies spread, replicate, and insinuate themselves into organizations. People would disappear from our equations”.

Top managers are of research interest because of the influence they have in their organizations. Their actions and knowledge affect the pool of resources a firm possesses (Castanias and Helfat, 1991; 2001; Felin and Hesterly, 2007; Mahoney, 1995); adding or destroying value while interacting with the firm’s resources (Sirmon *et al.*, 2007). Moreover, the ability of the managerial resource to coordinate the interaction and deployment of the available organizational resources plays a key role in explaining sustained superior performance (Holcomb *et al.*, 2009). Thus, the convergence of these theoretical approaches about the idiosyncratic value of top managers is one of the justifications of this research initiative.

From a methodological perspective, this thesis follows the invitation to work with constructs that reflect actual, rather than potential, contributions of top managers to an organization. This point originates from a large body of research that studies the top manager’s influence in the organization based on demographic constructs (e.g., Beal and Yasai-Ardekani, 2000; Entrialgo , 2002; Govindarajan, 1989; Gupta *et al.*, 1984; Thomas *et al.*, 1991, Thomas and Ramasswamy, 1996). Most of these studies follow Hambrick and Mason’s (1984) seminal article that posits demographic constructs as good proxies of top manager’s cognitions when studying upper echelons.

This stream of research has sought to study the effects that top managers’ demographics have on organizational performance, strategies, structures, strategic decision process and

degree of innovation, among other organizational outcomes (e.g., Carpenter *et al.*, 2004; Finkelstein *et al.*, 2009). However, it is an issue that after twenty-five years, its core still relies on methods using demographic proxies, showing little effort to explore deeper variables in order to understand managerial behaviour (e.g., Hambrick, 2007).

Therefore, while the amount of research on top managers based on demographics grows, so does the claim to address what happens inside the “black box” of organizational demography (Carpenter *et al.*, 2004; Lawrence, 1997). Priem *et al.*, (1999) warn about the trade-offs behind the use of demographics in strategy research, arguing that their use inherently implies an emphasis on measurement reliability over construct validity, prediction rather than explanation, and description over prescription; where results are “likely characterized by weak or uninterpretable findings, unexplained phenomena, and unusable prescriptions” (p. 938). Furthermore, research based on demographics seems to underestimate the role of human will when explaining organizational phenomena (Mahoney, 1995), and ignores the importance of managerial action in the evolution of organizations (Penrose, 1959). It is in part what managers do within their organizations that make them perform better or worse.

Research should balance the weight placed on potential measures with factual accounts to provide a deeper understanding of managers and their effects on an organization (Stevenson and Jarillo, 1990). According to Gartner (1988), the particular characteristics of top managers are adjunct to their behaviours, and such characteristics may or may not contribute to organizational outcomes. Hence, to understand the effects that top managers have on the firm, the emphasis should be on what that person does rather than on who he or she is. For Penrose (1959), the most important managerial contributions to the firm come not from the

temperamental characteristics of managers, but from the productive services managers can render. As noted by Carpenter *et al.*, (2004, p. 770) in their review on research into top managers: "...there remains a need to show how (...) demographics map on to particular cognitions, socio-cognitions and behaviours".

Finally, from a managerial perspective, the motive for this study is based on the call to conduct research into top managers whose outputs are actionable by practitioners working within organizations. As noted by Priem *et al.*, (1999), research on upper echelons based on demographics lacks operational validity which, according to Thomas and Tymon (1982, p. 348), has to do with the "ability of the practitioner to implement action implications of a theory by manipulating its causal variables".

For Priem *et al.*, (1999), research based on demographics does little to inform practice because of three reasons. First of all, demographic variables are inherently difficult for managers to manipulate when aiming for specific organizational outcomes. Secondly, demographics usually rank low in the priority order when selecting top managers. And thirdly, by definition, factual variables rather than proxy variables better explain the observed phenomena. Thus, by providing sense-making and operational prescriptions (Thomas and Tymon, 1982), it is expected that this thesis will enhance the practical relevance of its findings.

1.3 Research objectives and expected contributions.

1.3.1 Objectives

As noted in the discussion above, the motives driving this thesis are varied but are somehow interrelated around the premise that the action of CEOs matters to organizations. With this in

mind, fragmented bodies of literature were reviewed in a research project that considers two general aims:

- (1) to develop a routine-based framework to conduct research on CEOs based on the patterns they follow while engaging in action; and,
- (2) to empirically test this research approach

From the review of literature, three outcomes were expected: first, the identification of the theoretical and methodological elements to justify the study of CEOs according to the perspective proposed in this thesis; second, the development of an appropriate conceptual framework, identifying a broad range of antecedent and outcome constructs suitable to empirically test such framework; and third, the discussion of relevant literature about some of these antecedent and outcome constructs to derive the propositions and hypotheses to be tested empirically.

1.3.2 Expected contributions

There seems to be a need to further integrate the body of knowledge regarding the influence of CEOs in the organization despite the substantial amount of research conducted on the subject (Carpenter *et al.*, 2004). A possible explanation of this need for integration lies in the variety of theoretical and methodological approaches that have emerged to push forward research on this phenomenon. As noted by Weick (1989), theory development under these characteristics requires explanations that provide accuracy and detail in the propositions, and clarity on the assumptions supporting such proposed explanations. This thesis aims to provide a framework with these characteristics, which contributes to the understanding of the influence of CEOs in the organization by:

- Providing a synthesis of research in managerial action and linking this work with related research within the RBV and organizational routines theory
- Proposing the concept of CEO routine engagement patterns as a unit of analysis to study the action of CEOs
- Providing a framework to apply this concept in empirical research
- Contributing to the understanding of the influence of CEOs in organizations by conducting empirical research following the proposed framework

To an academic audience, this thesis contributes with an approach to study the influence of CEOs based on their patterns of engagement in action, which is suitable to empirically link the idiosyncrasies of these action patterns with individual antecedents and board organizational outcomes. In addition, this thesis explores new characterizations of the concept of routines that may be suitable for statistical analysis. To a managerial audience, the thesis expects to offer insights and empirical evidence that allow managers to reflect upon their particular way of engaging in action during their everyday practice. It also provides a reference to assess the contribution of the managerial work of CEOs to the organization.

1.4 Research methods

This section summarizes the methods followed to empirically test the framework proposed in this thesis. A full discussion of the methodology is presented in chapter 3.

The literature review developed eight propositions and sixteen hypotheses regarding the variation in the engagement patterns of CEOs in six different routines according to constructs at the individual and organizational level of analysis. The individual level

antecedents considered in the study were tenure, functional experience and graduate education. The organizational level outcomes considered in the study were organizational strategy and performance. The routines considered in this study were: environment scanning, information diffusion, resource allocation, mentoring, strategy implementation and strategy regeneration.

To test the propositions and hypotheses of the study, quantitative data were gathered through a cross-sectional, self-administered questionnaire applied to a sample of 650 CEOs of Mexican SMEs from different industries. All managers were participants of an executive education programme at a Mexican business school that is specifically designed for this organizational position. The data collection phase of the study lasted for two months, from February 22nd to April 27th 2009. A total of 223 questionnaires were returned, of which 206 were usable in the study.

The measures to make the CEO engagement patterns in each routine operational were based on thirty-three items, which relate to specific elements that theory identifies as constituting for each routine. The items were subject to a data reduction procedure to develop the final scales for the routine engagement pattern constructs. The measures of the remaining constructs considered in the study were based on previous research. Some analyses were conducted on the dataset to ensure its quality. Then, different statistical techniques were used to test the hypotheses regarding the variation in the routine engagement patterns of CEOs among subgroups derived from the constructs of the study.

1.5 Structure of the thesis

The thesis is structured in six chapters, which are described below.

Chapter 1: Introduction

This chapter introduced the present research initiative, providing an overview of the whole document. In addition, it explains the motives, objectives and contributions of the thesis, as well as providing an outline of the research methods followed in the empirical study, and the structure of the whole thesis.

Chapter 2: Literature review

This chapter provides a review of the literature to build and justify the concept and framework proposed in the study; and to develop the eight propositions and sixteen hypotheses developed to empirically test the applicability of the framework. The empirical study focused on the engagement patterns of CEOs in six different routines and their relationship with three antecedent constructs at the individual level of analysis: tenure, functional experience and graduate education; and two outcome constructs at the organizational level of analysis: organizational strategy and performance.

Chapter 3: Research methodology

This chapter presents a detailed account of the methodological approach followed to apply the framework. It discusses the methodology and methods followed in the study, the development of the questionnaire instrument used to collect data, the sampling and data collection procedures of the study, the measurement of the constructs used in the study, and the analysis techniques adopted to test the hypotheses of interest.

Chapter 4: Preliminary data analysis

This chapter discusses and reports several analyses that were conducted on the dataset to ensure its careful and accurate use. Therefore, it describes the characteristics of the sample

in general, it reports and discusses the data screening and univariate statistics of the variables of the study, and it presents the test for common method variance. This chapter also presents the details regarding the data reduction procedure conducted to develop the final scales for the routine engagement constructs. Finally, this chapter discusses the assessment of the parametric assumptions of the variables of study.

Chapter 5: Hypotheses Related Analyses; Discussion of Results

This chapter reports the specific analysis conducted to test the hypotheses regarding the relationships between the routine engagement patterns reported by the CEOs and the antecedent and outcome constructs considered in the study. Results are reported for nine antecedent related hypotheses (five related with tenure, two related with functional experience and two related with graduate education); and seven outcome related hypotheses (five related with strategy and two related with performance). All the results presented in this chapter are followed by the corresponding discussion of the findings.

Chapter 6: Conclusion

This chapter presents the conclusions drawn from the empirical study as well as the thesis as a whole. The implications for theory and practice are also discussed in this chapter. Finally, the chapter closes with a discussion of the limitations of the thesis, and suggestions for future research.

Chapter 2: Literature Review

This chapter reviews literature aiming at four different, but related, objectives: (1) to synthesize research in managerial action and link it with research from the RBV and routine theory (section 2.1); (2) to develop the concept of CEO routine engagement patterns (section 2.2); (3) to develop a framework to conduct empirical research, relating this concept to some causal antecedents and organizational outcomes (sections 2.3 and 2.4); and (4) to contextualize the setting for the development of a series of propositions and hypotheses to empirically test this framework (sections 2.5 and 2.6).

2.1 Managerial engagement in action

Much has been written about the importance of managerial action in the business world (Aguilar, 1992; Andrews, 1971; Holcom *et al.*, 2009; Kotter, 1982; Mahoney, 1995; Mintzberg, 1973; Penrose, 1959). For Penrose (1959), managerial action is the basis for the development, maintenance and evolution of an administrative system that coordinates and transforms human and material resources into productive services, which support the productive opportunities of the firm. CEOs undoubtedly play a key role in the functioning of this system and, in order to make things happen, they have to engage in several activities that have to do with information, resources, and strategy (Hales, 1999; Mintzberg, 1994b). A basic premise of the RBV points out that the managerial engagement in action leads to firm heterogeneity and performance differentials. It is through the engagement in different activities that managers organize human and material resources in different ways to develop different organizations (Mahoney, 1995; Penrose, 1959).

Research suggests at least two behavioural approaches that address how the managerial engagement in action takes place. One approach identifies such engagement as spontaneous, fluid, discretionary and rather unstandardized (Hales, 1999; Tsoukas, 1994; Whitley, 1989).

Accordingly, managers engage in action through brief, interrupted, fragmented and highly interdependent activities; and their acting seems to be oriented towards the solution of *ad hoc* issues and contingencies that managers face in their everyday activities (Mintzberg, 1973). Research based on this *ad hoc* representation of managerial engagement in action has contributed substantially to understand managerial functions (Noordegraaf and Stewart, 2000), and to the development of ideas about the meaning of management (Hales, 1999). However, it presents limitations for research aiming to link the specifics of managerial action with antecedent causal powers inherent to managers (e.g., Tzoukas, 1994), with a broader guiding purpose behind their action, and with concrete organizational outcomes (Carroll and Gillen, 1987; Hales, 1999).

The second approach identifies the managerial engagement in action as patterned rather than spontaneous, where top managers deliberately act following routinized action patterns across time to conduct their organizations (e.g., Garvin, 1998; Lovas and Goshal, 2000; Slvato, 2003). Taking routines as reference mechanisms to portray the managerial engagement in action basically implies that CEOs act in a stable, more structured and planned way; where idiosyncratic repetition, collective action and knowledge creation, rather than improvisation, lead to firm heterogeneity and change (Ambrosini *et al.*, 2009; Eisenhardt and Martin, 2000; Feldman and Pentland, 2003; Nelson and Winter, 1982; Teece and Pisano, 1994).

Literature on routines clearly identifies these two alternatives that CEOs follow to engage in action. Thus, Winter (2003) points that *ad hoc* action engagement, or in his words “brilliant improvisation” is not a routine (p. 991). A routine represents a collective capacity to perform recognizable patterns of interaction¹ (Nelson and Winter, 1982). Hence, for an action to be characterized as a routine, it has to occur repeatedly (Cohen et al., 1996; Becker, 2005a).

¹ As in Becker (2005a), the term interaction in this thesis refers to the type of action that routines consist of.

Such repeated interactions, though they may not be exactly the same in each iteration, should bear a resemblance to a recognizable category of acting or function (Feldman and Pentland, 2003). Furthermore, these recognizable interactions represent a collective phenomenon that allows the participating individuals, including CEOs, to deliver, while tacitly learning about their acting (Becker, 2004; Feldman and Pentland, 2003).

2.1.1 A routine-based perspective of managerial action: benefits and challenges

Building on the concept of routines to portray managerial engagement in action presents several benefits. Firstly, research and theory on routines provide a broad, solid theoretical background to address the interactions between individual and collective level constructs that explain organizational differentials (e.g., Ambrosini and Bowman, 2010; Felin and Hesterly, 2007; Grant, 1996). Secondly, it provides a structure to identify the role of CEOs as valuable resources with effects on the sustained advantage of the organization (Barney, 1991; Nelson and Winter, 1982). Thirdly, it provides explanations regarding the benefits that a routinized engagement in action yields to both managers and the organization in terms of knowledge-related capacities (e.g., Ambrosini and Bowman, 2010; Becker, 2004; Grant, 1996; Spender, 1996). Finally, a perspective based on a routinized engagement in action enables an understanding of how CEOs enhance their managerial capabilities by exerting both stability and change within organizations (Becker *et al.*, 2005; Feldman and Pentland, 2003; Nelson and Winter, 1982; Penrose, 1959).²

However, before relying on routines to portray managerial action, there are some challenges to be considered which are inherent to the concept of routines. Thus, even though the definition of routines, according to the characteristics of repetition, resemblance and

² A detailed discussion about the benefits just mentioned takes place in the following section.

collective action, may represent a shared agreement within routine theory (e.g., Feldman and Pentland, 2003; Becker, 2004); there is a challenge to comply with the second one when conducting empirical research. Thus, if routines have mainly to do with recurrence, what exactly constitutes the same, or even a similar pattern of behaviour? How can a line be drawn between a resemblance of the same behaviour and a different one?

Nelson and Winter seminal ideas on routine theory are crystal clear regarding this issue, emphatically questioning the possibility of expecting something close to exact replication when conducting research within the social realm (1982, p. 118-119). Despite the fact that advancements in addressing this challenge have proposed methodologies to follow changes in patterned sequences (e.g., Abbot and Hryachk, 1990; Pentland, 2003a), it seems that the issue of resemblance has more to do with ontological rather than methodological aspects of the concept of routines.

According to Pentland and Feldman (2005), it may be difficult to identify resemblance in routine-based research because the conceptual interpretation of the term “routine” has different variants, and the elements of each conceptual interpretation might be empirically different. Thus, routines may resemble more or less previous iterations depending on the ontological position held to observe the phenomena. In Pentland and Feldman’s view (2005) routines can represent: (1) actual behavioural regularities, identified as specific actions carried out by specific people, in specific places (e.g., Feldman, 2003); (2) artifacts, which are the physical manifestations of the routine such as regulations, standard operating procedures or manuals guiding an observed behaviour (e.g. Knott, 2003); and (3) abstract ideas or generalizations that people have about the behavioural regularities that conform the routine itself, and lead to observed behaviours (e.g., Feldman, 2000).

In a similar argument, Becker (2005b) cites a fourth interpretation of the concept, which is based on dispositions (e.g., Bourdieu, 1977; 1990). In this view, routines involve deeper causal structures with the potential to restrict and trigger sequential behaviours. As in Tzoukas (1994), a multilevel cause-action perspective, such as the one just described, locates actual behaviours in the rather variable extreme of a continuum, while dispositions – or causal powers– are located in the continuum’s more stable extreme. For example, Bourdieu (1990) points that practice –the actual behaviours– is generated and organized by a more durable system of dispositions. Moreover, routines assumed as abstract ideas are posited to account for a more stable and normalized perspective of the phenomena than when routines are interpreted as the actual behaviours observed (e.g., Pentland, 2003b). The same difference is present when routines such as procedural rules are compared with the pattern of behaviours observed (e.g., Knott, 2003).

In order to tackle the issue of resemblance, routine-based research must be specific about the interpretation assumed and requires finding the fit between such interpretation and the research purpose in hand. Therefore, based on the work of Pentland and Feldman (2005) and Becker (2005b), focusing on the behavioural aspect of routines suits the purpose of this thesis for several reasons. First of all, it implies the selection of a single perspective of routines, which by itself constraints the research focus of the study. Hence, research focusing on the different parts of a routine –rules and abstract ideas– or the interaction among them is initially overruled. Furthermore, explicitly focusing on a single element of the routine represents a strategy to tackle the issue of resemblance. Pentland and Feldman (2005) use the analogy of a “black box” to argue that this strategy enhances the resemblance of recurrent interactions, because a more stable perspective is attained by not unpacking the internal structure of routines.

The second reason is that a behavioural perspective of routines is the one that captures the way individuals interact in order to perform specific functions within an organization, which is compatible with the aim of portraying managerial action in a routinized manner. An important aspect of this perspective is that it brings attention to the function guiding the interactions taking place within routines (e.g., Feldman, 2000; 2003). This is important because focusing on the function brings meaning to what may seem to be mindless actions, conceptualizing them, and their potential alterations, within the whole represented by a specific routine (Pentland and Reuter, 1994)³. Moreover, focusing on the function while studying routines is deemed suitable for specific research purposes: “Treating a routine as a functional whole is a sensible, safe approximation when the research question concerns a description, prediction or comparison concerning the routine as a whole” (Pentland and Feldman 2005, p.801).

The third reason is that the behavioural perspective on routines seems appropriate to link the characteristics of the interaction patterns with direct antecedents and organizational outcomes (e.g., Becker, 2005b). As mentioned at the beginning of this section, a major limitation of the classical approach to studying managerial action was its inability to address such links. Since the focus of this thesis is the CEO and his or her actions, the behavioural perspective is in line with the aim to trace back the specifics of the interaction patterns with the causal antecedents inherent to those powerful individuals immersed in such interactions (Becker *et al.*, 2005; Felin and Hersterly, 2007; Pentland and Feldman, 2005). Finally, Becker (2005b) argues that it is the behavioural perspective which generates performance

³ Pentland and Reuter (1994) use the phrase “effortful accomplishments” to point out that the interactions within routines can vary among several possibilities within the context of the task to be performed. Thus, it can also be argued that focusing on the function provided by routines represents an additional strategy to address the issue of resemblance among recurrent interactions. In this line, Pentland and Feldman (2005) argue that the focus on the function overlays the internal structure of the routine enhancing resemblance.

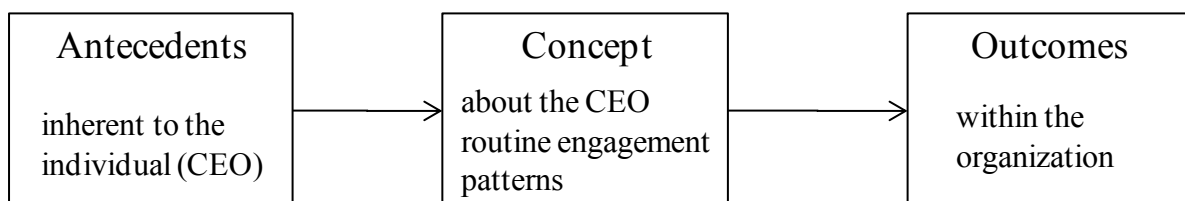
implications and, thus, it represents “the appropriate level of analysis for questions pertaining to performance” (p. 818-819). Table 1 presents a summary of this section.

Table 1. Benefits and challenges of a routine perspective of managerial action – summary

Benefits	Challenges
-Enables links between managerial action and broader to organizational outcomes.	-It is difficult to identify routines when conducting empirical research.
-Highlights the role of the CEOs and their action as valuable resources of the organization.	-The condition of resemblance implicit in the concept of routine is difficult to meet within the social realm.
-Explains the way action and learning interact to enhance the capacities of both CEOs & organizations.	-There are different ontological interpretations regarding the concept of routine.
-Explains the way CEOs exert both stability and change within organizations.	-The ontological interpretation of the concept of routine held must fit the research purpose in hand.

The literature previously reviewed provides a base on which to build a routine-based conceptual framework which focuses on the patterns that CEOs follow to engage in action. Thus, the three defining characteristics of routines, repetition, resemblance and collective action, and four interpretations of the concept were discussed to define a particular approach to portray a routine perspective of managerial action. The following sections go deeper in developing a concept based on the engagement patterns of the CEO, linking it backwards with several causal antecedents inherent to the individual, and forward with several organizational outcomes within the organization. After that, a series of propositions and hypotheses will be derived to test the proposed framework.

Figure 1. Conceptual framework



2.2 Development of the conceptual framework

2.2.1 CEO routine engagement patterns; what are they?

For this thesis, the CEO routine engagement patterns are identified as purpose oriented patterns of behaviour which are governed by CEOs in order to deal with operational and strategic issues. It is through these recurrent interactions that CEOs engage with the resources of the firm to carry out its purpose. In a nutshell, they represent the sequential slots of space and time where the resource management process takes place. Thus, they can be described as *moments* of interaction between the CEO and the human capital base of the firm, which are valuable not by themselves, but because of the effects (expected or not) they have at different levels of the organization. The effects of the engagement patterns of the CEO in the organization should be more apparent in the presence of higher levels of managerial discretion (Hambrick and Finkelstein, 1987).

This perspective to study the influence of the CEO in the organization builds on the premise that it is the interaction between CEOs and other valuable resources of the firm what drives or constraints superior performance. (e.g., Castanias and Helfat, 1991; 2001; Holcom *et al.*, 2009; Penrose, 1959). Furthermore, such interaction allows resources to be managed with the aim of finding a superior fit with environmental opportunities (Mahoney, 1995), which presents a dual challenge for management: the promotion of stability and change within the organization (e.g., Bowman and Ambrosini 2003; Knott, 2001; Nelson and Winter, 1982).

A perspective based on the engagement patterns of CEOs echoes work focusing on macro- and micro-level mechanisms supporting the resource management process of the organization. Thus, at the macro level, the engagement patterns of the CEO affect the management of resources through interactions taking place within board routines and

processes that seek superior fit by manipulating information, resources and the strategy of the organization (Sirmon *et al.*, 2007). At the micro level, the resource management process is affected by punctual interventions within rather stable activity patterns, in which the CEO blocks, promotes or integrates strategic initiatives that are oriented toward firm-environment fit (e.g., Salvato, 2003; Lovas and Ghoshal, 2000).

Finally, the routine engagement patterns of CEOs are worth studying because of the value they provide to the organization and the CEO. According to a resource-based logic, this value lies in their contribution to the sustainability of the organization and the managerial capabilities of the CEO.

2.2.2 The organizational value of the CEO routine engagement patterns

As noted by Barney (1991) in his widely known paper on the resource-based view, *heterogeneity* and *imperfect mobility* are required characteristics of *resources* that are highly *valuable* for the organization. The basic assumption is that resources presenting these characteristics have the potential to generate superior performance over time. The aim of this section, therefore, is to argue that the routine engagement patterns of the CEO are valuable to the organization because they present these characteristics. However, before moving ahead to this aim, three concepts need to be clarified: valuable resources, heterogeneity and imperfect mobility of organizational resources.

According to Barney's (1991) work, a valuable resource must allow either the exploitation of opportunities or the neutralization of threats presented to the organization. In his view, the concept of heterogeneity of resources means that valuable organizational resources are unevenly distributed across competing organizations. Finally, Barney (1991) defines the concept of imperfect mobility of resources as the inability of competing organizations to

acquire or imitate the valuable resource in question (p. 104-105). Accordingly, the routine engagement patterns of the CEO qualify as valuable resources because, through the interactions they enable, the CEOs and the people working with them act upon the opportunities and risks faced by the organization. Moreover, the value of the engagement patterns of the CEO is proposed to be rooted in the idiosyncratic contribution of the CEO to the organization, which is both heterogeneous and imperfectly imitable by competing organizations.

Regarding heterogeneity, knowledge is a guiding principle when referring to managerial action. In his seminal work about the nature of managerial work, Mintzberg (1973) emphatically highlighted the symbiotic relationship between these two concepts. Hence, managerial engagement in action enhances firm-specific knowledge, which in turn enhances managerial action and so forth. Furthermore, such knowledge enables managers to understand the true value and contribution of the resources available to the organization (Ambrosini and Bowman, 2010). In resource-based thinking, this perspective of knowledge is posited as a primary resource underlying organizational heterogeneity (Barney, 1991; Felin and Hersterly, 2007; Grant, 1996; Penrose, 1959; Spender, 1996; Tsoukas, 1996).

In general, the argument points to the fact that the creation, storage and transference of knowledge give organizations a particular advantage in the face of competition (Kogut and Zander, 1996; Nahapiet and Ghoshal, 1998; Nelson and Winter, 1982). For Penrose (1959), such knowledge derives from the interaction of individuals working together, and whose enrichment “not only causes the productive opportunity of a firm to change ... but also contributes to the ‘uniqueness’ of the opportunity of each individual firm” (p. 52-53).

As such, it is argued that organizational knowledge cannot be known in its totality by a single mind; rather it is distributed in a knowledge system that constitutes a specific organization (Tsoukas, 1996; Weick and Roberst, 1993). However, it is also argued that the initial conditions of such ‘collective knowledge’ reside in the individuals constituting the organization (Felin and Hesterly, 2007). Accordingly, research highlights two perspectives to addressing knowledge-based heterogeneity, each differing mainly in the assumption held regarding the ultimate locus of knowledge (Felin and Hesterly, 2007; Grant, 1996; Nahapiet and Ghoshal, 1998); or, in other words, who is accountable for the creation, storage and transference of knowledge, the organization or the individuals working in it?

The first perspective posits knowledge as a social phenomenon that resides within the organization, which is embedded in different forms of collective practice (Nelson and Winter, 1982; Weick and Roberst, 1993), and is independent from the individuals working in them (Nahapiet and Ghoshal, 1998; Spender, 1996). Taking the argument to the extreme, Nelson and Winter (1982) argue that “the possession of technical ‘knowledge’ is an attribute of the firm as a whole, as an organized entity, and is not reducible to what any single individual knows, or even to any simple aggregation of the various competencies and capabilities of all the various individuals, equipments and installations of the firm” (Nelson and Winter, 1982: 63).

The second perspective goes towards the other extreme in disaggregating the locus of knowledge, and pointing to it as rooted on the individuals working within the organization (Felin and Hesterly, 2007; Grant, 1996). A clear reference to this position can be found in Simon (1991, p.125), who argues that “all organizational learning takes place inside human heads; an organization learns in only two ways: by the learning of its members, or by ingesting new members who have knowledge the organization did not previously have”.

For Grant (1996), focusing on the individual as the main actor in the creation, storage and diffusion of knowledge represents the right way to explain organizational knowledge because, in the end, organizational knowledge is about individuals, the idiosyncratic knowledge they possess and the means they have to cooperate with it (p. 120-121).

Despite the apparent polarization, both perspectives recognize the role that idiosyncratic patterns of interaction have in the constitution of heterogeneous organizational knowledge. For example, Weick and Roberst (1993), regarding their concept of ‘collective mind’, argue that it derives from recurrent actions: “Contributing, representing and subordinating actions that form a distinct pattern external to any given individual becomes the medium through which collective mind is manifest.” (p. 364). Regarding the individual level perspective, Grant argues that placing the focus on routines⁴ brings forward the interactions by which individuals and their capacities act and engage in activities that enable knowledge creation, storage and deployment (1996, p. 113).

Following the previous discussion, it seems natural to argue that, regarding knowledge based heterogeneity; this thesis is closer to the ideas coming from the second perspective. As such, it builds on the idea that antecedent causes inherent to the individual –such as knowledge– shape idiosyncratic interaction patterns, in this case the routine engagement patterns of CEOs. Thus, knowledge inherent to the CEO, in the form of path dependent skills (Becker, 1964; Castanias and Helfat, 1991), experience (Hambrick and Manson, 1984), cognitive references (Cyert and March, 1963; March and Simon, 1958) and a particular style of management (Mintzberg, 1994b), represents a key resource driving the heterogeneity of a particular organization⁵.

⁴ To be accurate with Grant’s argument, routines should not be considered as rules; as is the case of this thesis.

⁵ A full discussion of these antecedent causes takes place in the following section.

In addition, this managerial knowledge gives way to patterns of interaction that are unique relative to others taking place in competing organizations. By the very process of interaction, these patterns enhance individual and collective firm specific knowledge, which represents an organizational resource with the potential to yield sustained superior performance.

With regard to imperfect mobility, it can be argued that even though the apparent function of a specific pattern of interaction might be discernible, the organizational effects it produces cannot be easily replicated. Barney (1991), citing the work of Dierickx and Cool (1989), Lippman and Rumelt (1982), and Rumelt (1984), discusses two attributes that blur the relationship between resources and differential effects in performance, hence blocking imitability and securing sustainability: causal ambiguity and social complexity.

It is said that causal ambiguity impedes imitation because the causal links between specific resources and the sustained advantage of the organization cannot be understandable by rivals (Rumelt, 1984). In congruence with this logic, routine theory proposes that the partial understanding of the interactions between resources, procedures and results, taking place within routines, raises barriers to imitation (e.g., Reed and DeFillippi, 1990). Apparently, this happens because routines contain more than explicit –or codified– knowledge, and consider more dimensions of action; such as tacit knowledge, emotions and bodily knowledge (Polanyi, 1958; 1966).

In relation to the argument of this thesis, there are no guidelines to identifying how each of the elements interacting within the engagement patterns of CEOs relates to the outcomes being observed, or in the words of Ambrosini and Bowman (2010 p. 942) “what is not clear

are the inner workings, the synergistic interactions between the components...that collectively deliver advantage”. It is the impossibility of capturing the knowledge on the links between interactions and outcomes what generates ambiguity in the routine engagement patterns of the CEO, making them an inimitable resource with the potential to enhance sustained superior performance.

The attribute of social complexity is related with the impossibility of imitating other firms’ valuable resources because they represent a complex social phenomenon (Barney, 1991). As mentioned before, the idea that the collective work of managers is valuable to the organization is central to the RBV. Over time, social bonds and interactions lead to stocks of knowledge and the development of working cultures that are non-tradable, non-imitable and non-substitutable (Dierickx and Cool, 1989). By engaging in socially complex interactions, CEOs are able to grasp knowledge about the human and material resources of the organization to continually improve their action (Mahoney, 1995).

For Penrose (1959), the knowledge gains obtained from such interactions enable managers “to provide services that are uniquely valuable for the operations of the particular group with which they are associated” (p.46). Moreover, Ghoshal and Bartlett (1994) point to the social interactions taking place between the CEO and the human capital base of the firm as the mechanisms responsible for the rise and development of inimitable organizational cultures. At the core of this thesis is the idea that the systematic engagement of CEOs in activities requiring the coordinated work of several individuals shapes unique organizational values and work dynamics that are non-imitable, and have the potential to differentially affect the sustainability of the organization.

Thus, the organizational value of the routine engagement patterns of the CEO rests on their role as means to deal with the opportunities and risks faced by the organization, the uniqueness inherent to the knowledge of the individuals who engage in them, and in the inability for externals to grasp and replicate their contributions to the sustained performance of the organization.

2.2.3 The managerial value of the CEO routine engagement patterns

Part of the previous section discussed how knowledge –both that inherent to CEOs and that embedded in the recurrent interactions they engage in– has an effect on the sustainability of the organization. However, the creation, storage and transmission of knowledge are not the only by-products of a routinized engagement in action. According to routine theory, resorting to engaging in routines enhances managerial capabilities by exerting both stability and change within organizations (Becker *et al.*, 2005; Feldman, 2000; Feldman and Pentland, 2003; Nelson and Winter, 1982; Winter, 2003).

Routines have generally been conceptualized as mechanisms that provide stability (Becker, 2004; Teece and Pisano, 1994; Winter, 2003). On its most negative side, this aspect of routines may drive managerial action towards inertia (Hannan and Freeman, 1983), mindlessness (Ashforth and Fried, 1988), competency traps (Levitt and March, 1988), among other undesirable outcomes. According to Becker (2004), routines provide stability for two reasons.

The first has to do with actor-related aspiration levels (Cyert and March, 1963), and the second with the economics entailing the change of behaviour (Nelson, 1994). For the first reason, the argument points to the fact that, if an existing routine provides the desired results

in the eyes of the relevant actor, then “no conscious cognitive problem-solving is triggered to find another way to achieve the task” (Becker, 2004, p.659). Regarding the second reason, it is argued that the costs associated with a change of behaviour and the magnitude of the adjustments affecting the individuals in question may emphasize the current course of action.

Despite the potential downsides, the stability-providing effect of routine-based action yields important aids to the function of management (e.g., Becker, 2004; Feldman and Pentland, 2003; Nelson and Winter, 1982). Of particular importance is the role that the stability coming from routinized action plays in the assimilation of predictable outcomes (Knight and Merriam, 1948). According to routine theory, predictability is key to enhancing the managerial capability to coordinate and control (Cyert and March, 1963; Nelson and Winter, 1982), to manage conflict within collective work environments (Coriat and Dosi, 1998; Nelson and Winter, 1982), to deal with uncertainty (Becker and Knudsen, 2005) and to induce organizational change (Becker *et al.*, 2005; Feldman, 2000; Feldman and Pentland, 2003; Nelson and Winter, 1982; Winter, 2003).

Organizations depend on coordinated activities, what Penrose (1959) calls “single-minded direction” (p.18), to operate efficiently. Thus, routines are valuable to management because they are mechanisms that normalize action. Normalized activity patterns are easier to compare, and comparable activity patterns are easier to coordinate and control (Lillrank, 2003). As coordination mechanisms, routines enable a consistent integration of diverse and parallel activities conducted by different individuals –*high level simultaneity*– (Grant, 1996), whose operation can be purposely oriented toward a desired behaviour or goal (Nelson and Winter, 1982).

Furthermore, routines foster coordination by providing a base for the actor's knowledge of his or her expected behaviours and contributions within the broad context of collective work (Feldman and Pentland, 2003). As control mechanisms, routines serve as a way of setting references to compare behaviour. In this matter, Nelson and Winter argue that "...the eventual achievement of a state of routine operation also serves as a target for managerial effort, as much as it does in the context of control of an existing routine" (1982, p. 112).

In addition to their value as coordination and control mechanisms, routines also reduce organizational conflict by establishing agreements about the way work will be conducted. As stated by Nelson and Winter, "... routine operation involves a comprehensive truce in intraorganizational conflict" (1982, p. 110). Though conflict might be also reduced by exerting power residing within hierarchical structures (e.g., Braverman, 1974) or through normative means, such as standard operating procedures (e.g., Feldman and March, 1981); for Nelson and Winter, it is this socially constructed agreement -or truce- between those giving and implementing orders that makes a routine operationally possible⁶.

This notion of shared agreements is appealing because coercive means of inducing action can always be ignored or avoided by claiming ambiguity or lack of tacit detail. In contrast, through a recurrent engagement in action, individual actors are socialized into the ways of the organization (Levitt and March, 1988). For managers, this socializing process is valuable because it gives way to normalized, united and systematic group practices (Bourdieu, 1992), which conform to a work environment where the actors "are rarely surprised at each other's behaviour" (Nelson and Winter, 1982, p. 108).

⁶ This statement derives from the two alternatives of governance mentioned in the literature on routines: governance through motivation and control mechanisms (Nelson and Winter, 1982; Coriat and Dosi, 1998).

Uncertainty is said to arise when decisions can lead to more than one possible outcome (Radner, 1994). Uncertainty is challenging to managers because it diminishes the predictability of the outcomes rendered by the resources developed or acquired by the organization (Rumelt, 1984). However, researchers argue that engaging in action in a routinized manner reduces the negative effects of uncertainty. Accordingly, Becker and Knudsen (2005) believe that routines work as uncertainty reduction mechanisms because of two capacities: (1) they increase predictability –due to the stability-providing effect of routines previously discussed; and (2) they release limited cognitive resources, which means that “they can be used to save on mental efforts and thus preserve limited [cognitive] capacity required to deal with nonroutine events” (p. 750).

From a psychological perspective, routines are also considered as helpful mechanisms in dealing with uncertainty. Consequently, they develop a sense of confidence in individuals, helping to reduce the anxiety caused by oncoming unknown events (Giddens, 1984). Routines are able to foster confidence to face future events in a reinforcing way (Feldman and Pentland, 2003). Therefore, the stable behaviour expected from routinized action provides a base for actors to make confident decisions which, in the long run, provide more confident expectations and decisions with better mutual fit.

Finally, routinized action not only preserves the past by enhancing stability; they also represent an effective managerial mechanism for inducing organizational change. As noted by Becker *et al.*, (2005), the “central proposition of routine theory is that organizations change what they are doing and how they are doing it by changing their routines” (p. 776). In general, routines change due to the influence of exogenous factors such as market (e.g., Edmondson *et al.*, 2001) and managerial pressures (e.g., Knott, 2001). However, they also

change endogenously, as a result of the interactions among the actors involved in the routine (Becker *et al.*, 2005; Feldman, 2000; Feldman, 2003; Feldman and Pentland, 2003).

The process of exogenous change can be summarized in the following way. Uncertain events driven by the market exert pressures on managers. Managers then engage in a routinized manner to gain predictability, enhancing coordination and normalizing action. Such a state of operations allows the managers in the organizations to save cognitive resources in order to address the uncertain events driven by market pressures. The exogenous change imputable to management comes from the articulation of new initiatives to address market driven uncertainty, and from the assessments conducted on the current operations. In both cases, the aspiration levels of actors represent the very basic mechanisms for inducing change.

As mentioned previously, change in behaviours would be triggered or not, depending on the results coming from new initiatives and ongoing operations, and the aspiration level of the actor. If results conform to expectations, then no change is triggered, and vice versa.

In a different way, the process of endogenous change in routines takes place by the very exercise of the interaction. Thus, alterations in routines can be related to changes in the vision of the actors involved in a routine (e.g., March, 1994), to adjustments in the action-outcome shared understandings (e.g., Feldman and Rafaeli, 2002), to an imbalance between the individual and organizational goals and interests (e.g., Feldman, 2000), and by changes arising in the power relations among the actors performing the routine (e.g., Feldman and Pentland, 2003). In this way, each iteration of a routine can affect one of the elements just mentioned leading to alterations which can be incorporated into the practice of the routine, hence constituting a new pattern.

Therefore, the managerial value of the routine engagement patterns of the CEO rests on their capacity to enhance the managerial capabilities to enhance predictability; to coordinate and control the complexities of the work conducted in the organization; to manage conflict inherent to collective work environments; to deal efficiently with uncertain events; and to induce change within the organization. Table 2 summarizes the ideas regarding the organizational and managerial value of the CEO routine engagement patterns.

Table 2. CEO routine engagement patterns: organizational and managerial value - summary

Organizational	Managerial
-A routinized engagement in action enables CEOs to develop valuable firm-specific knowledge.	-A routinized engagement in action enables CEOs to predict collectively-dependent outcomes.
-The deployment of such knowledge represents a unique contribution of the CEO to the organization.	-Predictability is key to foster coordination and control and to manage conflict and uncertainty.
-The impossibility of linking valuable managerial interactions with desired outcomes creates ambiguity.	-A routinized engagement in action saves CEOs' cognitive resources to deal with non-routine events.
-Valuable, unique and causally ambiguous resources are able to generate sustained superior performance.	-Routinized action enables change to happen by the very process of recurrent interaction

2.3 CEO routine engagement patterns: causal antecedents inherent to the individual

After defining and discussing the core concept of this thesis, it is time to go deeper into linking the specifics of the routine engagement patterns of the CEO with some of the antecedent causes affecting them: the *skilfulness* of the human capital involved, and the differential *emphasis* placed by the CEO according to his or her experience, cognitive frames and managerial style. As will be seen in the discussion of this section, the arguments addressing the specifics behind the effects of each antecedent seem quite related; all of them appeal to a common path dependent development logic, and an action-oriented mechanism of self-actualization (e.g., Beal and Yasai-Ardekani, 2000; Carpenter *et al.*, 2004; Finkelstein *et al.*, 2009).

Perhaps Mintzberg (1994b), when discussing the idiosyncratic elements that managers bring to their job, is the one who presents the clearest argument about the relationships among each of the three causal antecedents just mentioned: “He or she [the manager] brings a body of *experience* that, on one hand, has forged a set of *skills* and *competences*, perhaps honed by training, and, on the other, has provided a base of *knowledge*...That knowledge is, of course used directly, but is also converted into a set of *mental models*, key means by which managers interpret the world around them...Together, all these characteristics greatly determine how a manager approaches a given job –his or her *style* of managing” (Mintzberg, 1994b, p.12, emphasis in original).

Despite this interrelation, each antecedent considered can be traced back to a different theoretical perspective addressing the contribution of CEOs to the organization. On the one hand, the causal antecedent of skilfulness refers to the economic-based approach developed within the RBV by Castanias and Helfat (1991; 2001), which is based on human capital theory (Becker, 1964). A key premise of this approach states that the specifics of the actions rendered by the resource of management depend on the skill differentials of the managers in question.

On the other hand, the causal antecedent based on emphasis is rooted in bounded rationality theory (Cyert and March, 1963; March and Simon, 1958), and is articulated in a theory of Upper Echelons by the influential paper of Hambrick and Mason (1984). According to this approach, action differs due to the emphasis assigned by CEOs to specific areas of activity. Hence, managers may emphasize some activities over others as a matter of particular experiences (e.g., Thomas *et al.*, 1991), cognitive structures (e.g., Tripsas and Gavetti, 2000) and managerial style (e.g., Mintzberg, 1994b; Slevin and Covin, 1990).

Hambrick and Mason (1984), argue that these managerial characteristics shape action in a three-step process: (1) by constraining the vision of managers, limiting the routes to gathering information; (2) by selecting the information they actually perceive; and (3) by framing the interpretation and meaning attached to the information perceived. Furthermore, Hambrick and Fukutomi (1991) and Miller (1991) posit that these sense-making mechanisms are not static over time; managers constantly adjust their perceptions and, hence, alter the way their action is conducted within the organization. However, these adjustments are not always congruent with the needs of the organization; leading to variations in the organizational outcomes they produce (e.g., Hambrick, 1981).

2.3.1 Causal antecedents based on skills

In their view, Castanias and Helfat (1991) define managerial skills as innate and path dependant abilities, expertise and knowledge developed through the manager's engagement in action. Accordingly, managers happen to differ "both in the types of skills that individuals possess, and the degree of skilfulness" (p.160), which lead top managers to pursue different actions and produce different organizational outcomes. Moreover, the development of managerial skills is proposed to happen along a hierarchy that includes three types of managerial skills: firm-specific, industry-related and generic skills; where each particular skill set varies according to its degree of transferability across firms and industries.

Firm-specific skills are posited as the most heterogeneous and fixed set of skills. For Penrose (1959), the firm-specific skills possessed by managers represent the base to provide the managerial services that drive or constraint organizational growth. Industry-specific skills represent transferable expertise that is valuable for organizations operating in the same industry. These may involve knowledge of opportunities, threats, regulations, suppliers,

customers and competitors, which is relevant for the assertiveness of the product-service base of the organization (Castanias and Helfat, 2001). Finally, generic skills are those which are transferable across all firms and industries, resembling the more widely available type of skills. Education and the innate abilities held by a new manager entering the labour market, represent an example of generic skills (Castanias and Helfat, 1992).

CEOs with sets of skills that are somehow unique in relation to CEOs in competing organizations have the potential to generate “managerial rents”. Castanias and Helfat (1991) link the concept of managerial rents to the Ricardian logic of rent generation; citing Rumelt (1987) they argue that Ricardian rents derive from scarcity of resources relating to demand, and compare resource scarcity with resource superiority, stating that “superior resources have a limited supply relative to less superior and more widely available resources and therefore yield Ricardian rents” (p: 161). Furthermore, they point out that these rent differentials might be sustained over time, if the skills in question –aside of being short in supply– are non-imitable.

Research shows that actions leading to different organizational outcomes can be linked backwards to specific sets of skills possessed by the CEO. For example, the success and failure of companies in technology-based industries can be traced back to particular stocks of industry specific-skills possessed by top managers (Holbrook *et al.*, 2000; Rosenbloom, 2000). As noted by Kor (2003), this type of skills seems to frame the assessment of market pressures and emerging opportunities, shaping the consequent actions conducted by the managers of the organization.

Regarding firm-specific skills, research points to them as being key management resources to configure and deploy action when pursuing growth opportunities. For example, Kor

(2003) found that the firm-specific skills of CEOs are valuable in speeding up the resource allocation processes and team setting requirements, efficiently matching individual expertise with specific projects. Evidence also supports the notion that firm-specific skills enable managers to grasp the trade offs and resource requirements behind the new business opportunities emerging from the organization, allowing them to actualize the focus of their action (Kor *et al.*, 2007).

Thus, according to the previous discussion, it is reasonable to expect that specific stocks of skills possessed by the CEO of the organization will lead to differences in the routine engagement patterns of the CEO.

2.3.2 Causal antecedents based on experience

As noted by Finkelstein *et al.*, (2009), the prevalence of research focusing on managerial experience when studying organizations builds on the premise that the experience of an individual reflects his or her choice and action. Therefore, researchers have relied on observable characteristics of managerial experience, such as tenure, functional experience, formal education and international experience, arguing that these will be associated with significant organizational outcomes. This stream of research has been focused mainly on the links between managerial choice and its experience antecedent, and between managerial experience and its effects on strategic and performance outcomes (Carpenter *et al.*, 2004; Finkelstein *et al.*, 2009; Hambrick, 2007). That is where its value as a reference for this research initiative lies.

More recently, research based on managerial experience has expanded the choice paradigm by building on the RBV, arguing that managerial experience is a valuable organizational

resource (e.g., Beal and Yasai-Ardekani, 2000; Carpenter *et al.*, 2004; Finkelstein *et al.*, 2009). However, rather than situating the value of experience according to the logic of resource scarcity (e.g., Castanias and Helfat 1991), these studies value managerial experience to the extent that it supports fit between the specifics of the organization and its environmental and strategic challenges.

In general, experience-based research focusing on the tenure of CEOs concurs on the idea that managers with longer tenures are less prone to engage in activities leading to major changes in their organizations; rather emphasising actions that maintain the status quo prevalent in the organization (Finkelstein *et al.*, 2009, p. 85). In relation to the functional experience of managers, findings suggest that particular career paths have influences on the way managers emphasize distinctive actions to face competition. In particular, emphasis on activities leading to either innovation or efficiency has been found to be related to the particular functional expertise of the top managers in charge of the organization (e.g., Strandholm *et al.*, 2004; Thomas *et al.*, 1991).

With regard to the educational experience of managers, findings concentrate around the idea that the years of formal education of managers is related to the emphasis on innovation-related initiatives pursued by the organization (Finkelstein *et al.*, 2009, p. 107). Finally, studies focusing on the international experience of managers suggest a relationship between the amount of time spent in foreign assignments with actions involving higher engagement in foreign domains (e.g., Chen and Stucker, 1997).

According to the previous discussion, it can be argued that the experience idiosyncrasies of CEOs will rise to differences in the routine engagement patterns that these managers usually follow.

2.3.3 Causal antecedents based on cognitive structures

It is argued that, in an environment where information is extensive, complex and ambiguous, managers –and individuals in general- depend on simplified representations of reality in order to engage in action (Cyert and March, 1963; Hambrick and Mason, 1984; Mintzberg *et al.*, 1976). Thus, for more than fifty years, research has been studying the “screens” (Cyert and March, 1963), “frames of reference” (March and Simon, 1958), “selective perception” (Hambrick and Mason, 1984), “dominant logic” (Prahalad and Bettis, 1986), or “knowledge structures” (Walsh, 1995) that are inherent to every manager, and represent a base from which to understand managerial decisions and actions.

Though prolific in terminology⁷, research on managerial cognition coincides in the prevalence to represent cognitive structures as based on path-dependent knowledge, rather than on the real time contingencies coming from the environment (Kiesler and Sproull, 1982; Walsh, 1995). Hence, managerial cognition is identified as a “theory driven” construct, in which everyday experience develops understandings about events in the world that are later applied to processing information to drive action; working as “a mental template that individuals impose on an information environment to give it form and meaning” (Walsh, 1995, p. 281).

Relating to managerial action, the cognitive structures of managers have been proposed as contributors to the idiosyncrasies present in the different stages of the strategy process: goal formulation, environment analysis, strategy formulation, implementation, and control (Stubbart, 1989). On the same line, Cossette and Audet (1992) argue that the cognitive structures of top managers are behind the definition of priorities within the organization, and the consequent actions pursued for their accomplishment.

⁷ Walsh’s (1995) review provides a more extensive list of terms related to the concept of cognition.

Empirical evidence on this matter suggests that the cognitive structures of top managers influence the organizational response to strategically sensitive issues. For example, Tripsas and Gavetti (2000) found in their study that Polaroid's top management cognitive structures affected their behaviour toward the embracement of new technological developments. Kaplan *et al.*'s (2003) study on pharmaceutical organizations shows how cognition of the upper ranks influences the firm's response to new business opportunities. Thomas *et al.*, (1993) documented how the actualized cognitive references of CEOs may push for actions to change the product-service portfolio of the organization. Finally, Fiol's (1989) study provided evidence on the effects that the cognitive structures of CEOs have on the patterns to search for potential co-investment partners.

In line with the previous discussion, it can be argued that the cognitive structures of the CEO will lead to differences in the routine engagement patterns that he or she follows.

2.3.4 Causal antecedents based on management style

CEOs have different styles in conducting their organizations. There is a substantial body of research building on distinctive frameworks to explain how a particular style of management relates with specific characteristics of the managers in question (e.g., Bass, 1990; Covin and Slevin, 1988; Mintzberg, 1994b; Miller and Friesen, 1982; Slevin and Covin, 1990; Miller *et al.*, 1982). Here, attention is placed on a framework that considers managerial style as a product of the propensity of the CEO towards risk, innovation and aggressiveness (Covin and Slevin, 1988; Slevin and Covin, 1990).

Such a framework identifies two distinctive management styles: entrepreneurial and conservative. Accordingly, the entrepreneurial style of management refers to those managers inclined to take business-related risks, which are empathic to pursuing change and

innovation in their organizations, and are rather prone to engage in aggressive competition with rivals. On the contrary, the conservative style of management corresponds to those managers that are risk-adverse, non-innovative, and rather passive and reactive in their approach to competitors (Covin and Slevin, 1988, p.218).

Evidence that builds on this framework suggests that differences in the style of management are related to differences in the managerial emphasis on particular market-oriented activities. Thus, relationships arise between managers identified as having an entrepreneurial style and involvement in activities oriented to developing new markets and the expansion of market share; while those identified as having a conservative style of management are related with activities oriented toward the maintenance of a stable market position (e.g., Covin *et al.*, 1994; Gerstien and Reisman, 1983; Herbert and Deresky, 1987).

From the previous discussion, it can be argued that a particular style of management followed by the CEO will lead to differences in his or her routine engagement patterns.

2.4 CEO routine engagement patterns: outcomes within the organization

In this section, the aim is to review literature that links the specifics of managerial action with organizational outcomes at different levels of analysis. In particular, the focus is placed on the outcomes produced with regard to the characteristics of the top management team (TMT), and the strategy and performance of the organization.

2.4.1 Top management team related outcomes

CEOs have a definitive influence on the characteristics of the management teams they command (e.g., Finkelstein *et al.*, 2009; Hambrick, 1994; Jackson, 1992). Either because of

structural and ownership conditions, or the expertise and prestige that CEOs possess, their actions have a strong effect on the group of people they work closely with (Finkelstein, 1992). It is not strange that scholars posit CEOs as the architects of the management team (Cannella and Holcomb, 2005, p. 222) who exert a great deal of influence in shaping the team's composition and social dynamics (Finkelstein *et al.*, 2009).

When it comes to team composition, evidence shows that changes in the priorities of CEOs have direct consequences on the size and heterogeneity of TMTs (e.g., Pitcher and Smith, 2001). It seems that the path to adapting to such changes requires the actualization of the expertise and motives available within the TMT, which usually happens through the coming and going of its members (e.g., Virany *et al.*, 1992). In this line, the work of Pitcher and Smith (2001) shows how a gradual increase in the CEOs emphasis on planning and control activities work as a tool to actualize the number and profile of the TMT, replacing members that do not comply with the priorities that are relevant at a particular moment.

This practice of relying on tight monitoring to trigger changes in the composition of TMTs seems to be prevalent among CEOs. For example, Heskett (1996) details the drastic changes in the size and heterogeneity of the top management team and precinct directors in the New York Police Department during the early 1990s. Such changes came after the force adopted new strategies and followed up mechanisms to tackle crime. Bartlett (1999) describes the follow-up system encouraged by Jack Welch and his TMT to ensure that GE subsidiaries were either the first or second competitors in their respective sectors, and he also discusses the effects of such policy on the composition of the subsidiaries' TMTs.

The work of Pitcher and Smith (2001) also provides evidence regarding the effects that the action of CEOs has on the social dynamics of the TMT. These authors' report that, in the

absence of pressures to adopt more stringent measures to integrate operations and investment decisions, the conflicts expected within a highly heterogeneous TMT (Smith *et al.*, 1994) did not arise at all. In fact, what Pitcher and Smith (2001, p. 4) describe is a highly integrated TMT: “There were no visible interpersonal tensions or major policy disagreements. There seemed to be a remarkable absence of politics in the form of coalitions around divergent opinions...”.

However, when integration became a priority for the CEO, conflict within the TMT increased substantially: “The tensions and conflicts surrounding policy disputes, such as efforts by the Head Office to take control of divisional marketing and systems development, were increasingly exacerbated by efforts to reduce costs and drive short-term profits to the bottom line...” (Pitcher and Smith 2001, p:7). Later, when most of the opposing members of the TMT were substituted, and the composition of the TMT became more homogenous, conflict among members decreased (p. 9).

Thus, from the previous discussion, it is sensible to expect that the specifics of action exerted by CEOs will have direct consequences in the composition and social dynamics of the TMT.

2.4.2 Organizational strategy related outcomes

For some time, scholars have underlined the influence that CEOs have on shaping the strategy of the organization (e.g., Andrews, 1971; Penrose, 1959; Porter, 1996; Mintzberg, 1994b; Mahoney, 1995). Consequently, the contribution of CEOs is fundamental in defining the way resources are allocated to address issues about the products, markets, technologies and structures of the organization. As mentioned previously, a core idea of this thesis is that,

within these issues, the uniqueness of the organization rests heavily on the idiosyncratic action conducted by the CEOs of the organization (Mahoney, 1995; Penrose, 1959).

To study the effects that specific action engagement patterns of CEOs may have on strategy, it seems appropriate to build on configurational approaches. This enables action to be framed within a broad organizational context; an issue that has been pointed to as a major flaw regarding research on managerial action (Hales, 1999; Tsoukas, 1994). Most importantly, relying on configurational approaches to address the managerial influence on strategy rather represents the norm within the strategic management field (Ketchen *et al.*, 1993; Meyer *et al.*, 1993).

A central idea behind organizational configurations is that knowledge can be gained by limiting the elements observed in the complex reality of organizations, and by enhancing the description of the ones observed (Meyer *et al.*, 1993). The aim then is to identify “sets of different configurations that collectively exhaust a large fraction of the target population of organizations under consideration” (Miller and Friesen, 1984, p. 12). As noted by Weber (1963) when referring to ideal type constructs, “It is not description of reality but ... to give unambiguous means of expression to such a description...it is no hypothesis but rather it offers guidance to the construction of a hypothesis” (p.396).

The guidelines provided by organizational configurations highlight specific “commonly occurring clusters of attributes of organizational strategies, structures, and processes” (Ketchen *et al.*, 1993, p. 1278); and in doing so, the configurational approach allows researchers to identify the differences existing between organizations, enabling theory development and testing (e.g., Doty *et al.*, 1993). Either in the form of theory-driven typologies (e.g., Miles and Snow, 1978; Mintzberg, 1979; 1983; Porter, 1980) or empirically

derived taxonomies (Galbraith and Schendel, 1983; Miller and Freisen, 1978; Ulrich and McKelvey, 1990), organizational configurations facilitate the study of general strategic patterns of constructs and different levels of analysis. Therefore, they are suitable for identifying “patterns common across individuals, groups departments, organizations or networks of organizations” (Meyer *et al.*, 1993, p. 1175).

Particularly useful for this thesis are those typologies that describe specific strategic stands, describing major communalities regarding market focus, value creation and organizational arrangements (e.g., Miles and Snow, 1978; Porter, 1980; Mintzberg, 1979; 1983). Almost all such typologies explicitly acknowledge the role of top managers in shaping the strategic orientation of the organization. For example, Miles and Snow’s (1978) typology provides a detailed description about the activities, structures and processes supporting distinctive “prospector”, “analyzer”, “defender” and “reactor” market orientations. Such extensive detail allows a parsimonious identification of the elements that managers following different strategies should focus their attention on while engaging in action.

Porter’s (1980) typology highlights organizational differences based on two criteria; the way value is created (differentiation or low cost), and the scope of market coverage (focused or wide). Based on both criteria, descriptions are provided regarding the actions undertaken by organizations following either an "overall cost leadership", “differentiation” or “focus” strategy in order to develop and maintain a sustained competitive advantage. Finally, Mintzberg’s (1979; 1983) typology provides descriptions of the coordination mechanisms and structures that enable the organizations to face the specifics of their competitive environments.

Typologies such as these provide solid references with which to address the role played by the routine engagement patterns of the CEO in the strategic orientation of the organization. Thus, different patterns of engagement in action can be expected from CEOs of organizations pursuing a specific market strategy, creating value in a specific way or with specific organizational designs.

2.4.3 Organizational performance related outcomes

If the action engagement patterns of the CEO have effects on the strategy of the organizations, they must also affect its performance. To address the performance effects of such engagement patterns, two approaches seem useful. The first comes from a rather small number of studies (e.g., Lau *et al.*, 1997; Mair, 2005; Martinko and Gardner, 1990; Slater, 1989) focusing on the direct influence that the specifics of managerial action –what managers do and how they do it– can have on performance. Therefore, the logic here is twofold: that there are managerial activities that are desirable in all situations (Slater, 1989); and that the differential effort devoted by top managers in SMEs may have performance implications (e.g., Gibb and Scott, 1985).

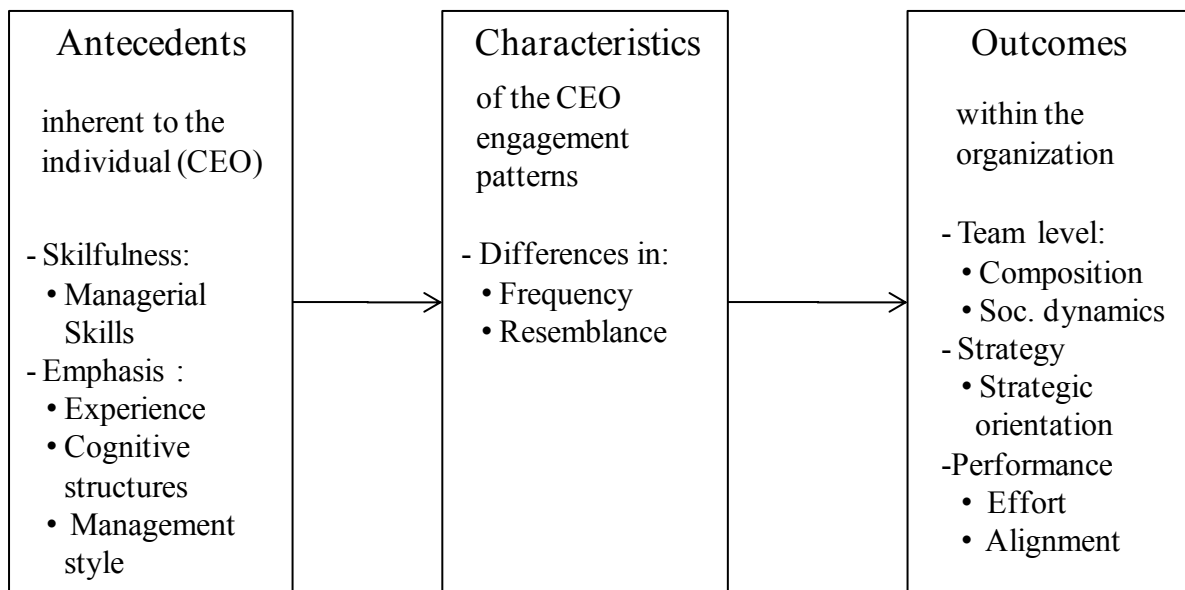
Explaining performance through managerial action is in line with the claim that the actual strategies of organizations are reflected by the patterns of action they follow (e.g., Mintzberg and Waters, 1985); hence, what is done to implement the strategy is what accounts for the end results. In the end, managers mainly have to do with making things happen and less with the intellectual design of strategic choices (Mintzberg, 1994a). Findings from this approach suggest that, by exerting programmatic (e.g., Lau *et al.*, 1997) and entrepreneurial activities, managers can affect the firm's performance (e.g., Mair, 2005).

The second approach would not consider managerial action in isolation; rather it builds on a growing body of research relying on a tripartite model that encompasses the three distinct constructs: the specifics of the CEO, strategy, and organizational performance (Beal and Yasai-Ardekani, 2000; Entrialgo , 2002; Govindarajan, 1989; Gupta and Govindarajan, 1984; Strandholm *et al.*, 2004; Thomas *et al.*, 1991; Thomas and Ramaswamy, 1996). The logic followed here is that alignment between the attributes of the CEOs and the strategy of the organization has performance implications.

Since the successful implementation of distinctive competitive strategies is dependent on the strategic perspectives, actions, skills and knowledge of the managers' in charge of them, alignment among these elements is valuable to the organization (Beal and Yasai-Ardekani, 2000). According to this approach, such alignment results in congruence between decisions and actions, clearer strategic direction, optimal resource deployments and the development of capabilities that support a specific strategic orientation (Entrialgo , 2002; Thomas *et al.*, 1991). Furthermore, it facilitates the fit between the firm and its environment, positively affecting the firm's performance (Miles and Snow 1978).

Therefore, when following the logic of the first approach proposed in this section, the differential efforts devoted by CEOs while engaging in action are expected to have performance implications. When following the logic of the alignment approach, congruence between the specific actions that CEOs engage in and the strategy of the organization is also expected to yield positive effects on performance. The conceptual framework with all the antecedent and outcome variables is presented in Figure 2.

Figure 2. Conceptual framework with variables



2.5 Empirical study: Setting

2.5.1 Setting

This section takes the initial steps to applying the conceptual framework previously developed. Therefore, to address the general proposition of this study - that variation in the routine engagement patterns of CEOs is contingent on the antecedent and outcome variables observed at different levels of analysis - the study should set boundaries regarding (1) the specifics of the routines to be studied, (2) the causal antecedents and organizational outcomes considered and (3) the unifying characteristic of the CEOs subject of study.

Regarding the first point, exploratory studies on both large (e.g., Bartlett and Ghoshal, 1993; Floyd and Wooldridge, 1992; Miles and Snow, 1978; Mintzberg, 1979) and small and medium organizations (SMEs) (e.g., Fombrun and Wally, 1989; Merz and Sauber, 1995; Miller *et al.*, 2001) provide a repertory of information, resource and strategy related activities that managers engage in to pursue their strategic aims. Such a repertory can be distilled into six routine categories: the scanning of the environment, the diffusion of information within the organization, the mentoring of managerial staff, the allocation of

resources and the implementation and regeneration of strategy (see Table 3 for the classical definitions identifying their source in each case).

Table 3. Classical definitions of the activity patterns considered in this study.

Activity	Definition	Author
Scanning of the environment	The way in which top management gains information about relevant events occurring outside the company in order to guide the company's future course of action. Includes both formal and informal search for information, and both directed and undirected viewing (p. vii).	Aguilar (1967)
	The means through which top managers perceive external (entrepreneurial, engineering and regulatory sectors) and internal (administrative sector) events and trends (p. 191).	Hambrick (1982)
	Role by which way managers seek and receive a wide variety of special information (much of it current) to develop thorough understanding of organization and environment; emerges as nerve centre of internal and external information of the organization (p.21).	Mintzberg (1973)
Information diffusion	Role by which managers transmit information received from outsiders or from other subordinates to members of the organization; some information factual, some involving interpretation and integration of diverse value positions of organizational influencers. (p. 21)	Mintzberg (1973)
	Disseminating information throughout the business about buyers, competitors in the target market. (p. 21).	Narver and Slater (1990)
Resource allocation	Role by which managers dispose organizational resources of all kinds; and by which make or approve all significant organizational decisions. Also by which decide who will get what in the organization; designs the organization and authorizes all important decisions (p. 21)	Mintzberg (1973)
	Role of the CEO as marshal and allocator of resources, of people and skills as well as funds and other assets (p. 19). And also assign work to employees linking it to the capabilities and interest of the available people (p. 16).	Aguilar (1992)
Mentoring	The mentor fulfils a set of career and psychosocial functions that enhance the protégé's progress. Advising and supporting through of sponsorship, visibility enhancement, and the correction of mistakes before they are known to others.	Kerr and Jackofsky (1989)
Strategy implementation	Role of the CEO as a taskmaster involves the definition, approval and follow-up of general and individual of plans, budgets and objectives (p. 21). Also the integration of departmental plans and efforts making adjustments to secure implementation (p. 20).	Aguilar (1992)
	To achieve long-term aims, it is necessary to develop operating objectives that purposely translate strategy into manageable short-term pieces for implementation (p. 110). Strategy implementation involves interactions between structures, people and control mechanisms to ensure that the Organization is achieving what it intends to accomplish (p. 195).	Hrebiniak and Joyce (1984)
Strategy regeneration	Searches organization and its environment for opportunities and initiates 'improvement projects' to bring about change in the organization (p. 21 regarding the entrepreneur role).	Mintzberg (1973)
	Four behaviours of an entrepreneurial venture: (1) Introduction of new goods; (2) introduction of new methods of production; (3) opening of new markets; (4) opening of new sources of supply. (p. 357-358).	Carland <i>et al.</i> , (1984)

Therefore, in line with strategy research, such efforts to normalize current strategies seem to require centralized information pools, and rely on planning, resource allocation and control

activities to secure the implementation of predefined objectives (Mintzberg and Waters, 1985). On the contrary, strategic initiatives aiming at innovation require insights about market trends, the means to diffuse information across the organization, flexible follow-up mechanisms and capable personnel, in order to seek out and encourage the different possibilities that were not deliberately considered in the first place (Mintzberg, 1994a). Finally, as in previous research (e.g., Becker, 2005b), frequency constituted the routine characteristic observed in this thesis.

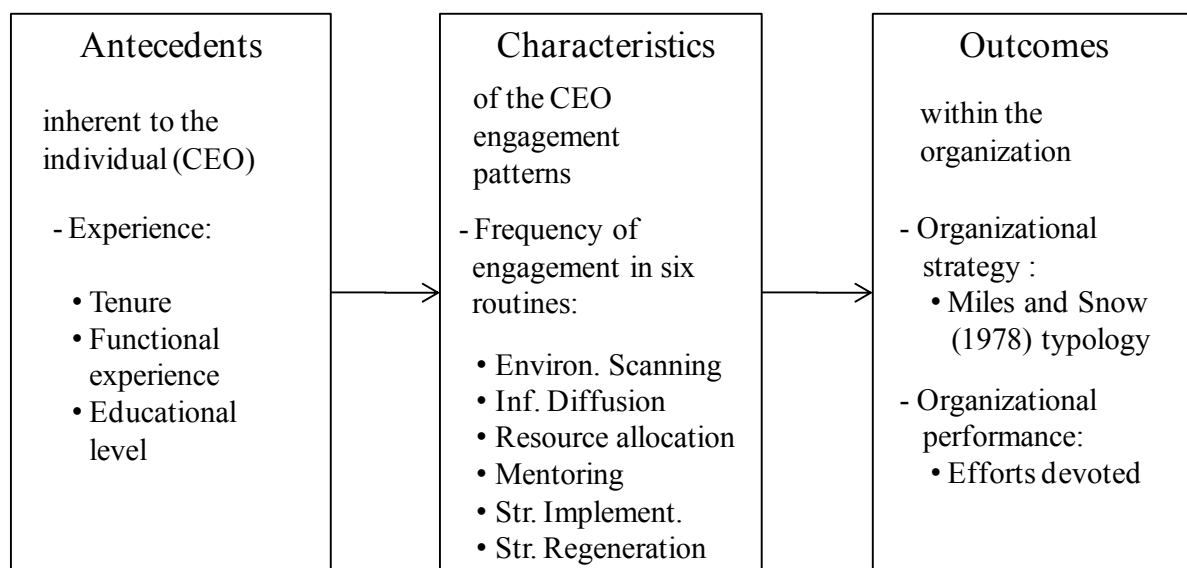
In relation to the second point, this study focuses on five constructs to investigate the variation in the engagement patterns of the six routines of study. The constructs are: three antecedent causes based on experience, which are tenure, functional experience and educational experience; and two organizational outcomes. One is related to strategy, and that is based on Miles and Snow's (1978) strategic typology, and the other is performance. As in previous research (e.g., Becker, 2005b), frequency constituted the routine characteristic considered to observe variation. For each construct, specific literature has been reviewed; then, following the guide of others (Pandit *et al.*, 2010; Whetten, 1989), broad conceptual relationships are presented in the form of propositions, while the derived relationships testing variation are presented as hypotheses. The research framework for the empirical study is presented in Figure 3.

Finally, the subjects of study were CEOs of Mexican SMEs. Research on SMEs is valuable because of the role that these organizations play in the economy. In Mexico, SMEs account for nearly 50% of the gross domestic product and employ 30 million people (71% of total employment) (OECD, 2007). As is widely accepted, SMEs face important challenges to consolidate and survive. Studies show that only two out of five new firms survive the first five years of operation (Phillips and Kirchhoff, 1989), and the case of Mexican SMEs is not

the exception; the current world recession has taken its toll when considering the national failure rates (Ibarra, 2009) and productivity figures (Gonzalez, 2009) of these organizations.

Furthermore, focusing on the CEOs of SMEs provided an ideal setting considering the purpose of this thesis. As is widely acknowledged by researchers within the strategic management field, the action of CEOs is likely to have a more pervasive influence among this kind of organizations (Hambrick and Finkelstein, 1987; Miller and Toulouse, 1986; O'Farrell and Hitchens, 1988). Furthermore, such influence might be more prevalent within the Mexican business contexts, where cultural idiosyncrasies place CEOs as the authority figures of the organization (Martínez and Dorfman, 1998).

Figure 3. Research framework of the empirical study



2.5.2. Mexican business context

In contrast to western industrial countries, where SMEs developed separately from the government, in the aftermath of the 1910 Revolution the Mexican state played a leading role in shaping the business possibilities available within the country (Camp, 1989). This

relationship between entrepreneurs and a closed state aiming for development originated certain practices and ideas about the role of top managers, where the family and family membership were of central importance (De la Cerda Gastelum and Núñez de la Peña, 1996). At the beginning of the 1960s, the Mexican economy entered a period of rapid expansion and sustained growth that lasted until the late 1970s. It was during this time that an incipient Mexican academic community devoted efforts to professionalize management practice, by adapting management ideas and concepts of the time to the Mexican business context.

During the administrations of Presidents De la Madrid (1982-1988) and Salinas (1988-1994) a series of structural changes in the economy were initiated, leading to the signing of the NAFTA agreement, and other so called “neoliberal” policies that have been continued until the present. Such a change in the dynamics of the economy presented a series of challenges affecting the Mexican society in terms of social inequality (Garduño, 2010), limited job creation (Dussel, 2003), unbalanced regional development (Horbath, 2004) and limited growth (Dussel, 2000) For business organizations the economic transition has been also hard to cope with; reshaping the industrial profile of the country and wiping complete sectors out of the economy (Dussel, 2000).

2.5.3. Management scholarship in Mexico

Research in management within the Mexican context has been closely related with practice, seeming to have evolved according to two distinct motives. First, there was the imperative to professionalize management practice to fit in an open and more complex competitive environment. Here the contributions aimed to provide theoretical references regarding the tasks relevant to CEOs to manage their organizations. And second, there was a need to

understand the specifics of the Mexican way to do business during the aftermath of the NAFTA negotiations. Most of the contributions in this regard provided elements identifying the idiosyncrasies of the Mexican *empresario*⁸ regarding values and management style; the idea was to facilitate relationships between local and foreign business partners.

When aiming to professionalize, three different trends can be identified in the Mexican management scholarship. One builds on the seminal work of Andrews (1971), framing the work of Mexican managers within the SWOT framework of strategy making (e.g. Llano, 1994; 1998). Accordingly, the CEOs main responsibility within the organization is to secure the means enabling them to focus on three general tasks: (1) diagnose the actual state of the organization; (2) define the best possible direction the organization should take, and (3) exert command of the individuals responsible take the organization towards such direction (Llano, 1998).

This scholarship trend is in line with the actual notion that the work of strategists involves both, thinking and acting (Dameron and Torset, 2009). Where the very process of acting involves strategy making; either by enhancing the diagnosis, or by adapting the objectives considered in the first place. This thesis will contribute to this scholarship trend in two fronts. Firstly, by going deeper in the tasks proposed, identifying the actual activities that enable their completion. And secondly, by empirically testing the relationships of such activities with boarder constructs.

A second trend, stands close to the literature on leadership (e.g., Ginebra, 1994) focusing on the role of the CEO as an implementer; in other words, as the ultimate responsible for action to be conducted in the organization. Accordingly, CEOs can follow two pads to generate the

⁸ Empresario is a common term in Mexico when referring to the CEO of an organization (Llano, 1994).

action that moves the organization towards a future desired position: (1) via extrinsic means to manage people, thus the leader relies on prizes and punishments to encourage individuals to act; and (2) via intrinsic means, which implies that leader has a personal capacity to orient the interest of followers towards the collective, and to commit people towards a mission regardless of the efforts such mission requires.

Finally, a third trend of Mexican management scholarship focuses on the political nature of the job performed by the CEO of the organization (Valero and Vicente, 1991). For example, making sure that the procedures that define the access to positions of power and influence consider the best interest of the organization, rather than kinship or other less objective criterions. Thus, the main task a CEO has to do with the development of those political processes related with governance, the business, the structure, the professional coexistence and the cultural settings of the organization (Valero and Vicente, 1991; Valero y Taracena, 2000).

The academic contributions related with the interest to study the idiosyncrasies of Mexican managers aimed to understand differences in the values between Mexican and North American managers, identifying how these differences affected business practice. For example the value of the family, which is highly regarded by to Mexican managers, affects the way decisions are made within the organization, usually considering the involvement of family members in decisions regarding new partnerships, promotions and new investments (De la Cerda Gastelum and Núñez de la Peña, 1996). Further more, the notion of family also derives in specific dispositions regarding the links between managers and subordinates, which usually follow a patriarchal logic (Martinez and Dorfman, 1998; Stephens and Greer 1995). Such logic gives way to an implicit agreement in which managers will mentor and take care of subordinates in exchange of loyalty and hard work.

Differences also seem to rise in the way Mexican managers interact with others within the organization. Stephens and Greer (1995) point out an informal-formal duality along these interactions that can be observed in many social formalities regarding professional distance and courtesy signs of respect. However, such formality is usually accompanied by a less formal and constant dialogue and contact with people from different levels of the organization, which usually reflects gestures of affection and friendliness.

Llano (1994) goes further in proposing several practices in which Mexican managers can differ from their counterparts in the North, two of them seem relevant to this thesis. The first has to do with the reliance on a continuous social interaction as a mean to grasp and solve issues arising from the business operation. This should not be considered as a prevalence to micro-management, rather, the author suggests that Mexican managers seem more open to engage in operative related issues. The second practice highlights the flexibility of Mexican managers to adapt to different cultures and circumstances, issue that contrasts with a rather parochial attitude of foreign managers when engaging in business in Mexico (Stephens and Greer, 1995).

2.6 Empirical study: hypotheses development

2.6.1 Causal antecedent based on tenure

Research and theory on tenure consistently enhances the idea that long-tenured CEOs tend not to make major changes in their organizations (Frinkelstein et al., 2009). Contributions to this idea (e.g., Thomas *et al.*, 1991; Barker and Muller, 2002) highlight associations between long-tenured executives and emphasis on activities that enhance stability, while short-tenured executives are related with activities that emphasize innovation. According to Hambrick and Fukutomi (1991), this might be due to the reason that short-tenured

executives face high pressure to deliver, making them prone to seek efficiency and take risks that lead them far from established strategic paths early on their tenures. Such pressure might come from the need to gain knowledge about the value and contribution of organizational resources (Ambrosini and Bowman, 2010), the characteristics of the “mandate” they have received (Hambrick and Fukutomi, 1991 p.727), from survival pressures commonly present among SMEs (Gibb and Scott, 1985), or from the need to gain legitimacy, to increase the chances for success (Zimmerman and Zeitz, 2002).

However, the conditions present in early tenures change with time. The initial efforts made by short tenured CEOs to allocate resources to secure the implementation of strategies, and develop innovative ways to improve results decrease as time passes (Miller and Shamsie, 2001). As tenure advances, top executives increasingly commit themselves to the past. Established strategies are preserved through the reinforcement of socially constructed conventions and recipes, whose correctness becomes taken for granted (Hambrick *et al.*, 1993). Thus, after a long period in office, CEOs increasingly devote their efforts to preserving the status quo, positioning the past as a legitimate path to follow (Hambrick and Fukutomi, 1991).

Legitimising past commitments requires pedagogic actions through which the actual interests and values of powerful individuals are reproduced, a process that Bourdieu (1990) and Bourdieu and Passeron (1977) identify as the imposition of “symbolic violence”. Consequently, symbolic violence occurs by actors instructing and informing their inclinations to legitimize them as the “objective” ones for a community of people, so that they are not identified as the ends desired in the first place. The outcome of this process is posited as an internalized and durable system of dispositions organizing collective action (Bourdieu, 1990).

Information diffusion and mentoring routines seem to suit the path just described to maintain the past in a legitimate way. In the same way, research shows that tenured CEOs are prone to instruct people in how to maintain the current course of action, even when performance is hurt (Miller and Shamsie 2001). Lacking the results to justify their actions, tenured CEOs may use the weight of hierarchy to constantly diffuse the information required to pursue specific objectives and instruct people on how to act (Cross and Sproull, 2004). Furthermore, the diffusion of information and continuous guidance are means of enhancing symbolic assurances that things are running well in the organization, while enabling the detection of potential challenges to the status quo (Ashforth and Gibbs, 1990).

Therefore, the first proposition is as follows:

Proposition 1: Tenure differences among CEOs will reflect differential engagement in routines oriented towards results, and in routines oriented towards status quo maintenance.

From this proposition four testable hypotheses are derived.

Hypothesis 1: Short tenured CEOs will report patterns with higher frequency of engagement in (a) resource allocation, (b) strategy implementation and (c) strategy regeneration routines, than non-short tenured CEOs.

Hypothesis 2: Short tenured CEOs will report patterns with less frequency of engagement in (a) information diffusion and (b) mentoring routines, than non-short tenured CEOs.

Hypothesis 3: Long tenured CEOs will report patterns with higher frequency of engagement in (a) information diffusion and (b) mentoring routines, than non-long tenured CEOs.

Hypothesis 4: Long tenured CEOs will report patterns with less frequency of engagement in (a) resource allocation, (b) strategy implementation and (c) strategy regeneration routines, than non-long tenured CEOs.

CEOs play an active role gathering information from the organization's environment (Aguilar, 1967; Mintzberg, 1973), which enables managers to make sense of the competitive situation faced by their organizations (Aguilar, 1967; Garg *et al.*, 2003). According to the relevant literature, engagement in environment scanning activities is contingent to tenure; being mainly emphasized during the first years in office. Thus, some researchers argue that the overconfidence in the knowledge of the organizations' environment that is granted by a long tenure reduces the need to search for new information (Tushman and Romanelli, 1985; Miller, 1991). Others argue that it is the development of organizational information networks, which tenured CEOs have developed over time that substantially reduces their requirements of new external information (Aguilar, 1967).

However, there are reasons to believe that, within the context of SMEs, short and long tenured CEOs may place equal emphasis on their engagement in environment scanning efforts. Firstly, since the objectives of SMEs are usually the same as of those of the CEO (O'Farrell and Hitchens, 1988), awareness of the elements that threaten or enable organizational success should represent a priority for CEOs regardless of their time in office (Gibb and Scott, 1985). Secondly, as mentioned in the discussion leading to the first proposition, short and long tenured CEOs may have different priorities but, in spite of such differences, both have to engage in scanning routines to grasp the elements that lead to implementation of their specific aims (Hambrick, 1982; Pfeffer and Salancik, 1978).

And thirdly, within SMEs, the development of those information networks required by CEOs to reduce their environment scanning efforts might be a difficult task for both short and long tenured CEOs. Hence, the lower legitimacy of SMEs in the eyes of the labour market (Williamson, 2000), the lack of resources to support the remuneration packages similar to those offered by larger organizations (Cardon and Stevens, 2004) and the limited

scope for development and career prospects inherent to smaller organizations (Marlow, 2000; Patton *et al.*, 2000), all limit the capacity of CEOs from SMEs to retrain the employees that support such networks.

Therefore, the second proposition is the following:

Proposition 2: The engagement in routines to gather information from the environment will be prized by both short and long tenured CEOs.

From this proposition the following two testable hypotheses are derived.

Hypothesis 5-1: Short tenured CEOs will report patterns with higher frequency of engagement in the (a) environment scanning routine, than non-short tenured CEOs.

Hypothesis 5-2: Long tenured CEOs will report patterns with higher frequency of engagement in the (a) environment scanning routine, than non-long tenured CEOs.

2.6.2 Causal antecedent based on functional experience

Research on functional experience builds on the idea that managerial exposure to the goals and incentives of a particular functional area shapes the way managers attend to certain information, interpret it, and act; which in general follows a path that is congruent with their functional expertise (Beyer *et al.*, 1997; Dearborn and Simon, 1958; Walsh, 1988). Therefore, if people have spent a career pursuing certain functional objectives and experiencing certain reward systems, it is expected that they will be highly concerned with the tactics required to realize them (Fligstein, 1990).

In line with this idea, recent studies have focused on the relationship between the functional experience of the CEO, and the organizational engagement in either innovation or efficiency

related strategies (Barker and Mueller, 2002; Beal and Yasai-Ardekani, 2000; Strandholm *et al.*, 2004; Thomas *et al.*, 1991). In contrast with previous work on this matter⁹, these studies have been sensitive to the issue regarding the use of a single functional area as a reference when conducting empirical research, and have incorporated a perspective that relies on the broad career path of CEOs in multiple business functions.

Thus, it is argued that CEOs with more experience in output functions, such as marketing, sales and R&D, are rather prone to engage in innovation oriented strategies. This is because work along these functions follows the logic of continuous growth, new product and new market development (Finkelstein *et al.*, 2009). Accordingly, it is expected that the experience of managers in output functions should also reflect higher engagement in those routines that enable the purpose of these functions.

For example, environment scanning and information diffusion routines might be posited as important mechanisms to succeed in the marketplace, mainly because of their contribution to the market assessment and response capabilities (e.g., Naver and Slater, 1990). Mentoring routines represent the means to develop internal key personnel supporting solid customer relations (e.g., Slater and Olson, 2000), and strategy regeneration routines may represent entrepreneurial efforts to encourage innovation in the products and processes of the organization (Carland *et al.*, 1984).

Alternatively, CEOs with background experience in throughput functions, such as manufacturing, accounting, finance and administration, favour efficiency related strategies (Finkelstein *et al.*, 2009) because these functions are congruent with the idea of tight

⁹ See Finkelstein and Hambrick (1996) for detailed references.

monitoring as a way to achieve objectives and secure efficiency gains. Thus, experience of these functions may lead to a CEO regarding information diffusion routines as action improvement mechanisms (e.g., Cross and Sproull, 2004), and resource allocation and strategy implementation routines as means that lead to efficiency (e.g., Mintzberg, 1994a).

Therefore, the third proposition is the following:

Proposition 3: Different functional experiences of CEOs will lead to differential engagement in those routines whose exercise reflects the inclinations of such experience.

From this proposition two testable hypotheses are derived.

Hypothesis 6: High experienced CEOs on output functions will report patterns with higher frequency of engagement in (a) environment scanning, (b) information diffusion, (c) mentoring and (d) strategy regeneration routines, than non-high experienced CEOs on output functions.

Hypothesis 7: High experienced CEOs on throughput functions will report patterns with higher frequency of engagement in (a) information diffusion, (b) resource allocation and (c) strategy implementation routines, than non-high experienced CEOs on throughput functions.

2.6.3 Causal antecedent based on education

Formal education represents a valuable asset in the social world (Becker, 1964; Bourdieu, 1990). For managers, education enables, or at least seems to be related with, the development of intellectual assets which are valuable to the organization. The work of Hitt and Tyler (1991) and Wally and Baum (1994) has been pointed to as references (e.g., Barker and Mueller, 2002) to highlight the correlation between the amount of formal education of CEOs and higher levels of cognitive complexity. Moreover, researchers argue that cognitive complexity –or the ability to discern patterns and distinguish among objects– improves

CEOs' ability to assimilate new ideas and, in turn, orients their disposition to accept changes and innovations (Barker and Mueller, 2002; Finkelstein *et al.*, 2009).

In line with this chain of ideas, several studies have found a positive association between the educational level of top executives and the organizational engagement in innovation related strategies. For example, Kimberly and Evanisko (1981) found that the amount of formal education of the top managers in charge of a medical institution was positively associated with initiatives aiming at technological and procedural innovations. A similar pattern of relationships was found in Bantel and Jackson's (1989) study on the banking sector; Koellinger's (2008) study on entrepreneurs; and Thomas *et al.*'s (1991) study on computer organizations. Thus, if education enables managers to cope with innovation, it can be expected that less educated managers might find difficulties in this regard.

Therefore, the fourth proposition is stated as follows:

Proposition 4: CEOs with fewer years of education will be less prone to pursue innovation related initiatives.

From this proposition one testable hypothesis is derived.

Hypothesis 8: CEOs not holding a higher education degree will report patterns with lower frequency of engagement in the (a) strategy regeneration routine than CEOs holding a degree in higher education.

In addition to the intellectual benefits conferred by higher education, research shows that it represents a lifetime milestone that leaves a permanent imprint on the individual (Astin, 1977; Smart and Pascarella, 1986). According to Austin (1977), the continuous challenges faced during the formation process of a higher education degree have long lasting effects on the individual's self-confidence, sense of autonomy and achievement, among other non-

cognitive constructs (Astin, 1977). When dealing with the business world, those years of education seem to invest individuals with confidence in the skills possessed to engage in new ventures (Koellinger *et al.*, 2007), as well as on the achievement of predefined objectives (Austin, 1977).

Hence, if higher education provides CEOs with a sense of security when dealing with rather uncertain situations, what happens with those CEOs lacking it? What might be the means available to CEOs with no higher education to compensate for such reassurance to deal with such situations? An alternative might be an increased effort to obtain information from the environment, enabling managers to look for those signals that confirm the correctness of their actions. Another alternative is what psychologists call “a thirst for confirming redundancy”, or the need that individuals feel to seek information that validates and confirms their thoughts, guesses and beliefs (Bruner *et al.*, 1956).

Furthermore, this proclivity of managers to increase the information available to them as a means of orienting their actions and the results ahead is also well documented in strategy literature (e.g., Becker and Knudsen, 2005; Khandwalla, 1973; Miller, 1987). In particular, researchers have gathered substantial evidence on the prevalence for top managers to engage in environment scanning activities to achieve this purpose (Daft *et al.*, 1988; Elenkov, 1997; McGee and Sawyerr, 2003). Therefore, managers seem to increase their efforts to gather information about those elements which, in their view, are less certain but also critically important for the situation they are facing.

Following on from the previous discussion, it is reasonable to expect some sort of variation in the engagement patterns in environment scanning routines between CEOs with higher education and those without.

Therefore, the fifth proposition is stated as follows:

Proposition 5: CEOs with fewer years of education will be more inclined to seek environmental information to orient their action.

From this proposition one testable hypothesis is derived.

Hypothesis 9: CEOs not holding a higher education degree will report patterns with higher frequency of engagement in the (a) environment scanning routine than CEOs holding a degree in higher education.

2.6.4 Organizational outcomes regarding strategy

The strategic typology of Miles and Snow (1978) represents a solid theory on which to develop propositions and hypotheses regarding the relationship between managerial idiosyncrasies and the strategy of small and medium organizations (e.g., Entrialgo, 2002). This theory has been assessed theoretically and empirically on several occasions in strategic management research (e.g., Conant *et al.*, 1990; Doty *et al.*, 1993; Hambrick, 1983; James and Hatten, 1995; Slater and Olson, 2000; Zahra and Pearce, 1990), and has received substantial support.

According to Hambrick (2003), the theory has endured due to its extensive detail, industry-dependent nature, and close connection with strategies actually pursued by firms in different industries and countries. Furthermore, Hambrick (2003) argues that Miles and Snow's typology proves useful to address "the general character of the activities for various strategic classes of firms" (p. 117). Thus, Miles and Snow argue that managers in organizations have to define their product-market domain (solve the entrepreneurial problem) and develop a distinct repertory of activities and processes (solve the administrative and technical

problems) to succeed in that domain. Therefore, prospector, defender, analyzer and reactor represent four types of strategic postures to compete.

The most dynamic type is prospector, whose success is rooted in innovation. Prospectors compete by continuously seeking those new products or market opportunities whose exploitation will yield a competitive advantage. Hence, substantial efforts are devoted to monitoring a wide range of environmental conditions. Prospector firms usually offer state-of-the-art products to several market segments, which require certain organizational arrangements to be constantly actualized. Thus, for this type of organizations technological and organizational flexibility is critical to respond to trends in the marketplace.

In contrast to a prospector organization, a defender organization would rely on efficiency oriented activities rather than on product or market innovation to succeed. A defender firm seeks to create stable domains, focusing on limited sets of products and customers, and aggressive efforts to block competition. Defender firms rely on cost-efficient technologies and organizational structures, and devote time and resources to processing improvement initiatives rather than to new product or market developments. In contrast with prospector organizations, emphasis is seldom placed on skill and resource transferability.

Regarding the analyzer type, it represents a unique combination of the market and organizational arrangements conducted by the prospector and defender types. Accordingly, analyzer organizations pursue both efficiency in stable markets and product-market innovation when competing in turbulent domains. Analyzers stand in an intermediate position between the extremes of prospectors and defenders, balancing the strengths of both in order to succeed. Analyzer firms have to find ways to adapt their technologies and

organizational structures to provide flexible responses to new market demands, without compromising the flow of cost-efficient operations.

Finally, the reactor type is characterized by a systematic change in the approach to responding to the competitive pressures faced. Reactor firms either lack consistency in the approach to competing in the marketplace or are in the process of changing from one of the three ideal types to another (Miles and Snow, 1978). Researchers argue that the reactor typology is the least understood type (Zahra, 1987), and studies have identified it as a residual category within the theory proposed by Miles and Snow, arguing that only the other three types should be considered in research (Doty *et al.*, 1993). Perhaps this is why empirical studies have found it difficult to identify reactor organizations empirically (e.g., Hrebiniak and Snow, 1980; Slater and Olson, 2000).

It seems that generalizing about the CEO routine engagement patterns in this type of organizations might be problematic. Thus, the remainder of this section will be concerned with the engagement patterns of the CEO along the six routines of study with only three strategy types: the prospector, analyzer, and defender.

Due to the distinctive orientations of prospectors, defenders and analyzers, the routines that CEOs engage with to make their organizations succeed in the market place are expected to differ. Specifically, it is expected that engagement in environment scanning, mentoring and strategy regeneration routines will be different among the three strategic types. Thus, in prospector organizations, CEOs should place greater emphasis on routines to scan the environment because of their permanent need to identify product and market opportunities. Since analyzer organizations get part of their revenues from new product developments that

are driven by environmental trends, CEOs at these organizations are expected to emphasize environment scanning routines more than CEOs at defender organizations, but less than CEOs at prospectors.

To enhance flexibility, prospector organizations rely on project teams and other relatively non-permanent organizational subunits, where skill transferability rather than specialization is highly prized. For CEOs, involvement in initiatives oriented towards the development of employees proves useful to obtain the skills required in these organizations in order to compete (e.g., Aragón-Sánchez and Sánchez-Marín, 2005). Accordingly, it is sensible to expect that CEOs from prospector organizations will emphasize engagement in mentoring routines in a more prevalent way than their counterparts in analyzer organizations, which will also place a greater emphasis than CEOs in defender organizations.

A similar pattern of CEO engagement emphasis between prospector, analyzer and defender organizations is also expected regarding the strategy regeneration routines. For prospectors, the continuous encouragement to find new alternatives to compete in the marketplace is core for their success. As argued by Miles and Snow (1978), the same priority is commonly present in analyzer organizations, and quite seldom found in defender organizations.

Therefore, the sixth proposition is the following:

Proposition 6: Engagement in environment scanning, mentoring and strategy regeneration routines will differ among organizations that pursue different strategies.

From this proposition four testable hypotheses are derived.

Hypothesis 10-1: The patterns of frequency of engagement reported by CEOs will be significantly different among strategic types.

Hypothesis 10-2: CEOs in prospector organizations will report patterns with the highest frequency levels of routine engagement.

Hypothesis 10-3 CEOs in analyzer organizations will report patterns with frequency levels of routine engagement between those reported by CEOs in prospector and defender organizations.

Hypothesis 10-4 CEOs in defender organizations will report patterns with the lowest frequency levels of routine engagement.

A substantial body of research provides evidence regarding the prevalence of SMEs to exert specific behaviours that differentiate them from bigger organizations when engaging in direct competition. For example, patterns regarding particular actions towards risk (Greve, 2010), the speed and flexibility in the responses to competitors (Chen and Hambrick, 1995; Dean *et al.*, 1998) and actions to address lows in performance (Audia and Greve, 2006) seem to emerge among SMEs. However, for the purpose of this study, the key contribution of this stream of research comes from its guiding premise, in the sense that there are patterns of behaviour that are expected to be systematically emphasized among SMEs. Specifically, it is argued that the structural characteristics of SMEs and the constant pressure to survive faced by top managers of this type of organizations may explain a more frequent engagement in information diffusion, resource allocation and strategy implementation routines than in the other three routines considered in the study.

Regarding structure, a small and flat organizational design –which is typical among SMEs– facilitates the way CEOs exchange information with individuals at different levels of the organization (d' Amboise and Muldowney, 1988). Research shows that such easy access to employees leads towards less formal and more systematic communication patterns on behalf of the CEO (Carroll and Gillen, 1987; O' Gorman *et al.*, 2005). In relation to the feasibility of the organization, evidence suggests that programmatic endeavours regarding the strategic

objectives and resources of the organization are key to explaining the success and survival of SMEs (Bracker and Pearson, 1986; Perry, 2001). For SMEs to improve their chances, CEOs must permanently devote their efforts to efficiently assigning the resources of the organization, and to follow up and secure the implementation of plans.

Thus, if activities related with the diffusion of information, the allocation of resources and the implementation of the strategy are so prevalent among SMEs, it can be expected that, regardless of the strategic aim of the organization, no variation should be expected in the way CEOs engage in them.

Therefore, the seventh proposition is stated as follows:

Proposition 7: Engagement in information diffusion, resource allocation and strategy implementation routines will be prevalent when compared with the other three routines of study and homogenous among organizations that pursue different strategies.

From this proposition four testable hypotheses are derived.

Hypothesis 11: CEOs will report patterns with a significantly higher frequency of engagement in the information diffusion routine than in (a) environment scanning, (b) mentoring and (c) strategy regeneration.

Hypothesis 12: CEOs will report patterns with a significantly higher frequency of engagement in the resource allocation routine than in (a) environment scanning, (b) mentoring and (c) strategy regeneration

Hypothesis 13: CEOs will report patterns with a significantly higher frequency of engagement in the strategy implementation routine than in (a) environment scanning, (b) mentoring and (c) strategy regeneration.

Hypothesis 14: The patterns of frequency of engagement in (a) information diffusion, (b) resource allocation and (c) strategy implementation routines reported by CEOs will not be significantly different among strategic types.

2.6.5 Organizational outcomes regarding performance

For a long time, researchers have argued that, the time and effort devoted by top managers of SMEs represent a key resource for their survival and success (e.g., Churchill and Lewis, 1983; Gibb and Scott, 1985; O'Farrell and Hitchens, 1988; Penrose, 1959; Sadler and Barry, 1970). Accordingly, "the task structure" or, in other words, the dedication of the CEOs to particular projects, task and activities, has a fundamental impact on the possibilities regarding the development and success of the organization (Gibb and Scott, 1985). According to the RBV, if the time and effort of CEOs represent a scarce and valuable resource, the more there were of them, the better it would be for the organization.

However, the dedication that top managers devote to the organization can vary because of changes in the intrinsic and extrinsic reasons driving their will to commit. Regarding the former, individuals are said to devote additional efforts to the organization because of the potential rewards or payments to be obtained in exchange (March and Simon, 1958). Under this logic, they place "side bets" or make several valuable investments while working in the organization (Becker 1960). As time passes, these "side bets" lead to a systematic involvement with organizational affairs; otherwise individuals are in danger of losing such valuable investments and rewards. However, it is possible that commitments with affairs different to those of the organization, and changes in the value of the "side-bets" may reduce the interest to commit.

In relation to the extrinsic reasons to commit, individuals are said to devote increased time and effort because of a psychological attachment to the organization; an attitude in which "an individual identifies with a particular organization and its goals and wishes to maintain

membership in order to facilitate these goals” (Mowday et al., 1979, p. 225). Such attachment explains distinct behaviours characterized by personal sacrifice and an increased dedication to organization-related actions and thoughts, (Wiener and Gechman, 1977). However, it is also plausible that changes in the drivers of such attachment may reduce the interest to commit.

Thus, if time and effort represent a valuable asset for the organization, it can be expected that those CEOs increasingly devoting themselves in the interest of their particular organizations will be able to yield superior performance.

Therefore, the eighth proposition is the following:

Proposition 8: The time and efforts devoted by CEOs to the organization will have performance implications.

From this proposition two testable hypotheses are derived.

Hypothesis 15: Among low performer organizations, CEOs will report less frequency levels of routine engagement in (a) environment scanning, (b) information diffusion, (c) resource allocation, (d) mentoring, (e) strategy implementation and (f) strategy regeneration routines than CEOs from non-low performer organizations

Hypothesis 16: Among top performer organizations, CEOs will report higher frequency levels of routine engagement in (a) environment scanning, (b) information diffusion, (c) resource allocation, (d) mentoring, (e) strategy implementation and (f) strategy regeneration routines than CEOs from non-top performer organizations.

2.6.6 Summary of propositions and hypotheses

Table 4. Summary of propositions and hypotheses

Prop. 1 Tenure differences among CEOs will reflect differential engagement in routines oriented towards results and in routines oriented toward status quo maintenance.	
H1	Short tenured CEOs will report patterns with higher frequency of engagement in (a) resource allocation, (b) strategy implementation and (c) strategy regeneration routines than non-short tenured CEOs.
H2	Short tenured CEOs will report patterns with less frequency of engagement in (a) information diffusion and (b) mentoring routines than non-short tenured CEOs.
H3	Long tenured CEOs will report patterns with higher frequency of engagement in (a) information diffusion and (b) mentoring routines than non-long tenured CEOs.
H4	Long tenured CEOs will report patterns with less frequency of engagement in (a) resource allocation, (b) strategy implementation and (c) strategy regeneration routines than non-long tenured CEOs.
Prop. 2 The engagement in routines to gather information from the environment will be prized by both short and long tenured CEOs.	
H5-1	Short tenured CEOs will report patterns with higher frequency of engagement in the (a) environment scanning routine than non-short tenured CEOs.
H5-2	Long tenured CEOs will report patterns with higher frequency of engagement in the (a) environment scanning routine than non-long tenured CEOs.
Prop. 3 Different functional experiences of CEOs will lead to differential engagement in those routines whose exercise reflects the inclinations of such experience.	
H6	High experienced CEOs on output functions will report patterns with higher frequency of engagement in (a) environment scanning, (b) information diffusion, (c) mentoring and (d) strategy regeneration routines than non-high experienced CEOs on output functions.
H7	High experienced CEOs on throughput functions will report patterns with higher frequency of engagement in (a) information diffusion, (b) resource allocation and (c) strategy implementation routines than non-high experienced CEOs on throughput functions.
Prop. 4 CEOs with fewer years of education will be less prone to pursue innovation related initiatives.	
H8	CEOs not holding a higher education degree will report patterns with lower frequency of engagement in the (a) strategy regeneration routine, than CEOs holding a degree in higher education.
Prop. 5 CEOs with fewer years of education will be more inclined to seek environmental information to orient their action.	
H9	CEOs not holding a higher education degree will report patterns with higher frequency of engagement in the (a) environment scanning routine than CEOs holding a degree in higher education.
Prop. 6 Engagement in environment scanning, mentoring and strategy regeneration routines will differ among organizations that pursue different strategies.	
H10-1	The patterns of frequency of engagement reported by CEOs will be significantly different among strategic types.
H10-2	CEOs in Prospector organizations will report patterns with the highest frequency levels of routine engagement.
H10-3	CEOs in Analyzer organizations will report patterns with frequency levels of routine engagement between those reported by CEOs in Prospector and Defender organizations.
H10-4	CEOs in Defender organizations will report patterns with the lowest frequency levels of routine engagement.

Table 4. Summary of propositions and hypotheses...(continue)

Prop. 7 Engagement in information diffusion, resource allocation and strategy implementation routines will be prevalent when compared with the other three routines of study and homogenous among organizations that pursue different strategies.	
H11	CEOs will report patterns with a significantly higher frequency of engagement in the information diffusion routine than in (a) environment scanning, (b) mentoring and (c) strategy regeneration.
H12	CEOs will report patterns with a significantly higher frequency of engagement in the resource allocation routine than in (a) environment scanning, (b) mentoring and (c) strategy regeneration
H13	CEOs will report patterns with a significantly higher frequency of engagement in the strategy implementation routine than in (a) environment scanning, (b) mentoring and (c) strategy regeneration.
H14	The patterns of frequency of engagement in (a) information diffusion, (b) resource allocation and (c) strategy implementation routines reported by CEOs will not be significantly different among strategic types.
Prop. 8 The time and efforts devoted by CEOs to the organization will have performance implications.	
H15	Among low performer organizations, CEOs will report less frequency levels of routine engagement in (a) environment scanning, (b) information diffusion, (c) resource allocation, (d) mentoring, (e) strategy implementation and (f) strategy regeneration routines than CEOs from non-low performer organizations.
H16	Among top performer organizations, CEOs will report higher frequency levels of routine engagement in (a) environment scanning, (b) information diffusion, (c) resource allocation, (d) mentoring, (e) strategy implementation and (f) strategy regeneration routines than CEOs from non-top performer organizations.

Chapter 3: Research Methodology

This chapter presents a detailed account of how the empirical study was conducted. It is divided into five sections. Section 3.1 discusses the methodology and methods followed in the study; section 3.2 describes the development of the questionnaire instrument used to collect data; section 3.3 details the sampling and data collection procedures of the study; section 3.4 discusses the measurement of the constructs used in the study, and section 3.5 presents the analysis techniques adopted to test the hypotheses stated in the previous chapter.

3.1 Methodology and methods

3.1.1 Methodology

Addressing the methodological approach of inquiry is a critical phase of a research project. Methodology has to do with the understanding of the social organizational context, assumptions and research guidelines to systematically produce knowledge about the social world (Newman, 2006). By defining a methodological approach, the researcher – consciously or not– embraces a paradigm, or set of philosophical assumptions, models of quality and methods to conduct research (Newman, 2006; Robson, 2002). As noted by Halfpenny (1982), the researcher’s preference for a particular philosophical stand is somehow influenced by contemporary scientific work. In the case of current management research, the main stream points towards the resource-based view. (Nerur *et al.*, 2008; Newbert, 2007; Ramos-Rodriguez and Ruiz-Navarro, 2004). Being a theory that is based on causal mechanisms that are considered unobservable (Godfrey and Hill, 1995), the RBV fits the realist approach to science. For management research, realism provides a causal methodology that seeks to explain social behaviour through theories based on causal

mechanisms, whether they are observable or not, which constrain and enable different forms of collective human action (Reed, 2005).

Realism, in opposition to logical positivism, proposes that if a solid scientific theory seems to describe unobservable theoretical entities, it is appropriate to consider such entities as unobservable features of the world that exist regardless of our theorizing on them (Aronson, 1984; Halfpenny, 1982). Evidence about the existence of unobservable theoretical constructs is based on the observation of their effects (Aronson, 1984). As mentioned by Godfrey and Hill (1995), a particular theory based on unobservable constructs should be considered true when it follows the Popperian (1972) method for the growth of scientific knowledge. Therefore, “if a scientist makes a prediction on the basis of some theory that contains unobservable elements, and if this theory survives repeated attempts to falsify it, then we are justified in acting as if the theory were true” (Godfrey and Hill, 1995, p:526).

In Popper’s view, false theories are eliminated, and corroborated theories are retained for the present. When rival theories withstand refutation, the process to choose should be based on the correspondence between the propositions of the theory with the real world (Halfpenny, 1982). It is the possibility to openly challenge theory that marks the difference between science and pseudo-science (Popper, 1959; 1963). In realism, systematic research replication is what allows true knowledge to be developed (Aronson, 1984; Kwan and Tsang, 1999). However, within management research, knowledge has been developed with a systematic focus on certain regions of the world; specifically the US, Canada and Europe (Bruton and Lau, 2008). That is why the focus of this research being on a Latin American country, such as Mexico, provides a solid contribution to knowledge of the field.

3.1.2 Methods

In order to test the relationships between the routine engagement patterns of CEOs and constructs at the individual and organizational level of analysis, the study relied on a cross-sectional, self-administered questionnaire to gather data. What follows is a justification of the use of a multilevel approach to theory, and the data collection strategy followed in the study.

Relying on constructs at different levels of analysis to develop a perspective of managerial influence based on the patterned engagement in action of CEOs represents a threefold benefit for the theoretical contribution of the study. First, a multilevel perspective enhances the validity of the study because it works like a within-method triangulation strategy; what Denzin (1970) specifically called *theoretical triangulation*. Thus, observing the same phenomena through different theoretical references coherently integrates seemingly contrasting findings, and confirms what might be refuted under a theory-specific approach (Denzin, 1970, p. 306). This triangulation method provides a coherent frame for the theory development and testing processes.

Second, it has been suggested that considering a multilevel perspective in theory building enhances the clarity of the explanation that is being developed (Klein et al., 1994). Therefore, once the theoretical references are set, an explanation of the underlying assumptions of the respective expected effects must be thoroughly specified, leading to a more comprehensive and convincing theory (Klein et al., 1994; Kozlowski and Klein, 2000). Finally, as noted by Hitt et al., (2007), research in management would benefit significantly if researchers considered a multilevel perspective of theory more often, rather than solely a micro or macro perspective, in their research designs.

The same authors argue that multilevel research represents a “way to promote the development of a more expansive management paradigm for understanding organizational systems” (Hitt *et al.*, 2007, p. 1385). More robust explanations and research outcomes are expected to arise from research addressing the interaction of constructs at different levels of analysis (Klein *et al.*, 1994; Rousseau, 1985). In summary, the main driver to studying the routine engagement patterns of CEOs relying on constructs at different levels of analysis is the contribution to the theory building and testing processes.

The use of a self-administered questionnaire to collect data was deemed appropriate for several reasons. First, and most importantly, it is a data collection method that ensures the conformity between the data and the multilevel approach followed in the study (Klein *et al.*, 1994). This means that the measures considered in the study allow an objective discrimination between the individual and the organizational level of analysis, and between specific groups at each level of analysis.

Secondly, a self-administered questionnaire is an efficient alternative to reach those individuals of interest to the specific research questions when they reside in multiple geographical locations, and is an especially useful instrument in situations where time and money are major constraints (Newman, 2006). Thirdly, it represents a practical way to gather the substantial amount of objective data (Robson 2002) necessary to conduct the statistical analysis to test the hypotheses of this study. This data is quite unique, as with all primary data collection techniques (Saunders *et al.*, 2007).

The fourth reason is that this method represents a common practice when researching upper echelons, and CEOs in particular (Carpenter *et al.*, 2004; Finkelstein *et al.*, 2009). The next

is that relying on quantitative methodologies, which are at the core of the current trends and practices in management research (e.g., Scandura and Williams, 2000), it is expected that refereed journal publications would be produced from the findings of the study. This is a very important aim when a doctoral candidate wishes a career in academia (Bence and Oppenheim, 2005).

Finally, despite limitations regarding questionnaire data, such as low response rates, issues about the meaning of the topics covered in the questionnaire, and inaccuracy between stated and actual behaviours due to social desirability bias, memory, knowledge or other idiosyncratic characteristics of the respondents (e.g., Robson 2002; Saunders 2007); self-administered questionnaires represent a very common method of collecting data in social science research (Newman, 2006; Robson, 2002). In the following sections, detail is provided about the way some of the previously mentioned limitations were addressed in this thesis.

3.2 Questionnaire development

To develop the questionnaire, the literature reviewed and discussed in the previous chapter was used to identify the relevant constructs, measurement scales and items to address the research questions and hypotheses of the study. Thus, the questionnaire used to collect data for the study was structured in seven sections, which contained thirty-nine questions about one hundred and ten items.¹⁰ However, not all of questions and items included in the questionnaire were used in this study as some initially formed part of questionnaire because of commitments with the business school staff that allowed access to the sample of managers used in this study. Sections 1, 2, 4 and 7 of the questionnaire are the ones related with the present study.

¹⁰ Appendices A and B present the English and Spanish versions of the questionnaire, respectively.

3.2.1 Questionnaire translation

Most of the literature reviewed to inform this study was written in English; hence, the first version of the questionnaire was developed in this language. The English version of the questionnaire was then translated into Spanish through a parallel-translation/double-translation procedure (Adler, 1983; Sekaran, 1983; Song *et al.*, 1999) which involved two translators who independently translated the questionnaire. One translation was done by the researcher, while an English teacher located in Mexico carried out the second translation. Differences in both translations were assessed and consensus was reached to obtain a preliminary Spanish version of the questionnaire.

As suggested by Brislin (1970), this version was piloted with eight Spanish-speaking individuals; four of them were academics and four were CEOs of small firms. These groups of people were asked to fill in the questionnaire and engage in an interview to comment about it in terms of content clarity, format, structure and length. The advice of Schriesheim *et al.*, (1993) was followed, in that specific emphasis was placed on the items from section 2 of the questionnaire, to enhance the content adequacy of the constructs to be measured through them. Therefore, participants were asked to comment on whether the items from this section converged with a definition provided regarding the six managerial activities considered in this thesis.¹¹ The pilot resulted in minor corrections being made with regard to semantics and also raised an issue about a potential misunderstanding in how to answer the questions in section 2. One item was included following a suggestion raised by one of the participants (Item info_g). The eight individuals answered the first pilot questionnaire in less than thirty minutes.

¹¹ These definitions are presented in section 2.5, Table 3.

3.2.2 Second pilot study

For the pilot study, the questionnaire was applied to a group of sixty entrepreneurs who were following an executive education programme at a Mexican business school. The participants attended the sessions of this programme on two consecutive days (one afternoon and one morning) per week in the Mexico City campus of the business school. The pilot study took place during the second week of January, 2009.

The questionnaires were delivered to the participants of the study during the second of their weekly sessions, after an eighty-minute session on marketing concepts. The researcher introduced himself to the audience, briefly described the research and asked for their participation in the study. A total of fourteen questionnaires were returned after a two-week follow-up period, representing a 23.3% response rate. However, due to changes in the wording and structure of some items of the questionnaire, none of the questionnaires obtained during the pilot study were included in the final sample.

The pilot stage in the research process is fundamental to ensure the purpose of the questionnaire is satisfied, and to detect issues in the design and application procedure of the of the data collection instrument (Cooper and Schindler, 2003). Furthermore, it allows to foresee potential non-response and data recording issues in the questionnaire (Newman, 2006). No major concerns were raised by the measures used in the study at this stage. Appendix C presents the statistics of the data collected on the pilot study. However, the pilot study did raise concerns about the application procedure followed to collect data, specifically regarding the response rate that resulted from it. Measures were taken to increase the response rate; otherwise the estimation was that no more than 150 questionnaires would be obtained through this procedure. Three issues were identified as elements affecting the response rate of the study:

- 1) The session carried out before the research was presented and the questionnaire handed out did not have any connection at all with the topic of the study.
- 2) There was no direct engagement of any faculty member or administrative manager to invite or encourage participation in the study, or in the follow-up phase.
- 3) The time frame to receive questionnaires was not made clear to the participants.

3.3 Sampling and data collection procedures

The sample frame consisted of 650 Mexican CEOs from different industries. Again, all managers were participants in an executive education programme at a Mexican business school, a programme that was specifically designed for this organizational position. CEOs following this programme also attend on two consecutive days (one afternoon and one morning) a week for ten months. Data were collected based on a cross-sectional survey instrument delivered on the business school campuses in seven cities located in different regions of Mexico. The cities were: Guadalajara, Hermosillo, Leon, Mexicali, Mexico City, Monterrey and Veracruz.

Some changes were made in the data collection procedure following what was learned from the pilot study. Consequently, the questionnaires were handed out to the participants in the study after a case discussion session conducted by the head of the business policy track at the afore-mentioned business school. The session was eighty minutes long and the topic discussed was related to the topic of the study. The head of the business policy track verbally encouraged the group of CEOs in the classroom to engage in the study before introducing the researcher.

The researcher then briefly discussed the context and purpose of the study, and highlighted the fact that the data collected would be anonymous and to be used solely for academic purposes. After that, the questionnaires were handed out, and the participants were asked to return them either that afternoon after the end of the final session of the day, or the next morning before the first session of the day. At the end of the last session on the second day, the researcher addressed the group again. This time the aim was to open up the possibility of the participants returning the questionnaire during the remaining weeks of the programme, and to do so via those in charge of the programme.

The data collection phase of the study lasted for two months, starting on February 22nd and closing on April 27th 2009. During this period, the manager of the programme addressed the group in the first working session of the week, encouraging those in the programme who had not yet filled in the questionnaire to do so. The previously described procedure was conducted in the same way at each of the campuses of the business school. The data collection phase was closed after two months because the business school suspended activities temporarily, due to an outbreak of swine flu¹² on April 25th. The decision was also backed by the fact that the questionnaires received by that point were sufficient for the statistical analysis of the study to be carried out.

A total of 223 questionnaires were returned, representing a 34.3% response rate, eleven percent higher than in the pilot study. Of the returned questionnaires, fifteen were eliminated because of missing information. Though the sample of CEOs for the study was not generated randomly from a population of organizations, the use of purposive samples represents a regular practice in strategy research (Short *et al.*, 2002). Strategy studies that

¹² Swine flu triggers alerts worldwide. Adam Thomson. Ft.com Published: 26-04-09 / last updated: 27-04-09.

followed similar sampling and data collection procedures are also well documented. For example, Stewart (1998) relied on the social networks of graduate students to create a sample of managers and study the psychological traits of entrepreneurial proclivity. Upton *et al.*'s (2001) study on fast growth family firms was based on a sample of participants in the Ernst & Young Entrepreneur of the Year programme; and Galbreth (2005) investigated valuable organizational resources based on a sample of fifty-six Australian managers studying an MBA.

The sampling and data collection procedures followed in the study are congruent with guidelines that research points to as positively affecting response rates. First of all, the procedure was efficient to target and directly address the individuals of interest for the study (Baruch and Holtom, 2008); in this case, CEOs. There was no doubt that the questionnaire was answered by the person holding this organizational position as all the individuals considered in the study had passed through the selection criteria followed by the business school for admission to the CEO programme.

Secondly, recognizing the role of social networks in survey research (Cycyota and Harrison, 2006), the procedure adopted in the study relied on the social ties established between the business school staff and the participants of the study to encourage a higher response. Thirdly, asking CEOs to engage in the study, after having an intense discussion on a similar topic, is in line with suggestions of how to enhance the topical salience of a study in order to engage the target population (Cycyota and Harrison, 2006). Finally, having the participants routinely reachable within a classroom facilitated the follow-up and collection mechanisms, which seem relevant as a way of improving response rates (cf. Baruch and Holtom, 2008).

3.4 Construct measurement

As mentioned previously, this study developed constructs about the patterned engagement of CEOs in several routines, and related them with other constructs at two different levels of analysis: the CEO, or individual, level (tenure, functional experience and educational level) and organizational (organizational strategy and performance).

3.4.1 Construct measurement: CEO routine engagement patterns

The study focuses on six different routines that CEOs engage in to manage their organizations: scanning of the environment, diffusion of market information, mentoring of managerial staff, resource allocation, strategy implementation and strategy regeneration. The measures to make the engagement pattern in each routine operational were based on items which relate to specific activities that theory identifies as constituting each routine. Therefore, the creation of the items began with a review of literature regarding the behaviour of managers in these activities (Aguilar, 1967; 1992; Bartlett and Ghoshal, 1993; Carland *et al.*, 1984; Carroll and Gillen 1987; Hambrick, 1982; Hrebiniak and Joyce, 1984; Kerr and Jackofsky, 1989; Kotter, 1982; Mintzberg 1973 and 1994; Narver and Slater, 1990; Stewart, 1982).

Environment scanning items considered elements of both the internal and external environment of the organization, regarding information from different sectors relevant for the organization: clients, retailers and suppliers (Aguilar, 1967; Hambrick, 1982; Mintzberg, 1973). Information diffusion items asked about the dissemination of market and customer information, with individuals from different levels of the organization, through formal and informal channels (Mintzberg, 1973; Naver and Slater, 1990). Resource allocation items looked for information on activities for assigning resources - human and material- to structures and projects in order to get things done (Aguilar, 1992; Mintzberg, 1973).

Mentoring items sought information on the CEO's direct involvement in activities to enhance and orient the work of individuals from different levels of the organization (Aguilar, 1992; Kerr and Jackofsky, 1989). Strategy implementation items enquired about involvement in activities that link plans and people with specific goals (Aguilar, 1992; Hrebiniak and Joyce, 1984; Mintzberg, 1973). Finally, strategy regeneration items asked for information on the engagement in activities to support experimental products, services, projects and supply mechanisms (Carland *et al.*, 1984; Mintzberg, 1973).

As mentioned previously, in order to improve content validity the content adequacy (Schriesheim *et al.*, 1993) of the items for the managerial routine constructs was tested with a group of practitioners and academics. In total, of thirty-three eight-point Likert-type items were incorporated in the questionnaire.

All the items were grouped according to three broad categories within the questionnaire: information, resource and strategy¹³. Since frequency was assumed as a source of variation, respondents were asked to rate how frequently they used to engage in the activity mentioned in each item (0 - never, 1- yearly, 2- every six months, 3- every three months, 4- monthly, 5- twice a month, 6- every week and 7- daily). The thirty-three items were subject to a data reduction procedure to develop the final measures for the routine engagement pattern construct. Detail on the procedure is reported in section 3.5.

3.4.2 Construct measurement: causal antecedent based on tenure

As mentioned by Finkelstein *et al.*, (2009), the concept of tenure has been conceived differently among researchers; for example, as tenure in the position, tenure in the

¹³ See appendix A section 2

organization and tenure in the industry. In this study, CEO tenure was measured as a continuous variable consisting of the number of years that the manager had been holding this organizational position (Beal and Yasai-Ardekani, 2000; Thomas *et al.*, 1991).

3.4.3 Construct measurement: causal antecedent based on functional experience

The experience of the CEO in a specific function was measured as a continuous variable reflecting a CEO's number of years of experience in that function. Several studies have used this approach to measure functional experience (Govindarajan, 1989; Gupta and Govindarajan, 1984; Beal and Yasai-Ardekani, 2000). The present study measured experience in the following functions: operations, finance, human resources, marketing and sales. Following precedents in this area of research (Thomas *et al.*, 1991; Thomas and Ramaswamy, 1996; Waller *et al.*, 1995), and with the aim of comparing our findings with these kinds of studies, experience in certain functional areas were combined into two broader categories: throughput and output experience. Thus, experience in throughput functions consisted of the cumulative years of experience reported by the CEOs of the sample of the functions of operations, finance and human resources. Experience in output functions consisted of the cumulative years of experience reported of the functions of marketing and sales.

3.4.4 Construct measurement: causal antecedent based on education

The educational level was measured by asking the CEOs to state their educational level according to five categories: basic, high school, graduate, post graduate/master and doctoral studies. Then, the approach of Thomas *et al.*, (1991) was followed, assigning a coding scheme to each category of the variable. Thus, 4.5 years were assigned to the category of graduate education, 2 years were assigned to post graduate/masters education category, and

4 years were assigned to the category of doctoral education. The years of education for each of these three categories were added to a base of zero because all the managers in the sample reported having at least a high school diploma.

3.4.5 Construct measurement: organizational outcomes regarding strategy

Organizational strategy was measured according to Miles and Snow's (1978) typology of strategic orientation. For more than twenty-five years, this theory has been informing research on strategy management (e.g., Conant *et al.*, 1990; DeSarbo *et al.*, 2005; Hambrick, 1983). Throughout this time, Miles and Snow's theory has been subject to continuous assessment, demonstrating that it is a valid measurement approach (Conant *et al.*, 1990; Doty *et al.*, 1993; James and Hatten, 1995).

As has been done by others (e.g., Slater and Olson, 2000), Miles and Snow's approach to strategy was applied following the self-typing method. This way of measuring strategy seems most appropriate in situations where the respondents have greater incidence in the processes defining strategy (James and Hatten, 1995). Furthermore, the self-typing method is easy to complete and interpret; facilitating the collection of substantial data sets (Conant *et al.*, 1990). Accordingly, respondents were asked to classify the strategy pursued by their firms according to the paragraph descriptions about each strategic type considered in Miles and Snow theory.

3.4.6 Construct measurement: organizational outcomes regarding performance

Firm performance was measured according to perceptual measures previously used in studies that rely on data collected from SMEs (Beal and Yasai-Ardekani, 2000; Naman and

Slevin, 1993). Focusing on perceptual measures of performance is responsive to the limitations regarding the availability of objective data among this population of organizations (Dess and Robinson, 1984; Sapienza *et al.*, 1988). Therefore, respondents were asked to indicate the degree of importance they attached to each of six financial performance indicators: return on sales, return on investment, return on assets, growth of sales, growth of profits and total amount of profits. Respondents were also asked to indicate the extent of their satisfaction with the performance of the firm with regard to each of the six indicators. The five-point scales used range from (1) very dissatisfied to (5) very satisfied; the satisfaction scores were multiplied by their respective importance ratings. The resulting six scales were averaged to construct a composite measure of firm performance.

3.5 Analysis techniques

The study required the use of several statistical techniques to test the relationships between the constructs previously mentioned. One was used to develop the final scales for the construct of routine engagement patterns. The other techniques were used to test the hypotheses involving this construct and others at different levels of analysis (individual and organizational).

3.5.1 Data adequacy assessment

Before conducting any analysis, the data set was screened and assessed to avoid issues arising from mistakes while capturing the data, from missing data and normality assumptions. Checking normality assumptions at this stage was necessary for the variables considered in the data reduction procedure to develop scales. Moreover, due to the fact that the data came from a single informant, an assessment of common method variance was conducted following Harman's single-factor procedure, detailed by Podsakoff and Organ (1986).

3.5.2 Data reduction procedure: scales for CEO routine engagement patterns

Principal component analysis (PCA) was conducted on the thirty-three items that measured the frequency of engagement in the six routines of study. This procedure was carried out in order to develop the final scales for the routine engagement pattern constructs. As shown in previous research (e.g., Floyd and Wooldridge, 1992; Hinkin, 1995), PCA is a widely used and reliable procedure when the aim is to condense the data to develop final scales, rather than to determine factor patterns or intercorrelations, as is used in confirmatory procedures.

PCA is a factor extraction method that summarizes patterns of correlations among observed variables to reduce a larger number of variables to a smaller number of components. This method is based on the extraction of maximum variance from a data set, through the creation of consecutive components, the first component explaining most of the variance, while the last explains the least part (Dunteman, 1989). Since PCA mixes common, specific and random variance in the analysis, it can be argued that methods based only on common variance –such as factor analysis– should be used to develop scales (e.g., Hinkin, 1998). However, there is a substantial body of research pointing to the fact that PCA and factor analysis extraction solutions are practically the same when: (1) more than twenty variables are included in the procedure; (2) the communalities of the solution are large –the closer to 1 the better– and (3) the communalities are similar in magnitude (Dunteman, 1989; Fava and Velicer, 1992; Velicer and Jackson, 1990). The three conditions are met by the PCA procedure conducted in this study¹⁴.

In a PCA solution, the first component represents the linear combination of observed variables that maximally separates subjects by maximizing the variance of their component

¹⁴ The communalities of the PCA procedure are reported in appendix E

scores; subsequent components are formed by extracting maximum variability from residual correlations, which are orthogonal to all previous extracted components (Tabachnick and Fidell, 2007). PCA provides a mathematically unique extraction solution, which is accompanied by diverse rotational methods that improve the interpretability and utility of the resulting components (Dunteman, 1989). Furthermore, when scores on components are estimated for each individual in the sample, they are often more reliable than the scores on the actual variables (Kim and Mueller, 1978; Tabachnick and Fidell, 2007). Finally, scores on components are most useful when they are to be used in further univariate and multivariate analyses (Dunteman, 1989; Tabachnick and Fidell, 2007); which is the case of this study.

3.5.3 Reliability analysis: scales for CEO routine engagement patterns

To ensure the reliability of the scales produced by the PCA procedure, several factors were taken into consideration. First, the assumption of normality of the variables considered in the procedure was assessed. Though non-normality is not an impediment to conducting the procedure, normally distributed variables enhance the resulting component solution (Tabachnick and Fidell, 2007). Second, the Kaiser-Meyer-Olkin test of sampling adequacy (KMO) and Bartlett's test of sphericity were conducted on the data set to ensure that it suited the PCA procedure (Field, 2005; Tabachnick and Fidell, 2007).

Third, the study followed standard practice to assess the underlying dimensions of the resulting components (Kim and Mueller, 1978). Fourth, since the final scales were based on the orthogonal rotation solution, a check of the viability of component independence was conducted by contrasting both orthogonal and oblique rotation solutions, and assessing the component correlations of the oblique solution (Field, 2005; Tabachnick and Fidell, 2007).

Finally, any scale development procedure must ensure that the new scales consistently reflect the constructs they are measuring (Field, 2005; Hinkin 1998; Nunnally and Bernstein, 1994). Thus, the internal consistency of reliabilities was assessed according to the Cronbach's alpha. This coefficient represents standard practice for determining reliability based on multiple-item scales in organizational research (Hinkin, 1995).

3.5.4 Assumptions of parametric data

The main analyses conducted in the study relied on univariate and multivariate statistical techniques, so the data had to meet parametric assumptions. In addition, since most of the study was based on group comparisons, the assumptions were assessed for each group and for the overall sample (Field, 2005; Neter *et al.*, 1988; Tabachnick and Fidell, 2007).

Two parametric assumptions were assessed: normality of data distribution and homogeneity of variance. These assumptions were assessed on the scales obtained through the data reduction procedure described in section 3.5.2. Normality was assessed through statistical -Kolmogorov-Smirnov test, and skewness and kurtosis statistics- and graphical -shape of histograms- procedures. In situations when normality is an issue, the analysis should be conducted through non-parametric tests (Field, 2005; Tabachnick and Fidell, 2007). Homogeneity of variance was assessed through Levene's test. If the assumption is broken, SPSS provides results that are adjusted for this non-parametric condition (Field, 2005).

3.5.5 Techniques to test antecedent related hypotheses

Independent measures t-tests were used to determine whether the theoretically expected differences of engagement in each routine were in fact associated with CEO tenure,

functional experience and educational level differentials. To test for hypotheses 1 to 9, ten subgroups of study were identified among the three causal antecedent constructs.

In the case of tenure, the sample was grouped at the 2nd and 8th percentile. Four subgroups of study were identified: (1) short tenured CEOs, (2) non-short tenured CEOs, (3) long tenured CEOs and (4) non-long tenured CEOs. Regarding experience on output and throughput functions, the sample was grouped at the 8th percentile to identify four additional subgroups of study. The subgroups were: (5) highly experienced CEOs and (6) non-highly experienced CEOs in output functions; and (7) highly experienced CEOs and (8) non-highly experienced CEOs in throughput functions. Finally, in the case of educational level, two subgroups were identified: (9) CEOs with a higher education degree (10) CEOs without a higher education degree. This procedure to identify relevant subgroups within a sample for comparison purposes is widely used in strategy research (e.g., Doty *et al.*, 1993; Entrialgo, 2002; Miller, 1991).

The independent measures t-test is a statistical technique that allows testing for group differences on a dependent variable when there are two groups or experimental conditions, and different individuals are assigned to each condition. As summarized by Tabachnick and Fidell (2007), the t-test is based on the comparison of two estimations of variance. The first estimation comes from differences between the scores within each group of comparison; random or error variance. The second estimate comes from differences in group means, and represents a reflection of the effects of the experimental condition plus error. If these two variance estimations do not differ, it is concluded that all the group means come from the same sampling distribution of means. Hence, the small differences between group means are due to random error. However, if the group means differ more than expected, it is concluded

that they come from different sampling distributions of means, and the null hypothesis that the group means are the same is rejected.

Since the independent measures t-tests is a parametric technique, it is fundamental to check for assumptions of normality and homogeneity of variance. As mentioned before, the correspondent assessments were carried out in the present study at the group level. When the assumption of normality was broken, the analysis was conducted through the Mann-Whitney test. This is a non-parametric equivalent to the t-test, and is based on differences in the ranked positions of scores in different groups (Field, 2005).

3.5.6 Techniques to test strategy related hypotheses

Multivariate analysis of variance (MANOVA), analysis of variance (ANOVA) and independent measures t-tests were used to test for differences in the engagement patterns of CEOs among three additional subgroups of study: (11) prospectors, (12) analyzers and (13) defenders. Hypotheses 10 and 14 were tested following MANOVA, and ANOVA planned contrasts. Previous studies have relied on these techniques to test for the overall relationships between managerial activities and strategic groups based on Miles and Snow (Floyd and Wooldridge, 1992). Hypotheses 11, 12 and 13 were tested through t-tests.

MANOVA is a statistical technique that allows differences between three or more groups or experimental conditions to be assessed, when several dependant variables are considered in the analysis. It tests whether the mean differences between groups on a combination of dependent variables are likely to have occurred by chance (Tabachnick and Fidell, 2007). Discriminant analysis is another multivariate technique that is helpful for assessing group differentials; it predicts group membership from a set of predictor variables. MANOVA

seemed to suit this study better because the focus is on testing differences of routine engagement patterns among strategic groups, rather than prescribing membership to a particular strategic group due to the engagement patterns observed. MANOVA was also preferred over multiple ANOVAs to avoid inflating the familywise error rate (Tabachnick and Fidell, 2007). However, it is widely acknowledged that significant results in MANOVA must be further analysed through ANOVA follow up procedures, which provide elements to interpret the group differences supported by the MANOVA results (Field, 2005; Tabachnick and Fidell, 2007).

In addition to the parametric assumptions of normality and homogeneity of variance at the group level, MANOVA also assumes group level homogeneity of variance-covariance matrices to produce robust results (Tabachnick and Fidell, 2007). This assumption implies that the correlation between any two dependent variables is the same in all groups of study (Field, 2005). To assess this assumption, the study will conduct the Box's M test, which, in the case of this study –based on unequal group sizes, must be non-significant to ensure a robust outcome of the analysis (Tabachnick and Fidell, 2007).

ANOVA is a statistical technique that allows the assessment of differences on a single dependent variable between three or more groups or experimental conditions. It tests if the mean differences among experimental conditions are due to chance (Tabachnick and Fidell, 2007). This technique is based on the same principle as the one discussed for the independent measures t-test; significant differences among groups arise from the comparison of two estimations of variance: one is random or error variance and the other comes from the experimental condition plus error. In this study, ANOVA planned contrasts were conducted to identify where the differences between the groups observed lay (Field 2005; Tabachnick and Fidell 2007).

These procedures allow group differences to be assessed without inflating the familywise error rate; by breaking down the variance accounted for by the model into component parts (Field, 2005). ANOVA planned contrasts should be used rather than post hoc tests in situations where predictions are made about inter-group differences (Field, 2005; Tabachnick and Fidell, 2007), which is the case of hypotheses 10 and 14. ANOVA also relies on the assumptions of normality and homogeneity of variance at the group level. Finally, hypotheses 11, 12 and 13 require normality to be assessed on the overall sample.

3.5.7 Techniques to test performance related hypotheses

Independent measure t-tests were also used to determine whether the theoretically expected differences of engagement in each routine were in fact associated with organizational performance. To test for Hypotheses 15 and 16, the sample was grouped at the 2nd and 8th percentile of the performance variable, identifying the last four subgroups of study: (14) low performer organizations, (15) non-low performer organizations, and (16) top performer and (17) non-top performer organizations.

3.6 Chapter summary

This chapter discussed the development process of a questionnaire that was drawn up in English, translated, pilot-tested and applied to a purposive sample of Mexican CEOs. It also discussed the measures used to make the constructs of the study operational. Table 5 presents the summary of the constructs used and the questionnaire items that measure them. Table 6 presents a synthesis of the statistical techniques employed to develop measures and test the different hypotheses of the study.

Table 5. Summary of constructs and questionnaire items

Constructs	Questionnaire items (Section / question / item)	Comments
CEO routine engagement patterns:		33 items measuring the frequency of engagement
Information related	3 / 19 / Info a – l	Scale 8-point Likert-type
Resource related	3 / 20 / Reso a – k	Subject to a data reduction procedure
Strategy related	3 / 21 / Strat a – j	
Tenure	1 / 11 / -	Years – continuous
Functional experience	1 / 14 / 1 – 5	Years – continuous
Education level	1 / 15 / 1 – 5	Level categories
Organizational strategy	7 / 39 / 1 – 4	Paragraph method – categories
Organizational performance		5-point Likert-type
Importance of financ. indicators	4 / 33 / a – f	Perceptual measure rating importance and satisfaction of financial indicators.
Satisfaction with financ. indicators	4 / 34 / g – l	

Table 6. Statistical techniques used in the study

Statistical techniques	Purpose	Comments
Principal component analysis	Item reduction	Develop the final scales for the CEO routine engagement pattern constructs
Independent T tests	Test H1-H9	Test differences in the CEO routine engagement patterns of: <ul style="list-style-type: none"> - 4 tenure based subgroups - 4 functional exp. based subgroups - 2 education level based subgroups
MANOVA - ANOVA Independent T-tests	Test H10-H14	Test differences in the CEO routine engagement patterns of: <ul style="list-style-type: none"> - 3 strategy based subgroups
Independent T tests	Test H15 & H16	Test differences in the CEO routine engagement patterns of: <ul style="list-style-type: none"> - 4 performance based subgroups

Chapter 4: Preliminary Data Analysis

This chapter discusses and reports on several analyses that were conducted on the data collected to ensure careful and accurate use, as well as on the procedure to develop the scales for the routine engagement constructs. Thus, section 4.1 describes the characteristics of the sample in general. Section 4.2 reports and discusses the data screening and univariate statistics of the variables of the study. Section 4.3 presents the test for common method variance. Section 4.4 details the data reduction procedure carried out in order to develop the final scales for the routine engagement constructs. Section 4.5 discusses the assessment of the parametric assumptions of the variables of study. Finally, section 4.6 presents a summary of the chapter.

4.1 Sample characteristics

The final sample consisted of 206 CEOs, which reported a mean of fourteen years in office (see Table 7). On average, they had more years of experience in operations and commercial functions than in finance or human resources. All CEOs in the sample held a high school degree; 47% held an undergraduate degree, 41% a post graduate degree, and 3% held a PhD. In the majority of the participating organizations, the CEO was either the sole owner (17%) or the principal owner of the organization (56%), and the main strategist. In this study, sixty-three respondents characterized their firms as prospectors, sixty-six as analyzers, seventy-seven as defenders and two as reactors¹⁵.

Table 7. Frequencies of causal antecedent variables

Variables	N	Mean	SD	Median	Mode
Tenure	204	14.06	9.72	12.00	5.00*
Operations	182	12.27	10.19	10.50	.00
Finance	182	7.19	9.58	3.00	.00
Sales & Mkg	182	10.67	10.82	6.00	.00
HR	182	5.69	9.31	.00	.00

*Multiple modes exist. The other is 20.

¹⁵ Due to the low representativeness of the reactor category, these questionnaires were removed from the study. Slater and Olson (2000) reported a similar response pattern for the reactor category, and did not include the data in their study. Thus, from the 223 questionnaires returned, seventeen were removed; fifteen of them had missing information and the other two were the ones classifying the organization as reactors.

The organizations from the sample operate in different industries: ten firms operate in the financial service sector; eighteen in agro-business, thirty-nine in construction; fifty-five operate in industry and eighty-two in the service sector. According to the criterion followed by The World Bank, most of the organizations considered in the study were small and medium (82%), reporting less than 500 employees. The median number of employees reported was in the 50-300 range. The median of the annual sales reported fell in the \$3-15 million range. The mode for both indicators also fell within these ranges. The average measure of performance was 13.40 (SD = 4.35), with a minimum value of 3.67 and a maximum of 25.

As mentioned in chapter 3, the study identifies seventeen subgroups of study. Four were based on tenure, four on years of experience in output and throughput functions, two on educational level, three on strategy, and four were based on performance. Table 8 presents the composition of each subgroup and the grouping criterion followed.

Table 8. Subgroups of study

Groups	N	Cut off point	Unit	Criterion
Tenure based (years)				
1 Non-short tenured	155	5	Years as CEO	2nd percentile
2 Short tenured	49			
3 Non-long tenured	165	23		8th percentile
4 Long tenured	39			
Output exp. based				
5 Non-high experienced	150	21	Years of cumulative experience in the related functions	8th percentile
6 High experienced	32			
Throughput exp. based				
7 Non-high experienced	144	37		8th percentile
8 High experienced	38			
Formal education based				
9 Group with higher educ. degree	188	-		CEOs with no higher education
10 Group with no higher educ. degree	18			
Strategy based				
11 Prospector	63	-		Indicated directly in the questionnaire
12 Analyzer	66			
13 Defender	77			
Performance based				
14 Non-low performer	162	9.50	Composite measure on the importance & satisfaction of perf. indicators	2nd percentile
15 Low performer	44			
16 Non-top performer	163	17.33		8th percentile
17 Top performer	43			

4.2 Data screening

A check for the accuracy of data entry, missing data, skewness and kurtosis of the data set was conducted through SPSS-frequencies. The results were satisfactory and are shown in Appendix D. All the variables had minimum and maximum values as expected. Variables that captured years of tenure and experience asked for the actual number of years; the minimum possibility was 0. Variables that captured the engagement frequency of the CEO in several activities had a minimum of 0 and a maximum of 7. Variables that measured the degree of importance and satisfaction of six financial indicators had a minimum of 1 and a maximum of 5. Missing values for all the variables were random, and all were far from the critical point of 15%, which has been suggested as a reference point to consider removing or remedying the variable data (Hair *et al.*, 2006).

Table 9 presents the amount of missing data per case, showing that 156 cases had no missing data, forty-two cases were far from the threshold of 10% missing data per case (Hair *et al.*, 2006), and eight cases reported missing data in between 10% and 23% of the variables. These cases remained in the analysis because all of them lacked data coming from the same item of the questionnaire (functional experience; question 14), which contributes with 7.14% of the variables of the study. When conducting the major statistical analysis of the study, the listwise deletion criteria was applied, as a default setting, to deal with the missing data of the data set. When relying on the listwise deletion criteria, all cases not having complete data on the variables being investigated are removed from the analysis. This criteria represents the most common and direct approach to deal with missing data, and is more reliable with large samples, which have a relatively small proportion of missing data presented randomly (Hair *et al.*, 2006; Tabachnick and Fidell, 2007).

Table 9. Summary of missing data per case

Number of missing data per case	Percent of variables	Number of cases	Percent of sample
0	0.00	156	75.73
1	1.79	15	7.28
2	3.57	7	3.40
3	5.36	2	0.97
4	7.14	7	3.40
5	8.93	11	5.34
6	10.71	2	0.97
7	12.50	2	0.97
8	14.29	1	0.49
10	17.86	1	0.49
13	23.21	2	0.97
		206	100.00

Appendix D reports the values of skewness and kurtosis for all the variables in the sample. Most of the values for skewness and kurtosis remained close to zero. Observation of these values represents an appropriate criterion to assess normality on samples with 200 cases or more (Tabachnick and Fidell, 2007). Variables that raised normality concerns are the ones measuring years of tenure and functional experience but, as mentioned in section 3.5.5, these variables were turned into categories to conduct analysis on grouped data. It could be concluded that, up to this point, normality did not represent an issue for the study. However, a deeper assessment of this and other parametric assumptions was conducted with the data set in general and with each group of study. The assessment of parametric assumptions is discussed later, in section 4.5.

4.3 Testing common method variance

Because of the characteristics of the data collection procedure, the presence of common method variance represented a potential methodological issue. Common method variance is a source of systematic measurement error. It refers to the variance that is imputable to the method of measuring constructs rather than to the constructs being measured (Podsakoff and Organ, 1986). Moreover, it has different sources; thus, it may arise from having a single informant, a common measurement context or certain item characteristics. (Podsakoff *et al.*,

2003). For example, consistency motif, cognitive maps and contingent mood are elements that may bias responses when relying on a single informant. Social desirability and leniency may influence responses if the method of measuring identifies respondents. Finally, the structure of the questionnaire items may require cognitive or abstraction efforts that end up biasing responses.

In general, the measurement method has to watch for circumstances that orient the informant toward a pattern of responses. If not, the presence of common method variance can lead to wrong conclusions about the observed relationships between the measures of the constructs studied. In fact, it can provide an alternative explanation about the phenomena studied (Podsakoff *et al.*, 2003).

The presence of common method variance was examined through Harman's single-factor test, which represents one of the most widely used alternatives used to address the issue of common method variance (Podsakoff *et al.*, 2003; Podsakoff and Organ, 1986). The test relies on the assumption that if a substantial amount of common method variance is present, the components produced by an unrotated solution, of an exploratory factor analysis procedure, will detect it. Thus, it is expected that conducting the procedure with all the variables in the study will result in the presence of common method variance becoming evident because either (1) a single component will emerge, or (2) one general component will account for the majority of the covariance among the measures.

The result for Harman's single factor test is reported in Table 10. The solution produced fifteen factors with eigenvalues greater than 1, indicating that respondents clearly discriminate between the various scales. The 1st component accounted for 16.5% of the

variance explained, while the 15th component accounted for 71% of it. Neither a single component emerged, nor did a single component account for the majority of the covariance. Therefore, it can be argued that a substantial amount of common method variance is not present (Podsakoff and Organ, 1986).

Table 10. Total variance explained – unrotated solution

Extraction Sums of Squared Loadings			
Component	Total	% of Variance	Cumulative %
1	8.416	16.501	16.501
2	4.133	8.104	24.606
3	3.524	6.910	31.515
4	2.641	5.178	36.694
5	2.436	4.776	41.470
6	2.073	4.066	45.536
7	1.936	3.795	49.331
8	1.678	3.291	52.622
9	1.644	3.223	55.845
10	1.514	2.968	58.813
11	1.415	2.774	61.587
12	1.326	2.601	64.188
13	1.213	2.378	66.566
14	1.148	2.250	68.817
15	1.097	2.151	70.968

Extraction Method: Principal Component Analysis.

4.4 Principal component analysis (PCA): Data reduction for the CEO routine engagement pattern constructs

As mentioned in section 3.4.1, in order to measure the routine engagement pattern constructs, a data reduction procedure was conducted on the thirty-three items that captured the frequency of engagement in information, resource and strategy related activities.

However, before carrying out the main analysis, it is advised to assess the suitability of the data to conduct an exploratory factor analytical procedure. (Field, 2005; Tabachnick and Fidell, 2007). For this purpose, normality was checked for and two different tests were conducted over the variables in question. The first test was the Kaiser-Meyer-Olkin test of sampling adequacy (KMO), and the second was Bartlett's test of sphericity. As reported in section 4.5, normality was not a concern.

The KMO test tells whether the size of a sample is suitable for carrying out a factor analytical procedure. The KMO statistic varies between 0 and 1; the closer to one, the better the statistic (Field, 2005). The result of the KMO statistic for our sample was close to 1 (KMO = .811), suggesting an adequate sample size for the procedure. Furthermore, the size of the sample should not represent a problem to the reliability of the procedure because both the number of cases (206 cases) and the communalities resulting from the PCA (see appendix E) –all above the .50 threshold– are appropriate to produce reliable components (Field, 2005; Tabachnick and Fidell, 2007).

Bartlett's test assesses that correlations between the variables considered for the PCA are adequate for the procedure. It tests the null hypothesis that the original correlation matrix is an identity matrix. Thus, a non-significant result means that the R-matrix resembles an identity matrix, indicating that the variables do not suit a PCA. A significant result, on the other hand, means that the R-matrix is different from an identity matrix and, therefore, the relationships between the variables included in the analysis are adequate for the procedure. The result of Bartlett's test was highly significant $t(528) = 2573.423$ $p < .001$; pointing to the data being suitable for a PCA.

Given that the data was suitable for this type of analysis, the data reduction procedure was conducted using SPSS principal components analysis. This procedure would allow six different routine categories to be identified as separate factors in the rotated solution. Because of the number of items involved (thirty-three), between seventeen and eleven components with eigenvalues greater than 1 could be expected at this stage (Tabachnick and Fidell, 2007). The first iteration of the procedure resulted in ten components, which are reported in Table 11.

Table 11. Varimax rotated principal component analysis; rotated matrix of 33 items

Item	Item description	Components									
		1	2	3	4	5	6	7	8	9	10
1	Info_a Meeting with clients to identify how to serve them better	-.0428	.1054	.1466	.1129	.0904	.0650	.0381	.0339	.8659	.0563
2	Info_b Meet with customers to find out what products or services they will need in the future	.1528	.1305	-.0093	.0488	-.0189	.1023	.0907	.1785	.8613	.0992
3	Info_c Engage on in-house market research initiatives	.3120	.1446	-.0394	.0840	-.0362	.2223	-.0771	.5545	.3718	-.0074
4	Info_d Review external reports assessing the quality of our products	.0340	.2365	.0517	.1304	.1380	.0568	-.0618	.7226	.0840	.0208
5	Info_e Meet with those who can influence our end user's purchases	.0719	-.0253	.0461	.0648	.1495	.0182	.1918	.7197	.0121	.3239
6	Info_f Collect industry information by informal means	.0578	.0594	.0260	.1030	.0259	.2495	.1505	.2665	.0039	.6266
7	Info_g Meet with our suppliers to keep up with technological trends	.0085	.1178	.0874	-.0105	.1839	.1373	-.0244	.0234	.1403	.7121
8	Info_h Engage in informal "hall talk" with managerial staff about our competitors' tactics or strategies	.0191	.0730	.1444	.1000	.1674	.7450	.0725	.1813	.0396	.2252
9	Info_i Engage in informal "hall talk" with non managerial staff about our competitors' tactics or	.1538	-.0245	.0548	.2260	.1810	.7475	.1295	.0156	.1830	.1674
10	Info_j Carry out interdepartmental meetings to discuss market trends and developments	.0961	.0019	.0579	.6621	.1843	.4543	.0232	.1375	.1175	.0353
11	Info_k Distribute formal information to managerial levels about information on our customers	.0521	-.0351	-.0468	.5722	.3045	.2335	-.0441	.3229	.0587	-.1326
12	Info_l Carry out interdepartmental meetings to discuss data on customer satisfaction	.0143	.0198	.0608	.5272	.2574	.2269	.1385	.3897	.1668	.0199
13	Reso_a Distribute budgeted resources to projects and departments	.0362	.2505	.7795	.0923	-.0287	.1954	.0326	-.0321	-.0260	.0180
14	Reso_b Decide which programs to provide resources	.1348	.1948	.8055	-.0720	-.0766	.1479	.1553	.0840	.0286	-.0066
15	Reso_c Define new hirings	.2634	-.2048	.4896	.0821	.2659	-.0512	.3350	-.0428	.1862	.1515
16	Reso_d Allocate equipment or materials to projects and departments	.1883	.0888	.7673	.1000	.1276	-.0953	-.0044	.0507	.0994	.0953
17	Reso_e Define priorities within the organization	.0261	.2673	.0263	.0022	.6857	.1115	.1818	.0211	.0858	-.1242
18	Reso_f Prevent loss of human resources	.0873	.5141	.2200	-.0682	.2848	.3316	.2287	.0046	.0197	.0556
19	Reso_g Engage in training initiatives of the managerial staff	.1431	.1636	.0947	.1043	.1464	.1495	.8744	-.0170	.0761	.0266
20	Reso_h Engage in training initiatives of non managerial staff	.1146	.1065	.1235	.1618	.1614	.0640	.8552	.0992	.0352	.1020
21	Reso_i Engage on the development of my successor	.0621	-.0642	.0758	.1793	.6725	-.0111	.0724	.1648	-.0119	.1115
22	Reso_j Help managerial staff to correct their mistakes before others notice them	.2174	.0933	.0206	.0503	.6010	.1937	.0603	.0939	.0260	.3588
23	Reso_k Give feedback on performance to managerial staff	.0920	.2712	-.0551	.1962	.6045	.2957	.0891	.0861	.0028	-.1865
24	Strat_a Translate goals into plans	.2069	.7736	.2444	.0909	.1046	.0387	.0430	.1304	.1158	.0657
25	Strat_b Translate goals into individual objectives	.2901	.7224	.1457	.0616	.1501	.0393	.0506	.1644	.1805	.0092
26	Strat_c Monitor activities to support top management objectives	.1444	.6274	.0902	.3464	.0616	-.1458	.1582	.1119	.0661	.3289
27	Strat_d Carry out interdepartmental meetings to discuss unachieved objectives	.2269	.2213	.0722	.7604	-.0217	-.0063	.1927	-.0107	.0325	.0904
28	Strat_e Define corrective measures to achieve objectives	.2585	.3723	.1195	.5414	.0412	-.1249	.1893	-.0966	.0137	.3765
29	Strat_f Engage in new product or service developments	.7055	.1051	.0495	.1704	.1183	-.1355	-.0086	.0641	.1396	.1737
30	Strat_g Justify and define new programs	.7128	.3625	-.0005	.2027	.0015	-.0457	.0980	-.0439	.0422	.0560
31	Strat_h Renegotiate objectives to facilitate new projects	.7691	.0892	.1173	.2013	.0324	.1470	.1102	.1423	.0482	-.0777
32	Strat_i Approve resources for trial projects	.6645	.0591	.2489	-.0852	-.0357	.2887	.1883	.1989	-.0439	-.1101
33	Strat_j Explore new sources of supply	.6800	.1306	.2219	-.0434	.2881	.1109	.0530	-.0282	-.0278	.1220
	Eigenvalue	8.52	2.68	1.94	1.76	1.62	1.44	1.31	1.18	1.1	1.06
	Variance (%)	25.83	8.12	5.9	5.35	4.92	4.38	3.97	3.57	3.36	3.23
	(Cumulative variance = 68.677)										

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 21 iterations.

The varimax rotated solution presents seven components with three or more items loading heavily ($> .39$) on them; the other three components present just two variables with heavy

loadings. When looking at individual items, four pairs attract attention because they seem to drive the creation of additional components. Thus, items Info_a and Info_b loaded heavily on component 9; items Info_f and Info_g loaded heavily on component 10; items Info_h and Info_i loaded heavily on component 6; and items Reso_g and Reso_h loaded heavily on component 7. In the case of the items that loaded on components 6 and 7, the issue was clearly related with the way the items were phrased.

Tabachnick and Fidell (2007) question whether components with heavy loadings of only one or two variables should be retained in the analysis, arguing that poorly defined components may lack reliability and challenge interpretability. In order to assess whether a component with two high loading items is reliable, these authors advise checking the pattern of correlations of the two variables with each other, and with other variables in the R-matrix (Tabachnick and Fidell, 2007). These components may only be reliable when the two variables are highly correlated with each other ($r > .70$), and relatively uncorrelated with other variables.

Since the aim of this procedure was to develop demonstrably reliable components, seven items were removed from the analysis. Four of them were those which had phrasing issues: Info_h and Info_i, and Reso_g and Reso_h; the correlation coefficients of both pairs were $r = .63$ and $r = .80$. A second pair was that of Info_f and Info_g, which raised high reliability concerns due to the low intra-pair correlation ($r = .29$). Finally, from the pair of variables Info_a and Info_b ($r = .68$), only one item was removed (the one with the highest loading in the component). Item Info_b remained in the analysis; otherwise the client information perspective would have been excluded from the study.

A second iteration of the procedure resulted in a six-component solution; the results are shown in Appendix F. Although the number of expected components emerged from the analysis in this iteration, four items loaded heavily in more than one component ($>.39$). As suggested by Hinkin (1998), ambiguous loading items should be deleted until a clear component structure results. Thus, the item with the highest loading on the second component was removed from the analysis and the procedure was conducted again. After five more iterations, four additional items were removed from the analysis (Strat_e, Reso_f, Strat_g and Strat_d). Detail and results per iteration are reported in Appendix G.

In total, eleven items were removed from the analysis. The results of the final six-component solution and alphas¹⁶ are reported in Table 12. The final solution was composed of twenty-two items, and accounted for 61.5% of the variance. Three decision rules (Kim and Mueller, 1978) provide support for the expectations regarding the underlying dimensions of the items used: the first was that at least three of them loaded heavily (>0.39) on each of the six components; the second was that the eigenvalues for all six components were greater than 1; and the third was that the components presented a relatively simple structure.

The components of the final solution were named based on the variables loading on them and in accordance with expectations. Since the purpose of the procedure detailed in this section was to develop measures to conduct additional analysis with external variables, the final scores were calculated according to the regression method¹⁷ computed over the component structure reported in Table 12 (Kim and Mueller, 1978; Tabachnick and Fidell, 2007).

¹⁶ The reliability analysis will be discussed in the next section

¹⁷ Details of the procedure are reported in Appendix I

Table 12. Varimax rotated principal component analysis, rotated matrix of 22 items

Item	Item description	Components					
		Strategy regeneration	Resource allocation	Mentoring	Strategy implementation	Information diffusion	Environment scanning
1	Info_b Meet with customers to find out what products or services they will need in the future	.2476	-.0181	-.1141	.2421	.2321	.4743
2	Info_c Engage on in-house market research initiatives	.3257	-.0174	-.0773	.1700	.2000	.6697
3	Info_d Review external reports assessing the quality of our products	-.0437	.0692	.1521	.1917	.1650	.6589
4	Info_e Meet with those who can influence our end user's purchases	.0414	.1012	.3677	-.0541	.0581	.7023
5	Info_j Carry out interdepartmental meetings to discuss market trends and developments	.1383	.0626	.1551	.0959	.8443	.0558
6	Info_k Distribute formal information to managerial levels about information on our customers	.0257	-.0451	.2350	.0289	.6906	.2163
7	Info_l Carry out interdepartmental meetings to discuss data on customers satisfaction	.0826	.0810	.2022	.0909	.7360	.2571
8	Reso_a Distribute budgeted resources to projects and departments	.0278	.8233	-.0185	.1834	.0777	-.0147
9	Reso_b Decide which programs to provide resources	.1373	.8369	-.0554	.1655	-.0314	.0886
10	Reso_c Define new hirings	.3255	.4847	.2678	-.0326	.1149	-.0714
11	Reso_d Allocate equipment or materials to projects and departments	.1692	.7305	.0827	.1250	-.0121	.0864
12	Reso_e Define priorities within the organization	.0485	.0490	.5566	.2691	.2317	-.1132
13	Reso_i Engage on the development of my successor	.0635	.0198	.6808	-.0485	.1360	.1158
14	Reso_j Help managerial staff to correct their mistakes before others notice them	.1998	.0598	.7297	.1166	.0758	.1484
15	Reso_k Give feedback on performance to managerial staff	.0917	.0027	.6873	.2802	.2094	.1121
16	Strat_a Translate goals into plans	.1594	.2524	.1041	.8219	.0783	.1088
17	Strat_b Translate goals into individual objectives	.2056	.1752	.1351	.8105	.0107	.1565
18	Strat_c Monitor activities to support top management objectives	.1073	.0988	.1969	.7023	.1267	.1552
19	Strat_f Engage in new product or service developments	.6721	-.0256	.1139	.2371	.0345	.1500
20	Strat_h Renegotiate objectives to facilitate new projects	.7540	.1440	.0576	.0973	.1994	.1618
21	Strat_i Approve resources for trial projects	.6755	.3263	.0220	.0328	-.0115	.1361
22	Strat_j Explore new sources of supply	.7046	.1829	.2699	.1525	.0530	-.0770
	Eigenvalue	5.82	2.43	1.53	1.42	1.32	1.003
	Variance (%)	26.46	11.06	6.94	6.45	6.00	4.56
	Cronbach's α	0.79	0.76	0.71	0.82	0.76	0.65
	Cumulative variance = 61.46 %						

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 8 iterations.

Data reduction procedures such as PCA provide reliable scales that make the constructs of study operational. However, these procedures can alter –usually by elimination– the constituting elements of the construct (Hinkin, 1995). In the case of the present study, such an effect was observed in two cases. The first has to do with the information diffusion construct. Here, the constituting items ended up focusing only on formal channels of communication. In the second case, the items constituting the mentoring construct focused on activities oriented toward managerial staff only. Though these adjustments do not challenge the reliability of the scales produced by the procedure, it is important to acknowledge them to improve the interpretability of results and the validity of conclusions (Hinkin, 1995).

Finally, to check for the viability of component independence inherent to an orthogonal rotation, a principal component solution with oblique rotation was conducted with thirty-three and twenty-two items. Checking for similar patterns in the rotated solutions, and in the component correlations of the oblique solution, is advised (Field, 2005; Tabachnick and

Fidell, 2007). As reported in Appendix H, the solutions with oblique rotation produced a similar number of components and loading patterns to those of the orthogonal solutions reported in this section. In addition, the low component correlation present in both oblique solutions (see Appendix H) suggests that it is reasonable to assume interdependence between components resulting from an orthogonal solution conducted over the same data (Field, 2005; Tabachnick and Fidell, 2007).

4.4.1 Internal consistency of reliabilities

The internal consistency of reliabilities (Cronbach's alpha, α) for the scales obtained after the data reduction procedure are reported in Table 13. All but one of the alphas were above the threshold of .7 (Nunnally and Bernstein, 1994). Though the α value for the measure on environment scanning routine patterns was below the threshold ($\alpha = .65$), it can be acceptable based on precedent (Hinkin 1995), and even suitable when considering the diversity –scanning environments and task sectors– of the items measured (Kline, 1999). In fact, this issue is far from being specific to this study, since it can be identified in previous attempts to operationalize the environment scanning construct (Becker and Knudsen, 2005).

Table 13. Internal consistency of reliabilities (Cronbach's alpha)

Routines	Cronbach's alpha	Items	Corrected item-total correlation	Cronbach's alpha if item deleted
Environment scanning	0.65	Info_b	0.36	0.62
		Info_c	0.53	0.50
		Info_d	0.41	0.59
		Info_e	0.40	0.59
Information diffusion	0.76	Info_j	0.64	0.62
		Info_k	0.54	0.74
		Info_l	0.60	0.67
Resource allocation	0.76	Reso_a	0.57	0.71
		Reso_b	0.70	0.63
		Reso_c	0.40	0.79
		Reso_d	0.60	0.68
Mentoring	0.71	Reso_e	0.43	0.68
		Reso_i	0.43	0.68
		Reso_j	0.56	0.59
		Reso_k	0.56	0.61
Strategy implementation	0.82	Strat_a	0.75	0.68
		Strat_b	0.70	0.73
		Strat_c	0.59	0.84
Strategy regeneration	0.79	Strat_f	0.51	0.78
		Strat_h	0.67	0.70
		Strat_i	0.59	0.74
		Strat_j	0.63	0.72

4.5 Assumptions of parametric data

The assumptions of parametric data were checked by assessing the normality of the distribution and the homogeneity of variance of the data. Since most of the analysis in this study is carried out on grouped data, the assumptions must be assessed at the subgroup level. (Field, 2005; Neter *et al.*, 1988; Tabachnick and Fidell, 2007). However, the assumption of normality was also assessed on the overall sample. The groups to be assessed were constituted according to two matching conditions: the type of routine engagement pattern and the individual or organizational level condition. There are six types of routine engagement conditions (each routine pattern studied), ten causal antecedent conditions (one per subgroup of study) and seven organizational level conditions (three for strategy and four for performance). Thus, assessment of the assumptions at the subgroup level was conducted on the 102 matched subgroups. The assessment of normality for the overall sample was conducted on the scales of the six routine engagement patterns studied.

4.5.1 Normality assumption of grouped data

In order to examine the assumption of normality of grouped data, the present study combined statistical and graphical techniques to identify the subgroups raising normality concerns (Field, 2005; Tabachnick and Fidell, 2007). Specifically, the study relied on the Kolmogorov-Smirnov test (K-S), the values and z-scores of the skewness and kurtosis statistics, and the shape of the histogram for this purpose. First, the K-S was used to develop a general perspective of the normality status of all the subgroups of study. The K-S test compares the scores in the sample to a normally distributed set of scores with the same mean and standard deviation; the result of the test indicates whether the distribution as a whole deviates from a comparable normal distribution (Field, 2005; Neter *et al.*, 1988). A non-significant result ($p > .05$) means that the distribution of the sample is not significantly

different from a normal distribution; whereas a significant result ($p < .05$) means that the distribution is significantly different from a normal distribution. It is deemed advisable not to use this test in isolation to assess normality (Field 2005). As it is sensitive to sample sizes, large sample sizes may obtain significant results even for small deviations from normality.

The second technique used was a further analysis of the skewness and kurtosis statistics conducted on the subgroups of study that reported significant results on the K-S test. Thirdly, the analysis was complemented by assessing the shape of the distribution of the subgroups of study concerned. When assessing normality based on skewness and kurtosis statistics, it is suggested that the z-scores of skewness and kurtosis be relied on in order to evaluate the significance of these sample conditions. In the case of small samples, absolute values (z-scores) above 2.58 –deviations from normality significant at $p < .01$ – should raise concern for non-normality (Field, 2005; Tabachnick and Fidell, 2007). For large samples (100 cases or more), the suggestion is to rely on the value of both skewness and kurtosis, rather than on their significance level, and on observing the appearance of the distribution (Tabachnick and Fidell, 2007). Therefore, the more the value of both conditions departs from zero, the less tenable the assumption of normality is, when a graphical analysis points in the same direction.

The K-S test was applied to all the 102 groups of analysis considered in the study. The K-S test was significant ($p < .05$) for twelve groups (reported in Appendix J): (1) Short tenure – mentoring, (2) Long tenure – environment scanning, (3) High experience in output functions – strategy regeneration, (4) Analyzer – environment scanning, (5) Non-low performers – mentoring, (6) Low performers – strategy regeneration, (7) Non-long tenure – mentoring, (8) Non-high experience in output functions – mentoring, (9) Non-high experience in

throughput functions – mentoring, (10) Higher education degree – mentoring, (11) Non-low performers – mentoring, and (12) Non-top performers – strategy regeneration.

The first six groups mentioned above were composed of small samples (less than 100 cases), but only one of them reported an absolute value of skewness or kurtosis higher than the threshold of 2.58. The group of concern was Low performers – strategy regeneration. The other six groups were composed of large samples (more than 100 cases); five of them had to do with the mentoring routine. As reported in Appendix J, the values of their skewness and kurtosis statistics range from $/.533/$ to $/.702/$ and from $/.099/$ to $/2.012/$ respectively. As mentioned by Tabachnick and Fidell (2007), the impact on normality due to departure from zero skewness diminishes with larger samples; the number of cases for these groups ranged from 144 to 188 cases, and the reported values of skewness remained relatively close to zero. A closer look at the values of kurtosis reveals that all but one of the groups of study have values less than .320; very close to zero indeed. Though the value of kurtosis (kurtosis = 2.012) reported by the group Non-top performers – strategy regeneration is far from zero, its distribution can be assumed as normal. Accordingly, Tabachnick and Fidell (2007) point out that underestimates of variance associated with positive kurtosis disappear with samples of 100 cases, and the number of cases of this group of analysis was 163. Finally, the histograms of all the groups of concern resembled a normal distribution. The histograms are presented in Appendix K.

The previous analysis showed that the group, Low performers – strategy regeneration, presented deviation from normality. The concern is meaningful because the group has a relatively small number of cases (forty-four). The analysis regarding this group was conducted through the Mann-Whitney test. For the other 101 groups of study, the

assumption of normality was supported. Although it was not significant, the analysis revealed a pattern around five groups involving large samples (more than 100 cases) with the mentoring routine. Thus, it seems prudent to control the findings by running parallel non-parametric tests on these groups (Field, 2005).

4.5.2 Normality assumption of the overall sample

To assess the normality assumption on the routine engagement patterns for the overall sample, the study also relied on the K-S test, values of the skewness and kurtosis statistics and on the appearance of the corresponding frequency histograms. As reported in Appendix L, the K-S test was significant only for engagement in mentoring routines. Since the analysis was conducted over a large sample (206 cases), it is deemed advisable to further check significant results through the values of skewness and kurtosis (Field, 2005; Tabachnick and Fidell, 2007). No concern was raised by the values reported of these sample conditions. In the case of the mentoring routine, the values of skewness and kurtosis were close to zero $/.527/$ and $/.129/$ respectively, suggesting no major deviation from normality (Field, 2005; Tabachnick and Fidell, 2007). Furthermore, the histogram for engagement in the mentoring routine did resemble a normal distribution (see Appendix M).

4.5.3 Homogeneity assumption

The assumption of homogeneity of variance was examined through Levene's test, which tests for the hypothesis that the variances of the groups of study are equal. This technique is considered reliable for testing the assumption of homogeneity of variance of all the groups involved in the study, due to the fact that this test is not sensitive to departures from normality (Tabachnick and Fidell, 2007). A non-significant result ($p > .05$) would indicate that the difference between the variances is zero. On the contrary, a significant result ($p <$

.05) would indicate that the group variances are significantly different, meaning that the assumption of homogeneity of variance is not tenable.

Appendix N presents the Levene's test results for all the groups of analysis considered in the study. Variance was not homogenous among three groups of analysis: (1) in the group comparing engagement in information diffusion routines between short tenured and non-short tenured CEOs; (2) in the group comparing engagement in environment scanning routines between high experienced and non-high experienced CEOs in output functions, and (3) when comparing groups of CEOs with, and without, a higher education degree engaging in strategy regeneration routines. SPSS provides t-test results based on procedures suitable for situations in which the variances of the studied groups are not equal (Field, 2005).

4.6 Correlational analysis

Assessing the pattern of correlations of the variables of study allows the identification of perfect linear relationships between variables, which can threaten further analysis conducted on the data (Tabachnick and Fidell, 2007). Moreover, the analysis of the correlation matrix provides an initial perspective on the predicted relationships between the variables studied (Field, 2005).

The correlation matrix for the variables of study is reported in Appendix O, and the first point to mention about these results is that perfect linear relationships do not present a problem in this study. In fact, the correlation coefficients reported are substantially low. However, this is not a cause of concern because this pattern of correlation is usually the norm when the analysis involves continuous and dichotomous variables. Tabachnick and Fidell (2007) point out that, even if a continuous and a categorical variable were strongly

related in the population, the highest correlation coefficient that they could reflect would be well below 1. Furthermore, the same authors argue that this effect is most common when the majority of the responses fall in one of the categories; which is the case due to the grouping criteria followed in the study.

The interpretation of the correlation matrix containing continuous and categorical variables is also problematic because the signs are dependent on the coding scheme followed in each variable (Field, 2005). What can be said about the correlations reported is that most groups analyzed present relatively stronger relationships with at least two routine engagement variables, which seems in line with the hypothesized expectations. The direction of the correlation cannot be defined because of the coding issue just mentioned.

The subgroups based on short tenure are significantly related with information diffusion ($r = -.119$ $p < .1$ (two tailed)) and strategy implementation ($r = .130$ $p < .1$ (two tailed)) routine engagement patterns; while the ones based on long tenure relate with environment scanning ($r = .118$ $p < .1$ (two tailed)), resource allocation ($r = -.128$ $p < .10$ (two tailed)) and strategy regeneration ($r = .115$ $p < .1$ (two tailed)). The groups based on higher output experience had significant correlations with engagement patterns in environment scanning ($r = .119$ $p < .10$ (two tailed)) and strategy implementation ($r = .122$ $p < .10$ (two tailed)) routines. The groups based on higher throughput experience had significant relationships with information diffusion ($r = .157$ $p < .05$ (two tailed)) and strategy implementation ($r = .128$ $p < .10$ (two tailed)). The groups based on higher education were significantly related with environment scanning routines ($r = .135$ $p < .05$ (two tailed)).

Prospector based subgroups were significantly related with mentoring ($r = .113$ $p < .1$ (two tailed)) and strategy regeneration ($r = .196$ $p < .01$ (two tailed)) routine engagement patterns;

subgroups based on analyzer organizations had no significant correlations, and defender based subgroups had significant correlations with environment scanning ($r = -.170$ $p < .05$ (two tailed)) and strategy regeneration ($r = -.160$ $p < .05$ (two tailed)) routine engagement patterns. Finally, low performer based subgroups had significant correlations with engagement patterns in information diffusion ($r = -.114$ $p < .01$ (two tailed)), strategy implementation ($r = -.117$ $p < .01$ (two tailed)) and strategy regeneration ($r = .121$ $p < .05$ (two tailed)) routines. And top performer based subgroups had significant correlations with environment scanning ($r = .139$ $p < .05$ (two tailed)) and strategy implementation ($r = .154$ $p < .05$ (two tailed)) routines.

4.7 Chapter summary

This chapter discussed and reported on the statistical analyses that were conducted on the data to ensure their careful and accurate use. The results indicate that missing data and common method variance do not represent a concern with regard to conducting further analysis on the data. The data reduction procedure, carried out in order to develop scales for the routine engagement constructs, produced six reliable components. No major adjustments were observed in the constituting elements of the constructs due to the data reduction procedure.

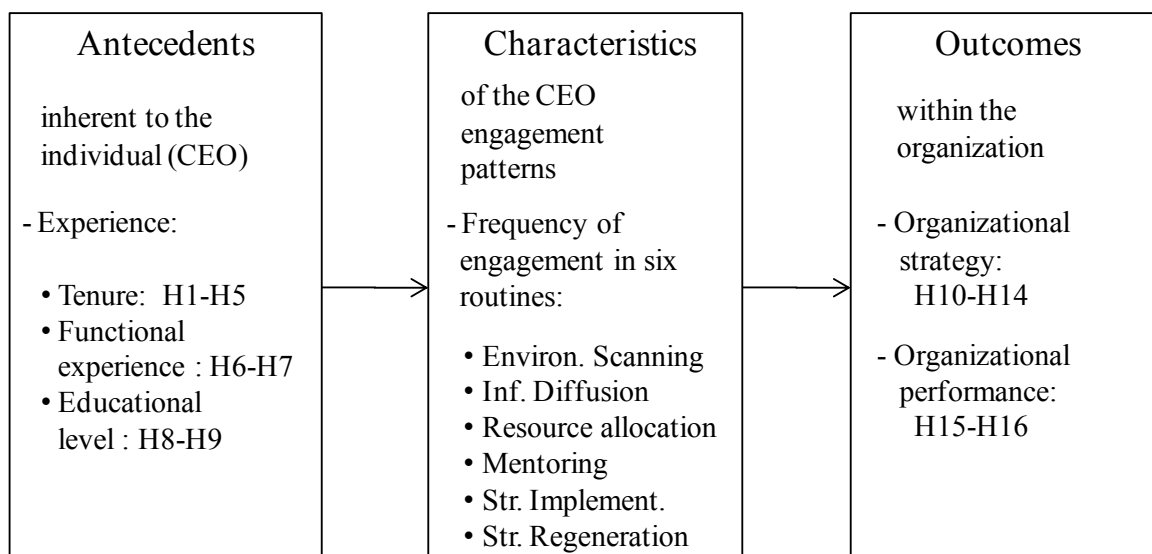
Only one out of 102 subgroups of study raised normality concerns and, in three of them, the assumption of homogeneity of variance was not supported. A non-parametric test was conducted on analysis involving the group with normality issues. Non-parametric tests were also conducted in parallel with parametric tests, to control analysis on five groups involving the mentoring routine. As mentioned, three subgroups did not support the assumption of homogeneity of variance. In these cases, the study relied on the statistics provided by SPSS

that suit this non-parametric condition. Finally, with some limitations due to the nature of the variables involved, the bivariate correlations were analyzed indicating some degree of congruence with the hypothesized relationships. After this analysis, it can be concluded that univariate and multivariate analyses are suitable to test the hypothesis considered in the study. The analyses to test the hypothesis of the study are reported and discussed in the next chapter.

Chapter 5: Hypotheses Related Analyses; Discussion of Results

This chapter is divided into three sections: the first two sections report the specific analysis conducted to test the several hypotheses addressed in this thesis and discuss the corresponding results. Figure 4 presents the research framework of the empirical study including the corresponding hypotheses. Therefore, section 5.1 reports and discusses results of the analyses regarding the antecedent related hypotheses. Section 5.2 reports and discusses results of the analyses to test the outcome related hypotheses. At the end of this chapter, section 5.3 presents a summary of the hypotheses and results.

Figure 4. Research framework of the empirical study with hypotheses



5.1 Antecedent related hypotheses

Independent measure t-tests were conducted to test whether the theoretically expected differences in the routine engagement patterns, reported by the CEOs of the study, were in fact associated with tenure, experience in output and throughput functions, and educational level differentials. The subgroups of study considered in the causal antecedent hypotheses did not present normality concerns. However, as mentioned in section 4.5, non-parametric

tests were conducted parallel to the parametric tests to control the analysis in five subgroups involving engagement in the mentoring routine.¹⁸ The three subgroups of study that did not support the assumption of homogeneity of variance had to do with causal antecedent hypotheses, and each of them is identified in the results presented below.

5.1.1 Tenure related hypotheses; discussion of results

The results for the first proposition and the four related hypotheses were according to expectations. They provide support to the idea that links exist between differences in tenure ranges and the frequency of engagement in specific routines, which either push for results (resource allocation, strategy implementation and strategy regeneration) or enable the maintenance of the status quo (information diffusion and mentoring). Although some differences were not statistically significant, engagement in the routines of study varied as hypothesized for both subgroups of short and long tenured CEOs. The results of both tenure based subgroups are reported in Table 14.

Table 14. Independent measure t-tests^a on tenure based subgroups

Routines	Short tenure based subgroups			Long tenure based subgroups		
	SH_T (n=49)	N-SH_T (n=155)	Difference of means	LG_T (n=39)	N-LG_T (n=165)	Difference of means
Environment scanning	1.95	1.78	0.17	2.28	1.72	0.56**
Information diffusion (b)	2.33	2.88	-0.55*	2.78	2.74	0.04
Resource allocation	2.46	2.20	0.26	1.82	2.37	-0.55**
Mentoring	2.74	2.91	-0.17	3.14	2.80	0.39
Strategy implementation	3.29	2.75	0.54**	2.81	2.90	-0.09
Strategy regeneration	2.10	1.97	0.13	2.38	1.91	0.47**

*. Significant at the 0.1 level (1-tailed).

**. Significant at the 0.05 level (1-tailed).

a. Means reported.

b. Equal variances were not assumed in the result reported for the short tenure based subgroups.

¹⁸ The pattern identified around the mentoring routine involved five subgroups of analysis. However, only four of these subgroups were considered in testable hypotheses: long tenured subgroups, output and throughput experience based subgroups and low-performance based subgroups.

Hypotheses 1 and 2 were mainly supported by the results. As prescribed in hypothesis 1, short tenured CEOs reported a higher frequency of engagement in those routines oriented to deliver results than non-short tenured CEOs. Results pointed in the expected direction and were significant for strategy implementation (H1b) $t(202) = 1.86$ $p < .05$, and not significant for resource allocation (H1a) and strategy regeneration (H1c) routines. Hypothesis 2 prescribed less frequency of engagement in routines emphasising the status quo by short tenured CEOs when compared with non-short tenured CEOs. Both results pointed in the expected direction, being significant for information diffusion routines (H2a) $t(69.3) = -1.53$ $p < .1$ and not significant for mentoring routines (H2b). These findings confirm the notion that short tenured CEOs orient their action to face the additional pressures they face to deliver (Hambrick and Fukutomi, 1991).

According to hypothesis 3, long tenured CEOs were expected to report patterns with higher frequency of engagement in routines emphasising the status quo than non-long tenured CEOs. The parametric results (reported in Table 14) on both information diffusion (H3a) and mentoring (H3b) routines pointed in the expected direction but were not significant. However, as reported in Table 15, the non-parametric result on the mentoring routine was significant $U = 2797.00$ $p < .1$, and in line with expectations supporting hypothesis 3.

Table 15. Mann-Whitney test^a on long tenure subgroups

Routines	Long tenure based subgroups		
	LG_T (n=39)	N-LG_T (n=165)	Difference of means ranks
Mentoring	113.28	99.95	13.33*

*. Significant at the 0.1 level (1-tailed).

a. Mean rank reported

Hypothesis 4 prescribed that long tenured CEOs would report less frequent engagement in routines oriented to deliver results than non-long tenured CEOs. As reported in Table 14, the

results pointed in the expected direction for resource allocation (H4a) and strategy implementation (H4b) routines, and were significant for engagement in resource allocation $t(202) = -1.83$ $p < .05$. In the case of engagement in the strategy regeneration (H4c) routine, the result pointed in the opposite direction towards expectations, and was statistically significant $t(202) = 1.64$ $p < .05$. This result goes against conventional wisdom on upper echelons research where long tenured CEOs are usually expected to discourage change (e.g., Finkelstein et al., 2009). Thus, hypothesis 4 was partially supported.

Taken together the results of hypotheses 1 to 4 shed light on the alternative mechanisms that CEOs facing different career circumstances may probably engage in to legitimize their action. On one hand, short tenured CEOs may push for the implementation of the strategic objectives to obtain those tangible results that give them credibility to keep running the organization (e.g., Zimmerman and Zeitz, 2002). On the other hand, long tenured CEOs may devote increased efforts instructing people to shape profiles and actions required to legitimize the practices they are willing to maintain in the organization (Ashforth and Gibbs, 1990).

Regarding the unexpected result involving higher engagement in strategy regeneration routines by long tenured CEOs (H4c), it can be attributed to the differences in the levels of analysis within the constructs used to infer the CEO proclivity towards innovation. Traditionally, research on upper echelons does so through organizational level constructs capturing the expenditures committed to innovation related processes taking place within the firm (e.g., Barker and Mueller, 2002; Thomas *et al.*, 1991). Instead, this thesis relies on individual level measures based on the actual behaviours exerted by the CEOs.

Moreover, this finding can foster two additional explanations. The first relates to the effects that the organizational knowledge, inherent to long tenures, can exert on the cognitive demands of CEOs which, according to Winter (1985), enables routinization of current operations, liberating cognitive capacity to address non-routine events. Thus, CEOs with longer tenures can devote time to encouraging change because they have good control of the firm's operations. The second explanation refers to the possibility that innovative behaviours might be triggered by boredom arising from a long-lasting reliance on current organizational and technological arrangements (e.g., Abrahamson, 1991), phenomena which are likely to happen to CEOs after long periods in office.

The second proposition and the two related hypotheses tested that engagement in environment scanning activities is important for CEOs in both tenure ranges. The results reported in Table 14 were according to expectations. Both short (H5-1) and long (H5-2) tenured CEOs reported higher frequency of engagement in the environment scanning routine when compared with non-short tenured and non-long tenured CEOs, respectively. However, the results were significant only for the comparison between long and non-long tenured CEOs $t(202) = 1.70$ $p < .05$. It is important to note that this result does not comply with the notion that path dependent expertise (Miller, 1991) and superior information networks (Aguilar, 1967) inherent to CEOs with longer tenures reduce the requirement to engage in environment scanning efforts.

5.1.2 Functional experience related hypotheses; discussion of results

The idea that differences in the functional experience of the CEO will reflect a differential engagement in specific routines, stated in the third proposition and the two related hypotheses, was supported. Results of the routine engagement patterns for the output and

throughput experience based subgroups are reported in Table 16; while the results of the non-parametric test regarding the mentoring routine are reported in Table 17.

Table 16. Independent measure t-tests^a on functional experience based subgroups

Routines	Output exp. based subgroups			Throughput exp. based subgroups		
	HI_Exp (n=32)	N-HI_Exp (n=150)	Difference of means	HI_Exp (n=38)	N-HI_Exp (n=144)	Difference of means
Environment scanning (b)	2.23	1.64	0.59**	1.78	1.73	0.05
Information diffusion	3.13	2.72	0.42	3.40	2.63	0.77**
Resource allocation	2.44	2.29	0.15	2.48	2.27	0.21
Mentoring	3.43	2.70	0.72**	2.92	2.81	0.11
Strategy implementation	2.73	2.93	-0.20	3.35	2.78	0.57**
Strategy regeneration	1.85	1.98	-0.13	2.10	1.92	0.18

** Significant at the 0.05 level (1-tailed).

a. Means reported.

b. Equal variances were not assumed in the result reported for the output experience based subgroups.

According to hypothesis 6, CEOs with higher experience of output functions (marketing, sales and R&D) were expected to report higher frequency of engagement in environment scanning (H6a), information diffusion (H6b), mentoring (H6c) and strategy regeneration (H6d) routines than non-high experienced CEOs in output functions. Results pointed in the expected direction for environment scanning, information diffusion and mentoring routines, and were significant for environment scanning $t(60.31) = 2.00$ $p < .05$ and mentoring $t(180) = 1.65$ $p < .05$. As reported in Table 17, the non-parametric result for the mentoring routine was also significant $U = 1822.50$ $p < .05$. The result pointed in the opposite direction for the strategy regeneration routine and was non-significant (reported in Table 16). These results provide substantial support to hypothesis 6.

Table 17. Mann-Whitney test^a on functional experience based subgroups

Routines	Output exp. based subgroups			Throughput exp. based subgroups		
	HI_Exp (n=32)	N-HI_Exp (n=150)	Difference of means ranks	HI_Exp (n=38)	N-HI_Exp (n=144)	Difference of means ranks
Mentoring	109.55	87.65	21.9**	95.76	90.38	5.38

** Significant at the 0.05 level (1-tailed).

a. Mean rank reported

Results mainly support hypothesis 7. As predicted, CEOs with higher experience in throughput functions (manufacturing, accounting, finance and administration) reported patterns with higher frequency of engagement in information diffusion (H7a), resource allocation (H7b) and strategy implementation routines (H7c) than non-high experienced CEOs in throughput functions. As reported in Table 16, results were significant for information diffusion $t(180) = 2.13$ $p < .05$ and strategy implementation $t(180) = 1.73$ $p < .05$ routines. The combined results of hypotheses 6 and 7 are in line with the notion that the experience gained in the tactics inherent to a particular carrier path influence managerial behaviour (Finkelstein *et al.*, 2009).

5.1.3 Educational level related hypotheses; discussion of results

Contrary to expectations, the fourth proposition and its related hypothesis were not supported. Hypothesis 8 prescribed less frequent engagement in the routine of strategy regeneration among the group of CEOs with no higher education degree. As reported in Table 18, the result for this routine pointed in the opposite direction and was not significant. According to this result, the lack of formal education does not seem to inhibit the engagement in innovation-seeking behaviours. As pointed out by Stevenson and Jarillo (1990), such behaviours are dependent on the experience related antecedents of managers, but they also have to do with other factors, such as their personality or skills.

Table 18. Independent measure t-tests^a on higher education based subgroups

Routines	Higher education based subgroups		Difference of means
	No higher educ. (n=18)	Higher educ. (n=188)	
Environment scanning	2.63	1.74	0.89**
Strategy regeneration (b)	2.42	1.95	0.48

** . Significant at the 0.05 level (1-tailed).

a. Means reported

b. Equal variances were not assumed in the result reported in this subgroup.

Also related with the antecedent of formal education, the fifth proposition and its related hypothesis were supported. Hypothesis 9 stated that CEOs that did not hold a higher education degree would report patterns with higher frequency of engagement in the environment scanning routine than CEOs who did hold a higher education degree. As reported in Table 18, the result is in line with expectations, and significant $t(204) = 1.94$ $p < .05$. This result supports the notion that the absence of some benefits conferred by formal education may trigger additional efforts to increase the information available to CEOs; an activity that these managers trigger to orient their action (Becker and Knudsen, 2005).

Finally, research focusing on antecedent causes inherent to CEOs to explain their behaviour, sheds light on the causal logic behind demographic predictors of tenure, functional experience and education implicit in most of the RBV research on upper echelons. Accordingly, the results reported and discussed in this section open the “black box” of organizational demography (Lawrence, 1997; Carpenter *et al.*, 2004) by clarifying how highly valuable, heterogeneous and inimitable path dependencies of CEOs map into specific patterns of behaviour that can be further associated with broader organizational outcomes.

5.2 Outcome related hypothesis

Multivariate and univariate variance analysis techniques were used to test the differences in the routine engagement patterns reported, according to two -organizational level- experimental conditions: the strategy pursued by the organization and its reported level of performance. As reported in section 4.5, the groups of study relevant to testing the strategy related hypotheses supported the parametric assumptions of normality and homogeneity of variance. However, MANOVA analyses also rely on the assumption of group level homogeneity of variance-covariance matrices to produce robust results; the assumption was assessed according to the Box’s M statistic. Since the analysis was conducted on a sample

with unequal subgroups, the result of the Box M statistic had to be non-significant to trust the MANOVA results to be accurate (see section 3.5.6). The result was non-significant and is reported in Table 19.

Table 19. Box's Test of Equality of Covariance Matrices

Box's M	F	df1	df2	Sig.
40.25	.92	42	116106.30	.62

Regarding the subgroups of study considered in the performance related hypotheses, one presented deviation from normality (the group related with low performance organizations); in this case only the non-parametric result is reported. Homogeneity of variance was not a problem for the performance related subgroups.

5.2.1 Strategy related hypotheses; discussion of results

Regarding the strategy of SMEs, the rationale of the propositions and hypotheses was twofold. On one hand, it was proposed that the CEO engagement in environment scanning, mentoring and strategy regeneration routines would differ according to the strategy of the organization. On the other hand, it was proposed that the CEO engagement in information diffusion, resource allocation and strategy implementation routines would be prevalent and homogenous among organizations that pursue different strategies.

Relating to the first rationale, the sixth proposition and its four related hypotheses were mainly supported. Table 20 presents results of different multivariate statistics that tested for differences in the engagement patterns of environment scanning, mentoring, and strategy regeneration routines among prospector, analyzer and defender type organizations. The results were all significant, providing support to hypothesis 10-1.

Table 20 Multivariate test^c for engagement patterns in three routines

Multivariate statistics	Value	F	Hypothesis df	Error df	Sig.
Pillai's Trace	.091	3.211	6.000	404.000	.004
Wilks' Lambda	.909	3.258 ^a	6.000	402.000	.004
Hotelling's Trace	.099	3.304	6.000	400.000	.003
Roy's Largest Root	.094	6.325 ^b	3.000	202.000	.000

a. Exact statistic

b. The statistic is an upper bound on F that yields a lower bound on the significance level

c. Groups: Prospector, analyzer and defender

The first three statistics reported in Table 20 - Pillai's Trace, Wilks' Lambda and Hotelling's Trace- provide a result that is based on the pooled statistics from each possible comparison of the dependent variables involved –degrees of freedom– to test for differences among groups (Tabachnick and Fidell, 2007). In this study, this particular analysis has two degrees of freedom. Thus, each group of analysis has two possibilities to compare the dependent variables; the first possibility may be to separate the first group from the other two, while the second may be to separate the second group from the third. Each possibility is a dimension in which groups differ and each generates a statistic.

The fourth statistic, Roy's Largest Root, is based only on the statistics provided by the first dimension or possibility of comparison; here its limitation becomes evident when groups differed in more than one dimension. Wilks' Lambda and Pillai's Trace and are the most commonly reported statistics, and are considered more robust than the other two when comparisons are made between groups of unequal size, and the assumption of homogeneity of variance-covariance matrices is met (Field, 2005; Tabachnick and Fidell, 2007).

Since MANOVA is an omnibus procedure, further analyses were conducted to identify the specific group differences hypothesized regarding the frequency of engagement in

environment scanning, mentoring, and strategy regeneration routines. Engagement frequency expectations were: highest for prospectors (H10-2), lowest for defenders (H10-4), and between prospectors and defenders for analyzers (H10-3). Table 21 shows the ANOVA results on the three routine engagement patterns considered. Most of the results support the proposed differences in terms of directionality and significance.

Table 21. ANOVA results^a, univariate differences by strategic type (I)

Routines	Prospectors n = 63	Analyzers n = 66	Defenders n = 77	F-value
Scanning of environment	2.12 (1.89)	2.00 (1.71)	1.40 (1.94)	3.10**
Mentoring	3.26 (2.39)	2.84 (2.09)	2.60 (2.27)	1.51
Strategy regeneration	2.47 (1.62)	1.92 (1.68)	1.65 (1.49)	4.60**

a. Means and standard deviations reported; the second are in parenthesis.

** . $p < 0.05$

Differences in reported levels of engagement were in the direction expected for scanning, mentoring and regeneration routines. As reported in Table 21, the univariate results were significant for engagement in scanning ($p = .047$) and strategy regeneration routines ($p = .011$). Planned contrasts for engagement in scanning routines revealed significant differences between prospector and defender $t(203) = 2.29, p < .05$ (one-tailed), and between analyzer and defender firms $t(203) = 1.94, p < .05$ (one-tailed); the difference in engagement patterns for scanning routines was not significant between prospector and analyzer organizations.

Planned contrasts for engagement in strategy regeneration routines revealed significant differences between prospector and analyzer $t(203) = 1.94, p < .05$ (one-tailed), and between

prospector and defender firms $t(203) = 3.01$ $p < .002$ (one-tailed); no significant difference was found in the engagement patterns of strategy regeneration routines between analyzer and defender firms. Though the univariate result was not significant for engagement in mentoring routines (reported in Table 21), planned contrasts revealed a significant difference between prospector and defender firms $t(203) = 1.73$, $p < .05$ (one tailed). These results provide substantial support for hypotheses 10-2 to 10-4.

These findings are in line with prior research on SMEs that links prospector type strategies (H10-2) with higher managerial emphasis on scanning (Garg *et al.*, 2003; Merz and Sauber, 1995); staff enhancing activities (Aragón-Sánchez and Sánchez-Marín, 2005; Slater and Olson, 2000); and strategic change (Merz and Sauber 1995). Moreover, these results support two premises of Miles and Snow: that both prospector and analyzer organizations are active in scanning the environment, and that prospector organizations are differentially engaged in regenerating their strategies.

In relation to the mentoring routine, the results are congruent with the notion that differences between prospector and defender firms lie at opposite extremes of a continuum (Doty *et al.*, 1993); however, in this routine the situation of analyzer firms could not be determined. As can be seen from the results, differences regarding organizations pursuing an analyzer strategy were the least conclusive (H10-3). This pattern resonates with previous research building on Miles and Snow (1978), where differences from analyzer organizations were also difficult to capture (e.g., DeSarbo *et al.*, 2005); as in this study, analyzer organizations seemed "... to be 'like' Prospectors... or 'like' Defenders" (DeSarbo *et al.*, 2005, p. 62).

The seventh proposition and the four related hypotheses were in line with expectations, generally conforming to the rationale that prevalence and homogeneity would characterize

the CEO engagement in three routines. Regarding prevalence, information diffusion (H11), resource allocation (H12) and strategy implementation (H13) routines were expected to present patterns with higher frequency of engagement than those reported for environment scanning, mentoring and strategy regeneration routines. As reported in Table 22, with the exception of the mentoring routine, the differences between routines were significant and according to expectations.

Table 22. Differences in the frequency of engagement between routines

Routines	Mean	Information diffusion	Resource allocation	Strategy implementation
		(Mean = 2.75) Mean difference	(Mean = 2.24) Mean difference	(Mean = 2.89) Mean difference
Environment scanning	1.82	0.93***	0.42***	1.07***
Mentoring	2.87	-0.12	-0.63***	0.02
Strategy regeneration	1.99	0.76***	0.25**	0.90***

** . Significant at the 0.05 level (1-tailed).

***. Significant at the 0.001 level (1-tailed).

Reports on the information diffusion routine presented a significantly higher frequency of engagement than those for environment scanning $t(205) = 7.13$ $p < .001$ and strategy regeneration routines $t(205) = 6.74$ $p < .001$. The frequency of engagement reported for the resource allocation routine was significantly higher than that reported for environment scanning $t(205) = 3.24$ $p < .001$ and strategy regeneration routines $t(205) = 2.23$ $p < .05$. Finally, reports on the strategy implementation routine were significantly higher than those reported for engagement in environment scanning $t(205) = 8.20$ $p < .001$ and strategy regeneration routines $t(205) = 7.98$ $p < .001$.

As mentioned before, engagement in the mentoring routine was not according to expectations; though not significant in all situations, it seemed higher than originally expected. A possible explanation might be due to the meaning that mentoring has for the

Mexican *empresarios*. As noted by Martinez and Dorfman (1998), it is characteristic of the Mexican model of management for CEOs to develop strong intra organizational relationships, and social bonds that facilitate trust. The engagement in mentoring activities facilitates a space in which these relationships can be built and maintained over time. Also, such higher engagement in the mentoring routine can be attributed to the dispositions deriving from the paternalistic style of management prevalent among Mexican CEOs (Martinez and Dorfman 1998; Stephens and Greer 1995); where CEOs implicitly agree to secure and look after the needs of subordinates in exchange of loyalty and hard work.

Regarding the rationale of homogeneity, hypothesis 14 proposed that engagement in information diffusion, resource allocation and strategy implementation routines would not present differences among organizations pursuing different strategies. Table 23 shows the multivariate statistics testing for group differentials on such routines, while Table 24 reports the ANOVA results of the respective engagement patterns. The results support hypothesis 14. Neither the overall MANOVA and ANOVA results, nor further planned contrasts, revealed any significant difference between prospector, analyzer and defender organizations according to the frequency of engagement in information diffusion, resource allocation and strategy implementation routines.

Table 23. Multivariate test^c for engagement patterns in three routines

Multivariate statistics	Value	F	Hypothesis df	Error df	Sig.
Pillai's Trace	.010	.330	6.000	404.000	.921
Wilks' Lambda	.990	.329 ^a	6.000	402.000	.922
Hotelling's Trace	.010	.328	6.000	400.000	.922
Roy's Largest Root	.009	.623 ^b	3.000	202.000	.601

a. Exact statistic

b. The statistic is an upper bound on F that yields a lower bound on the significance level

c. Groups: Prospector, analyzer and defender

Table 24. ANOVA results^a, univariate differences by strategic type (II)

Routines	Prospectors n = 63	Analyzers n = 66	Defenders n = 77	F-value
Diffusion of information	2.57 (2.08)	2.85 (1.8)	2.81 (2.03)	0.38
Resource allocation	2.21 (1.89)	2.21 (1.55)	2.30 (1.71)	0.06
Strategy implementation	2.70 (1.66)	2.97 (1.67)	2.98 (1.97)	0.53

a. Means and standard deviations reported; the second are in parenthesis.

The combined results of hypotheses 11 to 14 shed light on specific patterns of behaviour that appear to be equally emphasized by CEOs of SMEs. On one hand, the diffusion of information within the organization points to being more systematic because of the structural circumstances that characterize SMEs (Carroll and Gillen, 1987, O' Gorman et al., 2005). On the other hand, the failing chances of SMEs not programming the necessary resources that secure the implementation of action plans (e.g., Perry, 2001) explain why resource allocation and strategy implementation routines seem to represent an integral part of the everyday business activity of CEOs from SMEs.

These results are in line with research suggesting that Mexican CEOs prize a constant contact with people at different levels of the organization (Llano, 1994; Stephens and Greer, 1995). Also, the higher levels of engagement in the routines of information diffusion, resource allocation and strategy implementation is congruent with the apparent preference of Mexican CEOs to be in close contact with the on-going operations of the organization (Llano, 1994).

5.2.2 Performance related hypotheses; discussion of results

Finally, the eight proposition and the two related hypotheses tested the notion that the efforts exerted by the CEO when engaging in the six routines of study would differ according to

organizational performance. The results of the routine engagement patterns for the performance based groups are reported in Table 25. As mentioned in section 4.5, the analysis for the low performer based subgroups assessing the engagement patterns in strategy regeneration routines raised normality concerns. The non-parametric test for these subgroups is reported in Table 26.

Table 25. Independent measure t-tests^a on performance based subgroups

Routines	Low performer based subgroups			Top performer based subgroups		
	Low_Perf (n=44)	N-Low_Perf (n=162)	Difference of means	Top_Perf (n=43)	N-Top_Perf (n=163)	Difference of means
Environment scanning	1.67	1.86	-0.18	2.32	1.68	0.64**
Information diffusion	2.32	2.86	-0.55**	3.04	2.67	0.37
Resource allocation	2.03	2.30	-0.27	2.49	2.18	0.32
Mentoring	2.53	2.97	-0.44	3.03	2.83	0.19
Strategy implementation	2.49	3.00	-0.51**	3.42	2.75	0.67**
Strategy regeneration	-	-	-	1.92	2.01	-0.09

** . Significant at the 0.05 level (1-tailed).

a = Means reported

Table 26. Mann-Whitney test^a on performance based subgroups

Routine	Low performer based subgroups		
	Low_Perf (n=44)	N-Low_Perf (n=162)	Difference of means ranks
Mentoring	95.58	105.65	-10.07
Strategy regeneration	117.25	99.77	17.48**

** . Significant at the 0.05 level (1-tailed).

a = Mean rank reported

Hypothesis 15 was partially supported. As proposed, CEOs at low performer organizations reported patterns with lower frequency of engagement than CEOs at non-low performer organizations in all but one of the cases. Results were statistically significant for information diffusion $t(204) = -1.64$ $p < .05$ (H15b) and strategy implementation $t(204) = -1.68 < .05$ routines (H15e). The result regarding the engagement in the strategy regeneration routine

(reported in Table 26) pointed in the opposite direction towards expectations, and was significant $U = 2959$ $p < .05$ (H15f).

Regarding hypothesis 16, results were mainly supported. This hypothesis proposed that CEOs from top performer organizations would report patterns with higher frequency of engagement in the routines studied than CEOs from non-top performer organizations. As reported in Table 25, results pointed in the expected directions in five of the engagement patterns studied, and were significant for environment scanning $t(204) = 2.00$ $p < .05$ (H16a) and strategy implementation $t(204) = 2.24$ $p < .05$ routines (H16b). The result for the strategy regeneration routine was opposite to expectations, and was not significant.

Results from hypotheses 15 and 16 resonate with previous research on SMEs regarding associations between the efforts devoted by CEOs to information and strategy related activities and superior organizational performance (Beal, 2000). With regard to the former type of activities, fewer efforts exerted in the information diffusion routine arose among low performer organizations, while greater efforts placed on environment scanning routines were present among top performer organizations.

Regarding strategy related activities, the extent of efforts devoted to the routine of strategy implementation were positively associated to both low and top performer organizations. This finding resonates with others from this thesis in the sense that strategy implementation routines seem to be fundamental for the success of SMEs (H13 and H14). As mentioned previously, results showed associations between low performance and higher efforts devoted to the routine of strategy regeneration. Though not expected, this result is congruent with the notion that systematic diversions from a prevalent strategic path can have performance implications (Miles and Snow, 1978).

5.3 Summary of hypotheses and results

This section summarizes the results of the hypotheses addressed by the study. Tables 27, 28 and 29 present the summary of results about the antecedent related hypotheses, while Tables 30 and 31 do the same for the outcome related hypotheses.

Table 27. Summary of results for tenure related hypotheses

No.	Hypotheses	Direction	Significance	Remarks
Proposition 1: Tenure differences among CEOs will reflect differential engagement in routines oriented towards results and in routines oriented towards status quo maintenance.				
H1	Short tenured CEOs will report patterns with higher frequency of engagement than non-short tenured CEOs in:			
	(a) Resource allocation	Y		Mainly supported
	(b) Strategy implementation	Y	**	
(c) Strategy regeneration	Y			
H2	Short tenured CEOs will report patterns with less frequency of engagement than non-short tenured CEOs in:			Mainly supported
	(a) Information diffusion	Y	*	
	(b) Mentoring	Y		
H3	Long tenured CEOs will report patterns with higher frequency of engagement than non-long tenured CEOs in:			Mainly supported
	(a) Information diffusion	Y		
	(b) Mentoring	Y	*	
H4	Long tenured CEOs will report patterns with less frequency of engagement than non-long tenured CEOs in:			Partially supported
	(a) Resource allocation	Y	**	
	(b) Strategy implementation	Y		
	(c) Strategy regeneration	N	**	
Proposition 2: The engagement in routines to gather information from the environment will be prized by both short and long tenured CEOs.				
No.	Hypotheses	Direction	Significance	Remarks
H5-1	Short tenured CEOs will report patterns with higher frequency of engagement than non-short tenured CEOs in:			Not supported
	(a) Environment scanning	Y		
H5-2	Long tenured CEOs will report patterns with higher frequency of engagement than non-long tenured CEOs in:			Supported
	(a) Environment scanning	Y	**	

*Significant at 10%

**Significant at 5%

Table 28. Summary of results for functional experience related hypotheses

Proposition 3: Different functional experiences of CEOs will lead to differential engagement in those routines whose exercise reflects the inclinations of such experience.				
No.	Hypotheses	Direction	Significance	Remarks
H6	High experienced CEOs on output functions will report patterns with higher frequency of engagement than non-high experienced CEOs on output functions in:			Mainly supported
	(a) Environment scanning	Y	**	
	(b) Information diffusion	Y		
	(c) Mentoring	Y	**	
	(d) Strategy regeneration	N		
H7	High experienced CEOs on throughput functions will report patterns with higher frequency of engagement than non-high experienced CEOs on throughput functions in:			Mainly supported
	(a) Information diffusion	Y	**	
	(b) Resource allocation	Y		
	(c) Strategy implementation	Y	**	

**Significant at 5%

Table 29. Summary of results for education related hypotheses

Proposition 4: CEOs with fewer years of education will be less prone to pursue innovation related initiatives.				
No.	Hypotheses	Direction	Significance	Remarks
H8	CEOs not holding a higher education degree will report patterns with lower frequency of engagement than CEOs with a higher education degree in:			Not supported
	(a) Strategy regeneration	N		
Proposition 5: CEOs with fewer years of education will be more inclined to seek environmental information to orient their action.				
No.	Hypotheses	Direction	Significance	Remarks
H9	CEOs not holding a higher education degree will report patterns with higher frequency of engagement than CEOs with a higher education degree in:			Supported
	(a) Environment scanning	Y	**	

**Significant at 5%

Table 30. Summary of results for strategy related hypotheses

Proposition 6: Engagement in environment scanning, mentoring and strategy regeneration routines will differ among organizations that pursue different strategies.				
No.	Hypotheses	Direction	Significance	Remarks
H10-1	The patterns of frequency of engagement reported by CEOs will be significantly different among strategic types.	–	**	Supported
H10-2	CEOs in prospector organizations will report patterns with the highest frequency levels of routine engagement in:			Supported
	(a) Environment scanning	Y	**/2	
	(b) Mentoring	Y	**/2	
H10-3	CEOs in analyzer organizations will report patterns with frequency levels of routine engagement between those reported by CEOs in prospector and defender organizations in:			Mainly supported
	(a) Environment scanning	Y	**/2	
	(b) Mentoring	Y	**/2	
H10-4	CEOs in defender organizations will report patterns with the lowest frequency levels of routine engagement in:			Supported
	(a) Environment scanning	Y	**	
	(b) Mentoring	Y	**/2	
	(c) Strategy regeneration	Y	**/2	
Proposition 7: Engagement in information diffusion, resource allocation and strategy implementation routines will be prevalent when compared with the other three routines of study and homogenous among organizations that pursue different strategies.				
No.	Hypotheses	Direction	Significance	Remarks
H11	CEOs will report patterns with a significantly higher frequency of engagement in the information diffusion routine than in:			Mainly supported
	(a) Environment scanning	Y	***	
	(b) Mentoring	N		
H12	CEOs will report patterns with a significantly higher frequency of engagement in the resource allocation routine than in:			Partially supported
	(a) Environment scanning	Y	***	
	(b) Mentoring	N	***	
H13	CEOs will report patterns with a significantly higher frequency of engagement in the strategy implementation routine than in:			Mainly supported
	(a) Environment scanning	Y	***	
	(b) Mentoring	Y	***	
H14	CEOs will report patterns with a significantly higher frequency of engagement in the strategy implementation routine than in:			Mainly supported
	(a) Environment scanning	Y	***	
	(b) Mentoring	Y	***	
H14	The patterns of frequency of engagement in (a) information diffusion, (b) resource allocation and (c) strategy implementation routines reported by CEOs will not be significantly different among strategic types.	–		Supported

Significant at 5% **/2 = Significant differences at 5% among two groups only *Significant at 1%

Table 31. Summary of results for performance related hypotheses

Proposition 8: The time and efforts devoted by CEOs to the organization will have performance implications.				
No.	Hypotheses	Direction	Significance	Remarks
H15	Among low performer organizations, CEOs will report less frequency levels of routine engagement than CEOs from non-low performer organizations in:			Partially supported
	(a) Environment scanning	Y		
	(b) Information diffusion	Y	**	
	(c) Resource allocation	Y		
	(d) Mentoring	Y		
	(e) Strategy implementation	Y	**	
	(f) Strategy regeneration	N	**	
H16	Among top performer organizations, CEOs will report higher frequency levels of routine engagement than CEOs from non-top performer organizations in:			Mainly supported
	(a) Environment scanning	Y	**	
	(b) Information diffusion	Y		
	(c) Resource allocation	Y		
	(d) Mentoring	Y		
	(e) Strategy implementation	Y	**	
	(f) Strategy regeneration	N		

**Significant at 5%

Chapter 6: Conclusion

So far, this thesis has come a long way from proposing a concept and developing the framework and measures to assess it empirically. Thus, this chapter consists of two sections which aim to sum up these efforts. Section 6.1 presents the conclusions of the thesis and elucidates some relevant implications for theory and practice. Then, section 6.2 addresses the limitations inherent to the framework and design of the thesis and presents a series of suggestions for future research.

6.1 Conclusions and contributions

6.1.1 Conclusions

This thesis is a response to calls regarding theoretical, methodological and practical issues of research addressing the influence of CEOs in the organization. Therefore, the conceptual part of the thesis developed an approach in order to study the managerial influence of top managers according to the patterns they follow to engage in action. In addition, a framework addressing relationships between antecedents and outcomes of the routine engagement patterns of CEOs was developed to facilitate the empirical application of the proposed approach. The empirical part of the thesis focused on CEOs of Mexican SMEs to tests eight propositions and sixteen hypotheses about some of the relationships originally proposed in the framework.

The first, and most important, conclusion is that the approach proposed in this thesis is suitable to empirically study the specifics of managerial action and its influence on the organization. The measures developed to make the approach operational for empirical application proved to be reliable. All the measures on environment scanning, information

diffusion, resource allocation, mentoring, strategy implementation and strategy regeneration routines were highly consistent with theory.

Furthermore, the relationships expected between the specifics of the engagement patterns emphasized by CEOs and the constructs considered at different levels of analysis were according to expectations. This multilevel validation provides additional support about the construct validity of the measures used in this thesis, enhancing their potential use in future research. Thus, it can be concluded that the routine engagement patterns followed by CEOs represent a valid unit of analysis to study the action of powerful individuals in the organization.

Secondly, findings of this thesis hold with the idea that the previous experience of CEOs explains differences in the way managers engage in action. This is particularly important for RBV research on top managers based on demographics, considering the need for inquiry that clearly explains the link between demographic predictors and the *intervening* routines and processes that drive organizational outcomes. Therefore, results showed that CEOs prioritize some activities over others to cope with particular pressures inherent to the time they have had in office. Moreover, the antecedents of functional expertise and education were also related to particular expectations regarding their action. It seems that the motto “Tell me what you do and I’ll tell you what you are” applies to the managers studied in this thesis.

Thirdly, findings support the argument that the way in which CEOs engage in action is not contingent only towards the strategy of the organization; structural circumstances and the function that specific actions provide to management also count towards explaining the specifics of the managerial engagement in action. The results showed that efforts devoted to

scanning the environment and actualizing the strategy of the organization vary according to the strategic requirements of SMEs, being more prevalent among those organizations whose strategies relied more on innovation. Meanwhile, activities that are critical to the sustainability and survival of SMEs, such as resource allocation and strategy implementation, were prevalent and similarly empathized by CEOs of this type of organizations.

Fourthly, findings are in line with the RBV logic suggesting that the time and effort of CEOs represent valuable resources, which have performance implications. Particular to this thesis, the argument holds when the efforts are devoted to information and strategy related activities. Low efforts devoted to internally distributing market information and to pushing for the implementation of strategic plans, while increasingly engaging in innovation seeking activities, were associated with lower organizational performance. In contrast, higher performance appeared to be associated with higher efforts devoted to obtaining information from the environment, while pushing for the implementation of strategic plans.

6.1.2 Contributions to theory

This thesis contributes to strategic management theory in a threefold way. First of all, it enhances knowledge regarding two different research fronts: managerial action and routine theory. Regarding the former, the empirical study of this thesis contributes to the rather scarce research addressing the role of CEOs according to the activities they perform within the organization (e.g., Merz and Sauber, 1995; Slater, 1989). Focusing on the patterns that CEOs follow to engage in information, resource and strategy related activities represents an answer to the invitation to focus on actual rather than potential contributions of top managers when studying their influence in the organization (Carpenter *et al.*, 2004).

Furthermore, this thesis contributes to knowledge on managerial action providing insights into the idea that the specifics of managerial action affect organizational outcomes (Mahoney, 1995). The results discussed in the previous chapter showed that managers differ in the way they engage in action, and that such differences help to explain variations observed in the strategy and performance of the organization. As recent studies following a resource-base logic of managerial action (Holcomb *et al.*, 2009; Sirmon *et al.*, 2007), the present study was able to overcome the limitation to link the specifics of action with broader organizational outcomes.

Regarding the contribution to routine theory, our study support the general notion that idiosyncratic repetition, collective interaction and learning are the root causes of organizational heterogeneity (Becker, 2005a; Cohen *et al.*, 1996). Further, the approach followed here is in line with recent theoretical developments suggesting that the behavioural conceptualization of routines is the one relevant to address the antecedent and outcome effects of routines variation (Becker, 2005b). Even though this thesis follows the same logic to address routine variation, it expands Becker's original framework by focusing on the individual level antecedents orienting action, rather than on the elements inherent to the task being performed.

Also, the conceptualization of routines and the framework to address routine variation proposed in this thesis represent a path that may suit traditional case study research in routines. For example, they can be used to inductively identify the different interpretations of the different elements composing a certain pattern of action, or the pattern of action itself (e.g., Pentland and Feldman, 2005). But most importantly, they proved a novel contribution that is entirely suitable to expand the rather limited amount of research on routines that uses large samples and quantitative methods.

Secondly, this thesis contributes to theory with a set of reliable and valid measures that are relevant to subsequent studies addressing the influence of CEOs in the organization. Thus, these measures might prove useful to further address activity patterns that support the resource management process (Sirmon *et al.*, 2007). Also, such measures can be applied in research building not directly on the RBV. For example, the measures can inform quantitative studies building on the strategy and practice framework, whose aim is to study “strategizing through the practitioners and their daily practices” (Dameron and Torset, 2009, p. 25).

And thirdly, the empirical study conducted in this thesis considered a sample of CEOs from Mexican SMEs, which further contributes to the strategic management field with knowledge developed outside the US, Canada and Europe. A contribution that represents one of the few efforts to test strategy related frameworks with data from the Latin-American context.

6.1.3 Contributions to practice

Regarding practice, this thesis contributes on three fronts. First, it provides an informed reference to encourage top managers to reflect about the state of the capacities they possess to support their action. Since these capacities are mainly path dependent, it is in the hands of the managers themselves to push and orient their development. Thus, a critical self-reflection on the skills and experience that top managers possess is fundamental to identifying limitations inherent to their particular richness and scope; enabling a purposeful adjustment of specific areas of opportunity or potential biases, thus further enhancing the actual possibilities of managerial action.

Second, this thesis provides a series of action based elements to assess the contribution of top managers to the organization. A key issue discussed in this thesis has to do with the fact

that the dynamism embedded in the routines CEOs engage in, requires them to perform different roles and exert different skills. Therefore, observing the actual patterns of action a manager follows enables others around them to provide feedback about the emphasis, mode or balance of a particular course of action; and also on the potential effects –either positive or negative– on other individuals and on the organization as a whole.

And third, this thesis highlights the importance of the specifics regarding the interactions between the CEO and the human capital base of the organization. The theory reviewed points to the role of such interactions in shaping the social tissue that supports the organization, while empirical evidence provided highlights the role of such interactions in shaping and achieving strategy and performance related outcomes. Contributions calling for top managers to reflect on their action are highly valuable when one considers the long-lasting imprint that these managers leave on the way work is done within the organization, especially SMEs (Baron *et al.*, 1999).

6.2 Limitations and future research

6.2.1 Limitations

There are limitations related to the conceptual framework proposed in this thesis, and others related to the empirical study. With regard to the former, the framework did not consider specific causal antecedents from the leadership literature (e.g., Bass, 1990) or based on personality traits (e.g., Miller and Toulouse, 1986). In the literature that was reviewed, these perspectives seemed to coincide in the causal antecedent referred to in this thesis as managerial style. Furthermore, the antecedent causes were focused on the individual; however, there are elements that can alter the engagement patterns of the CEO which are closer to action, such as the characteristics of the tasks performed in terms of complexity, time, pressure and uncertainty (e.g., Becker, 2005).

Regarding the empirical study, four limitations are mentioned. First of all, the study relied on an operationalization of routines based on frequency; however, this perspective focused only on recurrence of the action, but not on the time devoted to the action in each iteration.¹⁹ Secondly, the procedure to make the CEO routine engagement pattern construct operational relied on the same sample to produce components, and to assess their construct validity. Thus, these components might be sample specific and inclined toward higher reliability (Hinkin, 1995).

Thirdly, since strategy was measured according to a self-classification procedure conducted solely by the CEOs of the sample, there is the potential issue that the measure captured intended, rather than realized, strategy (Conant *et al.*, 1990). Finally, the interpretation of the findings of this thesis is limited by the research design and sample procedure; specifically, the data are cross-sectional and come from a non-random sample.

6.2.2 Future research

Suggestions for future research consider theoretical, empirical and methodological possibilities; this section discusses alternatives that consider all. First, future research can address some of the limitations of the current study, which can be done either by expanding the theoretical framework to fill the gaps mentioned, or by replicating the empirical study following random-based sampling procedures. Furthermore, new research can build on the measures developed in this study, thus enhancing their validity.

Second, future research can build on the antecedents and outcomes not considered by the empirical study of this thesis. There are two particularly interesting possibilities. One is

¹⁹ This point was raised by an anonymous reviewer during the review process of a paper (Paredes-Izaguirre and Pandit, 2010) presented at the British Academy of Management Conference 2010.

related to the call for more research addressing the effects of CEOs on the composition and dynamics of top management teams (Finkelstein *et al.*, 2009, p: 148). This is a line of research that would provide explanations on the effects that specific patterns of action which are emphasized by the CEO have on the way management teams work and evolve.

The other possibility has to do with the study of the performance effects of alignment between specific patterns of action of CEOs and organizational strategy (e.g., Paredes-Izaguirre and Pandit, 2010), which is promising in terms of filling the gaps regarding knowledge on the managerial activities that enhance performance (Hales, 1999). Moreover, this is congruent with the call to conduct routine research in a broader perspective, in a way that avoids “looking for the attributes of successful firms without looking whether they are present in unsuccessful firms” (Winter, in Murmann *et al.*, 2003, p. 30.).

Finally, future research can consider different settings and methodological approaches. Regarding the former, the concept developed in this thesis can be applied to studying CEOs of organizations of bigger size, individuals at different organizational positions, and from different countries. Regarding the latter, the concept can also be applied inductively to grasp the different interpretations, emotions and motivations that specific patterns of action of individuals in positions of influence awaken in other participating individuals (e.g., Pentland and Feldman, 2005).

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Appendices

Appendix A English version of the questionnaire



IPADE - UEA



Study of managerial activities, strategy and organizational performance

This questionnaire is structured in seven sections. Questions from section 1 ask specific information about your organization, yourself and your management team. Questions from sections 2 to 7 ask about your work as a manager, and about the competitive environment and general characteristics of the organization. The questions from the last six sections are of multiple choice, thus an argument is presented, and you have to select one among several alternatives. There are no right or wrong answers to these questions; please give us your best judgement.

The estimated time to fulfil the questionnaire is 25 minutes.

To begin with, please provide the date and place where you complete this questionnaire.

Date: _____

City: _____

Contact: Luis Antonio Paredes Izaguirre
Floresta # 20 Col. Clavería
México D.F. CP 02080
Tel. 5354-1800 ext. 1306
lparedes@ipade.mx

Section 1

This section will ask you to provide specific information about your organization, yourself and your management team. To respond mark with an X inside the parenthesis and use the dotted lines respectively.

About your company			
1. Industry:			
<input type="checkbox"/> 1. Agriculture	<input type="checkbox"/> 2. Manufacturing	<input type="checkbox"/> 3. Services financial	
<input type="checkbox"/> 4. Energy	<input type="checkbox"/> 5. Construction	<input type="checkbox"/> 6. Services non financial	
2. Principal activity of the firm _____			
3. Years of operation in the principal activity _____			
4. Number of employees:			
<input type="checkbox"/> less than 10	<input type="checkbox"/> between 10 and 50	<input type="checkbox"/> between 50 and 300	<input type="checkbox"/> between 300 and 500
<input type="checkbox"/> between 500 and 700	<input type="checkbox"/> between 700 and 1000	<input type="checkbox"/> between 1000 and 1500	<input type="checkbox"/> more than 1500
5. Annual sales (in millions of USD)			
<input type="checkbox"/> less than 1	<input type="checkbox"/> between 1 and 3	<input type="checkbox"/> between 3 and 15	<input type="checkbox"/> between 15 and 30
<input type="checkbox"/> between 30 and 50	<input type="checkbox"/> between 50 and 70	<input type="checkbox"/> between 70 and 100	<input type="checkbox"/> more than 100
6. Destination of sales:			
a. National sales _____ % of total.		b. Foreign sales _____ % of total.	
c. Mention the number of countries in which your products are sold: _____			
7. Number of shareholders that the organization has (included yourself)			
<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 or more			
8. Ownership structure of the organization, mention the percentage share of each shareholder:			
Shareholder 1 _____ % share		Shareholder 3 _____ % share	
Shareholder 2 _____ % share		Shareholder 4 _____ % share	
		Shareholder 5 _____ % share	
		Shareholder 6 _____ % share	
9. Corporate ownership of the organization:			
a. Does an organization with annual sales over 30 million USD has a share on your organization?		<input type="checkbox"/> Yes, a _____ % share.	
		<input type="checkbox"/> No.	
About you			
10. Age: _____		12. Years of experience in the current industry _____	
11. Years as CEO: _____		13. Years of professional working experience _____	
14. Indicate the years of experience in the following functions:			
1. Operations _____		2. Finance _____	
3. Marketing / Sales _____		4. HR _____	
Other, (specify area and years of experience): _____			
15. Educational level:			
<input type="checkbox"/> 1. Basic		<input type="checkbox"/> 2. High school	
<input type="checkbox"/> 3. Graduate		<input type="checkbox"/> 4. Post-graduate / Master	
		<input type="checkbox"/> 5. PhD	
16. Indicate the area of superior studies:			
<input type="checkbox"/> 1. Engineering		<input type="checkbox"/> 2. Finance / Administration	
		<input type="checkbox"/> 3. Marketing	
		<input type="checkbox"/> 4. Other, specify: _____	
About the management team			
17. Indicate the number of individuals that conform the management team of the organization:			
<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 or more			
18. Please indicate the number of years each individual has belong to the team. Please start with the most tenured one.		Ind. 1: _____	Ind. 4: _____
		Ind. 2: _____	Ind. 5: _____
		Ind. 3: _____	Ind. 6: _____
			Ind. 7: _____
			Ind. 8: _____
			Ind. 9: _____

Section 2

This section describes some activities you carry out within your organization. Mark with an X the square that corresponds with the frequency that you carry out such activity.

19. Information related activities	Every:							
	Never	Year	Semester	Trimester	Month	Two weeks	Week	Day
a. Meet with customers to learn how to serve them better.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Meet with customers to find out what products or services they will need in the future.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Engage on in-house market research initiatives.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Review external reports assessing the quality of our products.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Meet with those who can influence our end user's purchases (e.g., retailers, distributors, other suppliers of our clients).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Collect industry information by informal means (e.g., lunch with industry friends, talks with trade partners).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Meet with our suppliers to keep up with technological trends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Engage in informal "hall talk" with managerial staff about our competitors' tactics or strategies.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Engage in informal "hall talk" with non managerial staff about our competitors' tactics or strategies.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Carry out interdepartmental meetings to discuss market trends and developments.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Distribute formal information (e.g., reports, newsletters) to managerial levels about information on our customers.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Carry out interdepartmental meetings to discuss data on customer satisfaction.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. Resource related activities	Every:							
	Never	Year	Semester	Trimester	Month	Two weeks	Week	Day
a. Distribute budgeted resources to projects and departments.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Decide which programs to provide resources....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Define new hirings.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Allocate equipment or materials to projects and departments.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Prevent loss of human resources.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Define priorities within the organization.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Engage in training initiatives of the managerial staff.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Engage in training initiatives of non managerial staff.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Engage on the development of my successor....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Help managerial staff to correct their mistakes before others notice them.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Give feedback on performance to managerial staff.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21. Strategy related activities	Every:							
	Never	Year	Semester	Trimester	Month	Two weeks	Week	Day
a. Translate goals into plans.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Translate goals into individual objectives.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Monitor activities to support top management objectives.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Carry out interdepartmental meetings to discuss unachieved objectives.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Define corrective measures to achieve objectives.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Engage in new product or service developments.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Justify and define new programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Renegotiate objectives to facilitate new projects.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Approve resources for trial projects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Explore new sources of supply.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 3

This section presents some statements describing some characteristics of your organization. Please indicate the one that best describes it. Please be sure to circle just one answer.

22. In comparison to our competitors, the products that we provide to our customers are best described as:
- 1) Products that are more innovative, and continually changing.
 - 2) Products that are fairly stable in certain markets while innovative in other markets.
 - 3) Products that are stable and consistently defined throughout the market.
 - 4) Products that are in a state of transition, and largely respond to opportunities and threats in the marketplace.
23. In contrast to our competitors, we have an image in the marketplace that:
- 1) Offers fewer, select products which are high in quality.
 - 2) Adopts new ideas and innovations, but only after careful analysis.
 - 3) Reacts to opportunities or threats in the marketplace to maintain or enhance our position.
 - 4) Has a reputation for being innovative and creative.
24. The amount of time our business unit spends on monitoring changes and trends in the marketplace can best be described as:
- 1) Lengthy: We are continuously monitoring the marketplace.
 - 2) Minimal: We really don't spend much time monitoring the marketplace.
 - 3) Average: We spend a reasonable amount of time monitoring the marketplace.
 - 4) Sporadic: We sometimes spend a great deal of time and at other times spend little time monitoring the marketplace.
25. In comparison to our competitors, the increases or losses in demand that we have experienced are due most probably to:
- 1) Our practice of concentrating on more fully developing those markets which we currently serve.
 - 2) Our practice of responding to the pressures of the marketplace by taking few risks.
 - 3) Our practice of aggressively entering into new markets with new types of products.
 - 4) Our practice of assertively penetrating more deeply into markets we currently serve, while adopting new products after a very careful review of their potential.
26. One of the most important goals in these business units in comparison to our competitors is our dedication and commitment to:
- 1) Keep our costs under control.
 - 2) Analyze our costs and revenues carefully, to keep costs under control and to selectively generate new products or enter new markets.
 - 3) Insure that the people, resources and equipment required to develop new products and new markets are available and accessible.
 - 4) Make sure we guard against critical threats by taking any action necessary.

27. In contrast to our competitors, the skills that our managerial employees possess can best be characterized as:
 - 1) Analytical: their skills enable them to both identify trends and then develop new products or markets.
 - 2) Specialized: their skills are concentrated into one, or a few, specific areas.
 - 3) Broad and entrepreneurial: their skills are diverse, flexible, and enable change to be created.
 - 4) Fluid: their skills are related to the near-term demands of the marketplace.
28. The one thing that protects us from our competitors is that we:
 - 1) Are able to carefully analyze emerging trends and adopt only those which have proven potential.
 - 2) Are able to do a limited number of things exceptionally well.
 - 3) Are able to respond to trends even though they may possess only moderate potential as they arise.
 - 4) Are able to consistently develop new products and new markets.
29. More so than many of our competitors, our management staff in this business unit tends to concentrate on:
 - 1) Maintaining a secure financial position through cost and quality control.
 - 2) Analyzing opportunities in the marketplace and selecting only those opportunities with proven potential, while protecting a secure financial position.
 - 3) Activities or business functions which most need attention given the opportunities or problems we currently confront.
 - 4) Developing new products and expanding into new markets or market segments.
30. In contrast to many of our competitors, this business unit prepares for the future by:
 - 1) Identifying the best possible solutions to those problems or challenges which require immediate attention.
 - 2) Identifying trends and opportunities in the marketplace which can result in the creation of product offerings which are new to the industry or reach new markets.
 - 3) Identifying those problems which, if solved, will maintain and then improve our current product offerings and market position.
 - 4) Identifying those trends in the industry which our competitors have proven possess long-term potential while also solving problems related to our current product offerings and our current customers' needs.
31. In comparison to our competitors, our organization structure is:
 - 1) Functional in nature (organized by department—marketing, accounting, personnel, etc.).
 - 2) Product or market oriented.
 - 3) Primarily functional (departmental) in nature; however, a product- or market-oriented structure does exist in newer or larger product offering areas.
 - 4) Continually changing to enable us to meet opportunities and solve problems as they arise.

32. Unlike our competitors, the procedures we use to evaluate performance are best described as:

- 1) Decentralized and participatory encouraging many organizational members to be involved.
- 2) Heavily oriented toward those reporting requirements which demand immediate attention.
- 3) Highly centralized and primarily the responsibility of senior management.
- 4) Centralized in more established product areas and more participatory in new product areas.

Section 4

This section presents a series of financial indicators. Please circle to indicate the importance attached to each financial indicator to assess the performance of your organization.

33. Importance of financial indicators	Very unimportant		Important		Very important
a. Return on sales.....	1	2	3	4	5
b. Return on investment	1	2	3	4	5
c. Return on assets.....	1	2	3	4	5
d. Growth of sales.....	1	2	3	4	5
e. Growth of profits.....	1	2	3	4	5
f. Total amount of profits.....	1	2	3	4	5

Now, please indicate to what extent you are satisfied with the performance of your organization along each of the indicators previously mentioned.

34. Satisfaction with financial indicators	Very dissatisfied		Satisfied		Very satisfied
a. Return on sales.....	1	2	3	4	5
b. Return on investment	1	2	3	4	5
c. Return on assets.....	1	2	3	4	5
d. Growth of sales.....	1	2	3	4	5
e. Growth of profits.....	1	2	3	4	5
f. Total amount of profits.....	1	2	3	4	5

Section 5

This section presents a series of statements characterizing the business environment or conditions in the primary markets your organization currently serves. Indicate the degree to which you agree or disagree with each statement.

35. Market environment	Strongly disagree				Strongly agree
a. In our kind of business, customer's product preferences change quite a bit over time.....	1	2	3	4	5
b. Our customers tend to look for new products all the time.....	1	2	3	4	5

	Strongly disagree					Strongly agree
c. Sometimes our customers are very price-sensitive, but on other occasions, price is relatively unimportant.....	1	2	3	4	5	
d. New customers tend to have product-related needs that are different from those of our existing customers.....	1	2	3	4	5	
e. We cater to many of the same customers that we used to in the past.....	1	2	3	4	5	
f. It is very difficult to predict any changes in this marketplace.....	1	2	3	4	5	

36. Technological environment Strongly disagree Strongly agree

a. The technology in our industry is changing rapidly.....	1	2	3	4	5
b. Technological changes provide big opportunities in our industry.....	1	2	3	4	5
c. It is very difficult to forecast where the technology in our industry will be in the next two to three years.....	1	2	3	4	5
d. A large number of new product ideas have been made possible through technological breakthroughs in our industry.....	1	2	3	4	5
e. Technological developments in our industry are rather minor.....	1	2	3	4	5
f. The technological changes in this industry are frequent.....	1	2	3	4	5

37. Competitive environment Strongly disagree Strongly agree

a. Competition in our industry is cutthroat.....	1	2	3	4	5
b. There are many promotion wars in our industry.....	1	2	3	4	5
c. Anything that one competitor can offer, others can match readily.....	1	2	3	4	5
d. Price competition is a hallmark of our industry.....	1	2	3	4	5
e. One hears of a new competitive move almost every day.....	1	2	3	4	5
f. Our competitors are relatively weak.....	1	2	3	4	5

Section 6

This section asks you to identify the extent to which you have relied on personal ties, contacts or networks to solve an issue related with the operation of your business.

38. In the last three years I have utilized my ties with...	Very Little						Very extensive
a. Top managers at buyer firms.....	1	2	3	4	5	6	7
b. Top managers at supplier firms.....	1	2	3	4	5	6	7
c. Top managers at competitor firms.....	1	2	3	4	5	6	7
d. Top managers at financial institutions.....	1	2	3	4	5	6	7
e. Political leaders in various levels of government	1	2	3	4	5	6	7
f. Officials in industrial bureaus/commercial chambers....	1	2	3	4	5	6	7
g. Officials in regulatory/supporting government bodies...	1	2	3	4	5	6	7
h. Officials in tax government bodies.....	1	2	3	4	5	6	7

Section 7

Finally, this section asks you to identify one of the following descriptions that most closely fits your organization compared to other firms in the industry. Consider your division or company as a whole and note that none of the types listed below are inherently "good" or "bad". To answer, mark with an X inside the corresponding parenthesis.

39. Paragraph-organization fit

Type 1 ()	This type of organization attempts to locate and maintain a secure niche in a relatively stable product or service area. The organization tends to offer a more limited range of products or services than its competitors, and it tries to protect its domain by offering higher quality, superior service, lower prices, and so forth. Often this type of organization is not at the forefront of developments in the industry. It tends to ignore industry changes that have no direct influence on current areas of operation and concentrates instead on doing the best job possible in a limited area.
Type 2 ()	This type of organization typically operates within a broad product-market domain that undergoes periodic redefinition. The organization values being "first in" in new product and market areas even if not all of these efforts prove to be highly profitable. The organization responds rapidly to early signals concerning areas of opportunity, and these responses often lead to a new round of competitive actions. However, this type of organization may not maintain market strength in all of the areas it enters.
Type 3 ()	This type of organization attempts to maintain a stable, limited line of products or services, while at the same time moving out quickly to follow a carefully selected set of the more promising new developments in the industry. The organization is seldom "first in" with new products or services. However, by carefully monitoring the actions of major competitors in areas compatible with its stable product- market base, the organization can frequently be "second in" with a more cost-efficient product or service.
Type 4 ()	This type of organization does not appear to have a consistent product-market orientation. The organization is usually not as aggressive in maintaining established products and markets as some of its competitors, nor is it willing to take as many risks as other competitors. Rather, the organization responds in those areas where it is forced to by environmental pressures.

Thank you very much for your time and engagement.

Appendix B Spanish version of the questionnaire



IPADE - UEA



Estudio sobre actividades directivas, estrategia y desempeño de la organización

Este cuestionario esta compuesto por siete secciones. Las preguntas de la sección 1 se orientan a información específica sobre su compañía, usted y su equipo directivo. Las preguntas de las secciones 2 a 7 se orientan a información sobre su trabajo directivo, y el entorno competitivo y características generales de su empresa. Las preguntas de las últimas seis secciones son del tipo de opción múltiple, se presenta un argumento y se le pide a usted que seleccione una de las distintas alternativas de respuesta. Le solicitamos contestar de la manera mas sincera posible, teniendo en cuenta que con respecto a este cuestionario no hay respuestas correctas o incorrectas.

El tiempo estimado de llenado del cuestionario es de 25 minutos.

Antes de iniciar, le pedimos que indique la fecha y lugar donde completó el cuestionario.

Fecha: _____

Ciudad: _____

Contacto: Luis Antonio Paredes Izaguirre
Floresta # 20 Col. Clavería
México D.F. CP 02080
Tel. 5354-1800 ext. 1306
lparedes@ipade.mx

Sección 1

En esta sección se le solicita información específica sobre su empresa, usted y su equipo directivo. Para responder marque con una X dentro del paréntesis y utilice las líneas punteadas.

Sobre su empresa			
1. Sector Industrial:			
<input type="checkbox"/> 1. Agropecuario	<input type="checkbox"/> 2. Manufacturero	<input type="checkbox"/> 3. Servicios financieros	
<input type="checkbox"/> 4. Energía	<input type="checkbox"/> 5. Construcción	<input type="checkbox"/> 6. Servicios no financieros	
2. Actividad principal de la empresa _____			
3. Años de operación en la actividad principal de la empresa _____			
4. Número de empleados:			
<input type="checkbox"/> menos de 10	<input type="checkbox"/> entre 10 y 50	<input type="checkbox"/> entre 50 y 300	<input type="checkbox"/> entre 300 y 500
<input type="checkbox"/> entre 500 y 700	<input type="checkbox"/> entre 700 y 1000	<input type="checkbox"/> entre 1000 y 1500	<input type="checkbox"/> más de 1500
5. Ventas anuales (en millones de dólares norteamericanos):			
<input type="checkbox"/> menos de 1	<input type="checkbox"/> entre 1 y 3	<input type="checkbox"/> entre 3 y 15	<input type="checkbox"/> entre 15 y 30
<input type="checkbox"/> entre 30 y 50	<input type="checkbox"/> entre 50 y 70	<input type="checkbox"/> entre 70 y 100	<input type="checkbox"/> más de 100
6. Destino de ventas:			
a. Nacionales _____ % del total.		b. En el extranjero _____ % del total.	
c. Indique el número de países en los que se realizan sus ventas en el extranjero: _____			
7. Número de socios que tiene su empresa (incluido usted):			
<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 o más			
8. Estructura de propiedad de la empresa, indique el porcentaje de participación de cada socio:			
Socio 1 _____ % de participación	Socio 3 _____ % de participación	Socio 5 _____ % de participación	
Socio 2 _____ % de participación	Socio 4 _____ % de participación	Socio 6 _____ % de participación	
9. Participación corporativa en la empresa:			
a. ¿Alguna empresa con ventas anuales mayores a 30 millones de dólares tiene participación accionaria en su empresa?		<input type="checkbox"/> Si, con un _____ % de participación.	
		<input type="checkbox"/> No	
Sobre usted			
10. Edad: _____		12. Años de experiencia en la industria actual _____	
11. Años como director general: _____		13. Años de experiencia laboral _____	
14. Indique los años de experiencia laboral en las siguientes áreas funcionales:			
1. Operaciones _____	2. Finanzas _____	3. Mercadeo / Ventas _____	4. Rec. Humanos _____
5. Otra, (especifique área y años de experiencia): _____			
15. Nivel de estudios alcanzado:			
<input type="checkbox"/> 1. Básica <input type="checkbox"/> 2. Bachillerato <input type="checkbox"/> 3. Superior <input type="checkbox"/> 4. Postgrado / Maestría <input type="checkbox"/> 5. Doctorado			
16. Indique el título superior obtenido:			
<input type="checkbox"/> 1. Ingeniería <input type="checkbox"/> 2. Admón / Finanzas <input type="checkbox"/> 3. Marketing <input type="checkbox"/> 4. Otro, especifique: _____			
Sobre su equipo directivo			
17. Indique el número de personas que conforman el equipo directivo de su empresa (incluido usted):			
<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 o más			
18. Indique el tiempo (en años) que cada persona tiene dentro del equipo directivo. Inicie con la que tiene mayor antigüedad.			
Persona 1: _____	Persona 4: _____	Persona 7: _____	
Persona 2: _____	Persona 5: _____	Persona 8: _____	
Persona 3: _____	Persona 6: _____	Persona 9: _____	

Sección 2

En esta sección se describen algunas actividades que usted realiza en su organización. Por favor marque con una X el cuadro que corresponde a la frecuencia con la que las realiza.

19. Actividades relacionadas con información	Cada:							
	Nunca	Año	Semestre	Trimestre	Mes	Quincena	Semana	Día
a. Reunirme con clientes para identificar como servirlos mejor.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Reunirme con clientes para identificar que productos o servicios necesitaran en el futuro...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Participar en proyectos internos sobre investigación de mercado.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Revisar reportes externos que evalúan la calidad de nuestros productos o servicios.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Reunirme con aquellos que pueden incidir en el proceso de compra de nuestros clientes finales (e.g., detallistas, distribuidores, distintos proveedores de nuestros clientes).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Recolectar información sobre la industria a través de medios informales (e.g., comidas con conocidos de la industria, charlas con socios comerciales).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Reunirme con mis proveedores para estar al tanto de las tendencias.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Conversar informalmente con personal directivo sobre las estrategias seguidas por nuestros competidores.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Conversar informalmente con personal <i>no</i> directivo sobre las estrategias seguidas por nuestros competidores.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Llevar a cabo reuniones interdepartamentales para discutir las tendencias del mercado.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Distribuir información formal (e.g., reportes, artículos, noticias) sobre nuestros clientes a personal directivo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Llevar a cabo reuniones interdepartamentales para revisar información sobre satisfacción de del cliente.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. Actividades relacionadas con recursos	Cada:							
	Nunca	Año	Semestre	Trimestre	Mes	Quincena	Semana	Día
a. Distribuir recursos presupuestados a proyectos y departamentos.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Decidir que programas recibirán recursos.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Definir nuevas contrataciones.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Asignar equipo o materiales a proyectos y departamentos.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Evitar la salida de personal valioso.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Definir prioridades dentro de la organización...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Participar en iniciativas de capacitación y entrenamiento del personal directivo.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Participar en iniciativas de capacitación y entrenamiento del personal <i>no</i> directivo.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Participar en el desarrollo de mi sucesor.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Ayudar al personal directivo a corregir sus errores antes de que otros los noten.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Dar retroalimentación sobre desempeño a personal directivo.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21. Actividades relacionadas con la estrategia	Cada:							
	Nunca	Año	Semestre	Trimestre	Mes	Quincena	Semana	Día
a. Convertir objetivos generales en planes de acción.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Convertir objetivos generales en metas individuales.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Dar seguimiento al personal para facilitar el logro de objetivos.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Llevar a cabo reuniones interdepartamentales para discutir objetivos no cumplidos.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Definir acciones correctivas para lograr objetivos.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Participar en el desarrollo de nuevos productos o servicios.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Justificar y definir planes de acción.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Renegociar objetivos para facilitar el inicio de nuevos proyectos.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Aprobar recursos para proyectos piloto o experimentales.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Explorar y discutir nuevas alternativas de aprovisionamiento.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Sección 3

Esta sección presenta enunciados que describen algunas características de su empresa. Identifique con un círculo la respuesta (sólo una) que mejor describa su organización.

22. En comparación con nuestros competidores, los productos que proveemos a nuestros clientes son:
- 1) Más innovadores y continuamente están cambiando.
 - 2) Bastante estables en algunos mercados e innovadores en otros mercados.
 - 3) Estables y bien definidos en todo el mercado.
 - 4) En estado de transición, y en gran medida responden a oportunidades y amenazas en el sector.
23. En contraste con nuestros competidores, nuestra imagen en el mercado se relaciona con:
- 1) Ofrecer pocos y selectos productos que son de gran calidad.
 - 2) Adoptar nuevas ideas e innovaciones, sólo después de intensos y detallados análisis.
 - 3) Reaccionar a oportunidades y amenazas en el mercado para mantener o mejorar nuestra posición.
 - 4) Ser innovadores y creativos.
24. El tiempo que la empresa invierte en monitorear cambios y tendencias en el mercado puede describirse como:
- 1) Extenso: Continuamente estamos monitoreando el mercado.
 - 2) Mínimo: Realmente no invertimos mucho tiempo monitoreando el mercado.
 - 3) Promedio: Invertimos una cantidad razonable de tiempo monitoreando el mercado.
 - 4) Esporádico: En algunas ocasiones invertimos mucho tiempo y en algunas otras invertimos muy poco monitoreando el mercado.
25. En comparación con nuestros competidores, los incrementos o pérdidas en la demanda de nuestros productos o servicios se debe en mayor medida a que:
- 1) Nos concentramos en servir de manera más completa a aquellos mercados que normalmente servimos.
 - 2) Respondemos a las presiones del mercado tomando pocos riesgos.
 - 3) Entramos agresivamente a nuevos mercados con nuevos productos.
 - 4) Incrementamos nuestra presencia en los mercados que normalmente servimos, mientras adoptamos nuevos productos tras estudiar a profundidad su potencial.
26. Una de las principales metas de esta empresa, en comparación con nuestros competidores, es nuestro compromiso y dedicación a:
- 1) Mantener los costos bajo control.
 - 2) Analizar nuestros costos e ingresos a conciencia, para mantener los costos bajo control y selectivamente incorporar nuevos productos o entrar a nuevos mercados.
 - 3) Asegurar que las personas, recursos y equipos necesarios para desarrollar nuevos productos y mercados estén disponibles en todo momento.
 - 4) Salvaguardar la empresa contra riesgos críticos tomando cualquier acción necesaria para ello.

27. En contraste con nuestros competidores, las habilidades que nuestros directivos poseen se pueden describir como:
- 1) Analíticas: sus habilidades les permiten tanto identificar tendencias como desarrollar nuevos productos o mercados.
 - 2) Especializadas: sus habilidades se concentran en una o pocas áreas específicas.
 - 3) Amplias e innovadoras: sus habilidades son diversas, flexibles y facilitan el cambio.
 - 4) Fluidas: sus habilidades están relacionadas con las demandas de corto plazo de la empresa.
28. Podemos protegernos de nuestros competidores porque:
- 1) Somos capaces de analizar a conciencia tendencias emergentes y adoptar sólo aquellas que tienen potencial.
 - 2) Somos capaces de hacer un número limitado de cosas excepcionalmente bien.
 - 3) Somos capaces de responder a tendencias del mercado aunque de inicio tengan un potencial moderado.
 - 4) Somos capaces de desarrollar nuevos productos y mercados de manera consistente.
29. A diferencia de muchos de nuestros competidores, nuestro equipo directivo se concentra en:
- 1) Mantener una sólida posición financiera basada en control de costos y calidad.
 - 2) Analizar oportunidades en el mercado y seleccionar aquellas con potencial, siempre considerando la salud financiera de la empresa.
 - 3) Actividades o funciones requeridas dadas las oportunidades y retos que enfrenta la empresa.
 - 4) Desarrollar nuevos productos y atender nuevos mercados o segmentos de mercado.
30. En contraste con muchos de nuestros competidores, esta empresa se prepara para el futuro:
- 1) Identificando las mejores soluciones a aquellos problemas o retos que requieren atención inmediata.
 - 2) Identificando tendencias y oportunidades en el mercado que pueden resultar en la creación de productos o servicios nuevos en la industria, o que permiten acceder a nuevos mercados.
 - 3) Identificando aquellos problemas, que de resolverse, mantendrán y posteriormente mejorarán nuestra oferta de productos y posición de mercado.
 - 4) Identificando aquellas tendencias en la industria que fueron exploradas por nuestros competidores y que tienen potencial de largo plazo, mientras resolvemos los problemas relacionados con la oferta actual de productos y necesidades de clientes actuales.
31. En comparación con nuestros competidores, la estructura organizacional de esta empresa es:
- 1) Funcional, organizada por departamentos (e.g., ventas, mercadotecnia, finanzas, personal).
 - 2) Orientada al producto o mercado que se atiende (e.g. eq. nuevo, eq. usado, refacciones).
 - 3) En principio funcional, pero una estructura orientada al producto o mercado existe para soportar nuevos productos o mercados.
 - 4) Cambiante para permitir el aprovechamiento de oportunidades y resolución de problemas que se van presentando.

32. A diferencia de nuestros competidores, la forma en la que evaluamos el desempeño puede describirse como:

- 1) Descentralizada y participativa, promoviendo el involucramiento de distintos miembros de la organización.
- 2) Orientada a aquellos hechos que requieren atención inmediata.
- 3) Centralizada y en mayor medida depende de la dirección general.
- 4) Centralizada en aquellas áreas de producto o servicio ya establecidas, y más participativa en áreas que manejan nuevos productos o servicios.

Sección 4

Esta sección presenta una serie de indicadores financieros. Por favor identifique con un círculo el grado de importancia que cada indicador tiene para evaluar el desempeño de su organización.

33. Importancia de indicadores financieros	No importante		Importante		Muy importante
a. Utilidad sobre ventas.....	1	2	3	4	5
b. Utilidad sobre inversión.....	1	2	3	4	5
c. Utilidad sobre activos.....	1	2	3	4	5
d. Crecimiento en ventas.....	1	2	3	4	5
e. Crecimiento en utilidades.....	1	2	3	4	5
f. Utilidades totales obtenidas.....	1	2	3	4	5

Ahora indique que tan satisfecho está con el desempeño de su organización en cada uno de los indicadores mencionados previamente.

34. Satisfacción con los indicadores financieros	No satisfecho		Satisfecho		Muy satisfecho
g. Utilidad sobre ventas.....	1	2	3	4	5
h. Utilidad sobre inversión.....	1	2	3	4	5
i. Utilidad sobre activos.....	1	2	3	4	5
j. Crecimiento en ventas.....	1	2	3	4	5
k. Crecimiento en utilidades.....	1	2	3	4	5
l. Utilidades totales obtenidas.....	1	2	3	4	5

Sección 5

Esta sección presenta una serie de oraciones que describen las características del entorno de la industria en la que su empresa mayormente participa en la actualidad. Por favor identifique con un círculo el grado de acuerdo o desacuerdo con cada oración.

35. Entorno de mercado	En total desacuerdo				En total acuerdo
a. En nuestro negocio, las preferencias del cliente cambian constantemente.....	1	2	3	4	5
b. Nuestros clientes tienden a buscar nuevas alternativas de producto permanentemente.....	1	2	3	4	5

	En total desacuerdo					En total acuerdo
c. Algunos de nuestros clientes son muy sensibles al precio, pero en otras ocasiones el precio es relativamente poco importante para ellos.....	1	2	3	4	5	
d. Nuevos clientes tienden a presentar necesidades distintas a las de los clientes ya existentes.....	1	2	3	4	5	
e. Atendemos a casi los mismos clientes que en el pasado.....	1	2	3	4	5	
f. Es muy difícil predecir cambio alguno en el mercado.....	1	2	3	4	5	
36. Entorno tecnológico	En total desacuerdo					En total acuerdo
a. La tecnología en nuestra industria cambia rápidamente.....	1	2	3	4	5	
b. Los cambios tecnológicos proveen grandes oportunidades en la industria.....	1	2	3	4	5	
c. Es muy difícil estimar cómo estará la tecnología de nuestra industria en los siguientes dos o tres años.....	1	2	3	4	5	
d. La mayor parte de las innovaciones de producto han sido posible gracias a radicales cambios tecnológicos vividos en la industria.....	1	2	3	4	5	
e. Los desarrollos tecnológicos en nuestra industria son mas bien menores.....	1	2	3	4	5	
f. Los cambios tecnológicos en esta industria son frecuentes.....	1	2	3	4	5	
37. Entorno competitivo	En total desacuerdo					En total acuerdo
a. La competencia en nuestra industria es muy agresiva.....	1	2	3	4	5	
b. Es muy usual competir en base a promociones en nuestra industria.....	1	2	3	4	5	
c. Lo que un competidor ofrece, otros pueden copiarlo fácilmente.....	1	2	3	4	5	
d. Competir en base a guerras de precios es característico en esta industria.....	1	2	3	4	5	
e. En esta industria se comenta sobre una nueva estrategia comercial casi todos los días.....	1	2	3	4	5	
f. Nuestros competidores son relativamente débiles.....	1	2	3	4	5	

Sección 6

Esta sección le pide que identifique la medida en la que ha utilizado sus contactos o redes personales para resolver algún asunto relacionado con la operación de su empresa.

38. En los últimos tres años he recurrido a mis vínculos con...	Muy poco							Con mucha regularidad
a. Altos ejecutivos en las compañías a las que les vendo.....	1	2	3	4	5	6	7	
b. Altos ejecutivos en las compañías que me proveen.....	1	2	3	4	5	6	7	
c. Altos ejecutivos en compañías competidoras.....	1	2	3	4	5	6	7	
d. Altos ejecutivos en instituciones financieras.....	1	2	3	4	5	6	7	
e. Líderes políticos en los distintos niveles de gobierno... ..	1	2	3	4	5	6	7	
f. Oficiales en cámaras industriales y de comercio.....	1	2	3	4	5	6	7	
g. Oficiales en organismos reguladores y certificadores.....	1	2	3	4	5	6	7	
h. Oficiales en entidades fiscalizadoras.....	1	2	3	4	5	6	7	

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Sección 7

Finalmente, esta sección le pide que identifique cuál de las siguientes descripciones se adecua más a su organización en comparación con otras empresas de la industria. Considere a su empresa en su totalidad, ninguna de las descripciones es inherentemente “buena” o “mala”. Para responder, marque con una X dentro del paréntesis correspondiente.

39. Adecuación descripción - empresa

Tipo1 ()	Este tipo de organización intenta localizar y mantener un nicho de mercado relativamente estable. A diferencia de los competidores, la organización tiende a ofrecer una gama limitada de productos o servicios e intenta proteger su nicho ofreciendo alta calidad, mejor servicio y precio. La organización no es pionera en lo que a innovación se refiere dentro de la industria; Incluso tiende a ignorar cambios en la industria que no tienen influencia directa en las áreas de operación actuales, en cambio se concentra en hacer el mejor trabajo posible en el nicho de competencia.
Tipo2 ()	Este tipo de organización opera en un mercado que se renueva continuamente. La organización siempre busca “ser la primera” en lo que a nuevos productos y mercados se refiere, aunque no todas estas iniciativas hayan sido muy rentables. La organización responde con prontitud a señales anticipadas de oportunidad, y usualmente estas respuestas generan cambios en la forma en la que compite la organización. Sin embargo, esta organización no tiene una posición fuerte en todas las áreas de negocio en las que participa.
Tipo3 ()	Este tipo de organización intenta mantener una línea limitada y estable de productos o servicios, mientras que al mismo tiempo toma acciones rápidas para incursionar en algunos desarrollos prometedores de la industria que la organización ha analizado a profundidad. La organización rara vez es pionera en el desarrollo de nuevos productos o servicios. Sin embargo, el monitoreo sistemático de las acciones de los grandes competidores en áreas compatibles con su base de productos, hacen de la organización una buena seguidora de tendencias; permitiéndole desarrollar productos o servicios soportados por estructuras de costos más eficientes.
Tipo4 ()	Este tipo de organización parece no tener una línea consistente de productos o servicios. La organización usualmente no es muy agresiva para mantener productos y mercados establecidos como si lo hacen algunos de sus competidores, tampoco es muy dada a tomar tantos riesgos como otros competidores. En cambio, la organización responde a factores y eventos derivados de presiones del entorno.

Muchas gracias por su tiempo y disposición a participar.

Appendix C Univariate statistics of the pilot study

No.	Variables	N	Missing	Min	Max	Mean	SD	Skewness			Kurtosis		
								Statistic	SE	Zskewness	Statistic	SE	Zkurtosis
1	GMtenure_9	14		1	18	7.929	1.428	.693	.597	1.160	-.376	1.154	-0.326
2	Opexp_11	12	2	0	19	7.667	1.818	.409	.637	0.642	-.975	1.232	-0.791
3	Fiexp_11	12	2	0	20	7.167	2.057	.635	.637	0.997	-1.242	1.232	-1.008
4	Salexp_11	12	2	0	45	9.917	3.484	1.761	.637	2.763	3.306	1.232	2.683
5	HRexp_11	12	2	0	6	1.500	.683	1.327	.637	2.082	-.326	1.232	-0.264
6	Otherexp_11	12	2	0	25	2.083	1.786	3.464	.637	5.436	12.000	1.232	9.738
7	Info_a	14		0	6	3.500	.500	-.041	.597	-0.069	-.865	1.154	-0.750
8	Info_b	14		0	5	2.357	.487	.090	.597	0.150	-1.415	1.154	-1.226
9	Info_c	14		0	5	1.929	.474	.607	.597	1.016	-.698	1.154	-0.605
10	Info_d	14		0	7	2.143	.563	.990	.597	1.658	.356	1.154	0.308
11	Info_e	14		0	7	2.786	.576	.376	.597	0.630	-.319	1.154	-0.277
12	Info_f	14		0	7	3.643	.541	-.210	.597	-0.351	-.434	1.154	-0.376
13	Info_g	14		0	6	2.429	.388	.868	.597	1.453	2.001	1.154	1.734
14	Info_h	14		0	6	3.643	.464	-.486	.597	-0.813	.440	1.154	0.381
15	Info_i	14		0	6	3.071	.615	-.234	.597	-0.391	-1.264	1.154	-1.095
16	Info_j	14		0	6	3.286	.496	-.067	.597	-0.112	-.949	1.154	-0.822
17	Info_k	14		0	5	2.214	.505	-.119	.597	-0.199	-1.706	1.154	-1.478
18	Info_l	14		0	5	2.357	.509	-.055	.597	-0.092	-1.552	1.154	-1.345
19	Reso_a	14		0	5	2.357	.414	.167	.597	0.279	-1.315	1.154	-1.139
20	Reso_b	14		0	4	2.143	.345	.193	.597	0.324	-1.004	1.154	-0.870
21	Reso_c	14		1	4	2.786	.334	-.631	.597	-1.056	-1.268	1.154	-1.099
22	Reso_d	14		1	5	2.786	.350	-.019	.597	-0.033	-1.177	1.154	-1.020
23	Reso_e	14		0	7	2.571	.581	.647	.597	1.083	-.142	1.154	-0.123
24	Reso_f	14		1	6	3.143	.329	.553	.597	0.926	1.215	1.154	1.052
25	Reso_g	14		0	6	2.643	.414	.412	.597	0.690	.432	1.154	0.374
26	Reso_h	14		0	6	2.000	.524	.785	.597	1.314	-.350	1.154	-0.303
27	Reso_i	14		0	6	2.071	.615	.516	.597	0.864	-1.548	1.154	-1.341
28	Reso_j	14		1	7	4.000	.565	.057	.597	0.096	-1.345	1.154	-1.165
29	Reso_k	14		2	6	3.500	.416	.714	.597	1.195	-.863	1.154	-0.748
30	Strat_a	14		1	7	3.143	.512	.836	.597	1.400	-.528	1.154	-0.457
31	Strat_b	14		0	7	2.429	.532	.807	.597	1.351	.440	1.154	0.382
32	Strat_c	14		0	7	3.500	.600	.167	.597	0.279	-1.007	1.154	-0.873
33	Strat_d	14		0	7	3.643	.509	-.101	.597	-0.169	.070	1.154	0.061
34	Strat_e	14		1	7	3.929	.518	.338	.597	0.566	-.978	1.154	-0.848
35	Strat_f	14		0	7	2.714	.529	.950	.597	1.590	.482	1.154	0.418
36	Strat_g	14		0	7	2.714	.529	.533	.597	0.892	.153	1.154	0.133
37	Strat_h	14		0	7	2.429	.488	1.368	.597	2.290	2.016	1.154	1.747
38	Strat_i	14		1	7	2.714	.450	1.202	.597	2.011	1.958	1.154	1.697
39	Strat_j	14		0	7	2.143	.512	1.066	.597	1.784	2.104	1.154	1.823
40	ImRtoSl_a	14		1	5	3.929	.355	-.999	.597	-1.673	.048	1.154	0.041
41	ImRtoIn_b	14		1	5	3.429	.291	-.620	.597	-1.039	.664	1.154	0.575
42	ImRtoAs_c	14		1	5	2.929	.355	.150	.597	0.251	-1.031	1.154	-0.894
43	ImSlGrd_d	14		1	5	4.500	.292	-2.895	.597	-4.846	9.147	1.154	7.926
44	ImPrGrd_e	14		1	5	4.357	.325	-2.009	.597	-3.363	3.751	1.154	3.251
45	ImTotPrf_f	13	1	1	5	4.308	.328	-2.138	.616	-3.468	4.862	1.191	4.083
46	StRtoSl_g	13	1	2	5	3.692	.263	-.658	.616	-1.068	-.028	1.191	-0.024
47	StRtoIn_h	13	1	2	5	3.462	.268	.127	.616	0.207	-.638	1.191	-0.536
48	StRtoAs_i	13	1	1	5	3.385	.350	-.283	.616	-0.459	-.619	1.191	-0.520
49	StSlGrd_j	13	1	1	5	3.154	.317	-.348	.616	-0.565	-.620	1.191	-0.521
50	StPrGrd_k	14		1	5	3.143	.254	-.321	.597	-0.538	1.631	1.154	1.414
51	StTotPrf_l	13	1	1	4	3.231	.257	-1.274	.616	-2.067	1.524	1.191	1.280
52	Sector_1	14		-	-	-	-	-	-	-	-	-	-
53	Employno_4	14		-	-	-	-	-	-	-	-	-	-
54	Ansales_5	14		-	-	-	-	-	-	-	-	-	-
55	Stdylev_13	14		-	-	-	-	-	-	-	-	-	-
56	Strategic_39	14		-	-	-	-	-	-	-	-	-	-

Appendix D Data screening for the main study: Univariate normality statistics

No.	Variables	N	Missing	% Missing	Min	Max	Mean	SD	Skewness			Kurtosis		
									Statistic	SE	Zskewness	Statistic	SE	Zkurtosis
1	GMtenure_9	204	2	1.0	0	45	14.064	9.721	.701	.170	4.120	-.186	.339	-0.549
2	Opexp_14	182	24	11.7	0	50	12.275	10.188	.764	.180	4.242	.385	.358	1.073
3	Fiexp_14	182	24	11.7	0	50	7.192	9.578	1.810	.180	10.050	3.655	.358	10.202
4	Salex_14	182	24	11.7	0	50	10.670	10.815	1.066	.180	5.919	.628	.358	1.752
5	HRexp_14	182	24	11.7	0	50	5.692	9.308	2.090	.180	11.605	5.048	.358	14.089
6	Otherexpyr_14	189	17	8.3	0	40	2.571	7.317	3.443	.177	19.477	12.186	.352	34.642
7	Info_a	206			0	7	3.262	1.764	-.087	.169	-0.515	-.555	.337	-1.645
8	Info_b	205	1	0.5	0	7	2.649	1.719	.253	.170	1.492	-.717	.338	-2.122
9	Info_c	205	1	0.5	0	7	2.576	1.769	.309	.170	1.818	-.722	.338	-2.136
10	Info_d	206			0	7	2.665	2.027	.347	.169	2.049	-.803	.337	-2.381
11	Info_e	203	3	1.5	0	7	2.680	1.846	.150	.171	0.879	-.795	.340	-2.340
12	Info_f	205	1	0.5	0	7	3.732	1.669	-.328	.170	-1.929	.043	.338	0.129
13	Info_g	204	2	1.0	0	7	3.137	1.702	.032	.170	0.185	-.279	.339	-0.823
14	Info_h	204	2	1.0	0	7	4.397	1.580	-.524	.170	-3.077	.232	.339	0.686
15	Info_i	205	1	0.5	0	7	3.878	1.894	-.339	.170	-1.993	-.339	.338	-1.004
16	Info_j	205	1	0.5	0	7	3.634	1.889	-.528	.170	-3.109	-.433	.338	-1.281
17	Info_k	203	3	1.5	0	7	3.118	2.074	-.119	.171	-0.698	-1.032	.340	-3.038
18	Info_l	206			0	7	3.388	1.875	-.272	.169	-1.605	-.739	.337	-2.191
19	Reso_a	206			0	7	2.762	1.815	.379	.169	2.235	-.787	.337	-2.332
20	Reso_b	205	1	0.5	0	7	2.459	1.616	.564	.170	3.322	-.402	.338	-1.189
21	Reso_c	202	4	1.9	0	7	2.901	1.648	.173	.171	1.013	-.327	.341	-0.961
22	Reso_d	203	3	1.5	0	7	2.882	1.661	.321	.171	1.880	-.323	.340	-0.952
23	Reso_e	199	7	3.4	0	7	3.477	2.410	.216	.172	1.254	-1.244	.343	-3.627
24	Reso_f	201	5	2.4	0	7	4.090	1.820	-.119	.172	-0.694	-.791	.341	-2.318
25	Reso_g	205	1	0.5	0	7	2.863	1.618	.224	.170	1.317	-.513	.338	-1.517
26	Reso_h	203	3	1.5	0	7	2.680	1.641	.138	.171	0.811	-.641	.340	-1.888
27	Reso_i	205	1	0.5	0	7	1.883	2.558	1.047	.170	6.164	-.436	.338	-1.290
28	Reso_j	202	4	1.9	0	7	3.970	2.341	-.340	.171	-1.986	-1.050	.341	-3.083
29	Reso_k	204	2	1.0	0	7	3.770	1.907	-.122	.170	-0.718	-.606	.339	-1.787
30	Strat_a	203	3	1.5	0	7	3.507	1.778	.222	.171	1.304	-.812	.340	-2.389
31	Strat_b	203	3	1.5	0	7	3.478	1.792	.018	.171	0.107	-.614	.340	-1.807
32	Strat_c	202	4	1.9	0	7	4.356	1.637	-.485	.171	-2.833	-.012	.341	-0.035
33	Strat_d	204	2	1.0	0	7	4.015	1.542	-.708	.170	-4.159	.685	.339	2.022
34	Strat_e	205	1	0.5	0	7	4.517	1.327	-.202	.170	-1.192	.155	.338	0.457
35	Strat_f	205	1	0.5	0	7	3.312	1.718	.226	.170	1.333	-.421	.338	-1.245
36	Strat_g	204	2	1.0	0	7	3.525	1.738	-.101	.170	-0.595	-.528	.339	-1.557
37	Strat_h	205	1	0.5	0	7	2.961	1.511	.024	.170	0.140	-.258	.338	-0.764
38	Strat_i	203	3	1.5	0	7	2.350	1.449	.377	.171	2.207	-.068	.340	-0.201
39	Strat_j	201	5	2.4	0	7	2.652	1.621	.123	.172	0.716	-.559	.341	-1.638
40	ImRtoSl_a_33	206			1	5	4.374	.958	-1.483	.169	-8.751	1.646	.337	4.879
41	ImRtoIn_b_33	206			1	5	3.495	1.225	-.310	.169	-1.832	-.842	.337	-2.496
42	ImRtoAs_c_33	205	1	0.5	1	5	2.932	1.144	.055	.170	0.326	-.708	.338	-2.094
43	ImSlGrd_d_33	206			1	5	4.422	.873	-1.603	.169	-9.458	2.462	.337	7.300
44	ImPrGrd_e_33	206			1	5	4.403	.877	-1.454	.169	-8.583	1.689	.337	5.008
45	ImTotPrf_f_33	206			1	5	4.451	.829	-1.424	.169	-8.405	1.413	.337	4.188
46	StRtoSl_g_34	206			1	5	3.393	1.048	-.099	.169	-0.584	-.464	.337	-1.377
47	StRtoIn_h_34	206			1	5	3.282	1.172	-.161	.169	-0.948	-.794	.337	-2.354
48	StRtoAs_i_34	204	2	1.0	1	5	3.152	1.154	-.048	.170	-0.284	-.725	.339	-2.140
49	StSlGrd_j_34	206			1	5	3.383	1.162	-.185	.169	-1.093	-.848	.337	-2.513
50	StPrGrd_k_34	206			1	5	3.243	1.156	-.008	.169	-0.044	-.920	.337	-2.728
51	SfTotPrf_l_34	206			1	5	3.291	1.166	-.082	.169	-0.486	-.814	.337	-2.414
52	Sector_1	206			-	-	-	-	-	-	-	-	-	-
53	Emplyno_4	206			-	-	-	-	-	-	-	-	-	-
54	Ansales_5	206			-	-	-	-	-	-	-	-	-	-
55	Partner_7	206			-	-	-	-	-	-	-	-	-	-
56	Stdylev_13	206			-	-	-	-	-	-	-	-	-	-
57	Strategic_39	206			-	-	-	-	-	-	-	-	-	-

Appendix E Measurement development for the CEO routine engagement patterns
Communalities before and after extraction

Communalities			
	Items	Initial	Extraction
1	Info_a	1.000	.815
2	Info_b	1.000	.845
3	Info_c	1.000	.629
4	Info_d	1.000	.633
5	Info_e	1.000	.695
6	Info_f	1.000	.567
7	Info_g	1.000	.602
8	Info_h	1.000	.710
9	Info_i	1.000	.748
10	Info_j	1.000	.726
11	Info_k	1.000	.608
12	Info_l	1.000	.599
13	Reso_a	1.000	.722
14	Reso_b	1.000	.770
15	Reso_c	1.000	.603
16	Reso_d	1.000	.689
17	Reso_e	1.000	.612
18	Reso_f	1.000	.572
19	Reso_g	1.000	.882
20	Reso_h	1.000	.849
21	Reso_i	1.000	.543
22	Reso_j	1.000	.599
23	Reso_k	1.000	.627
24	Strat_a	1.000	.758
25	Strat_b	1.000	.717
26	Strat_c	1.000	.718
27	Strat_d	1.000	.731
28	Strat_e	1.000	.717
29	Strat_f	1.000	.626
30	Strat_g	1.000	.699
31	Strat_h	1.000	.717
32	Strat_i	1.000	.688
33	Strat_j	1.000	.645

Extraction Method: Principal Component Analysis.

Appendix F

Measurement development for the CEO routine engagement patterns.
 Varimax rotated principal component analysis; rotated matrix of 26
 items. Second iteration showing items with double loadings

Item	Item description	Components					
		1	2	3	4	5	6
1 Info_b	Meet with customers to find out what products or services they will need in the future	.1791	.1700	-.0412	.0412	.0902	.5960
2 Info_c	Engage on in-house market research initiatives	.2558	.0928	-.0135	.0224	.0810	.7511
3 Info_d	Review external reports assessing the quality of our products	-.0411	.1688	.1579	.0364	.1248	.6398
4 Info_e	Meet with those who can influence our end user's purchases	.0625	-.0050	.2805	.0575	.1832	.5293
5 Info_j	Carry out interdepartmental meetings to discuss market trends and developments	.0778	.0118	.2387	.0791	.7157	.2582
6 Info_k	Distribute formal information to managerial levels about information on our customers	.0226	-.0345	.2722	-.0630	.5672	.3495
7 Info_l	Carry out interdepartmental meetings to discuss data on customer satisfaction	.0238	.0055	.2774	.0850	.6044	.4127
8 Reso_a	Distribute budgeted resources to projects and departments	.0199	.1835	.0168	.8178	.0640	.0171
9 Reso_b	Decide which programs to provide resources	.1140	.1310	-.0244	.8441	-.0478	.1223
10 Reso_c	Define new hirings	.2944	-.0750	.2615	.4846	.1969	-.0632
11 Reso_d	Allocate equipment or materials to projects and departments	.1778	.1656	.0569	.7139	.0677	.0265
12 Reso_e	Define priorities within the organization	.0250	.1855	.6890	.0679	-.0069	.0629
13 Reso_f	Prevent loss of human resources	.0830	.3995	.4306	.3158	-.0717	.1278
14 Reso_i	Engage on the development of my successor	.0537	-.0366	.6368	.0296	.2127	.0440
15 Reso_j	Help managerial staff to correct their mistakes before others notice them	.2120	.0971	.6930	.0343	.1290	.1038
16 Reso_k	Give feedback on performance to managerial staff	.0838	.2252	.6837	-.0142	.2416	.1301
17 Strat_a	Translate goals into plans	.1464	.7463	.1849	.2609	-.0119	.2434
18 Strat_b	Translate goals into individual objectives	.2064	.7080	.2023	.1759	-.0764	.2963
19 Strat_c	Monitor activities to support top management objectives	.1259	.7362	.1396	.0817	.2898	.1100
20 Strat_d	Carry out interdepartmental meetings to discuss unachieved objectives	.2353	.3731	-.0189	.0727	.7227	-.0275
21 Strat_e	Define corrective measures to achieve objectives	.2778	.5647	.0641	.1184	.4952	-.1295
22 Strat_f	Engage in new product or service developments	.6874	.2343	.0592	-.0033	.1392	.1334
23 Strat_g	Justify and define new programs	.7035	.4334	.0274	.0163	.1079	.0314
24 Strat_h	Renegotiate objectives to facilitate new projects	.7625	.0792	.0645	.1510	.2024	.2079
25 Strat_i	Approve resources for trial projects	.6393	-.0360	.0739	.3566	-.0779	.2203
26 Strat_j	Explore new sources of supply	.6659	.0875	.3312	.2203	.0112	.0068

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 16 iterations.

Appendix G Measurement development for the CEO routine engagement patterns. Detail and results of the varimax rotated principal component analysis per iteration to remove additional items

This appendix details the elimination of four items in the process to develop the measurement scales for the CEO routine engagement patterns. The items were: Stat_e, Reso_f, Strat_g and Strat_d. The first three items were removed because they loaded heavily (>.39) in more than one component. As mentioned in chapter 4 section 4, the order in which the items were removed was according to the magnitude of its loading in the second component. Once removed, the procedure was conducted again. The fourth item, Strat_d, was removed because it lacked the customer perspective that is present in the other items that loaded in the same component (more detail below). According to the results shown in appendix F, item Strat_e had to be removed from the analysis. The result of the third iteration is presented in table G-1.

Table G-1 Varimax rotated principal component analysis; rotated matrix after removing item Strat_e. Third iteration.

Item	Item description	Components					
		1	2	3	4	5	6
1	Info_b Meet with customers to find out what products or services they will need in the future	.1798	.0406	-.0499	.1880	.1201	.5847
2	Info_c Engage on in-house market research initiatives	.2491	.0245	-.0184	.1062	.1051	.7549
3	Info_d Review external reports assessing the quality of our products	-.0429	.0365	.1549	.1822	.1440	.6462
4	Info_e Meet with those who can influence our end user's purchases	.0582	.0634	.3027	-.0267	.1457	.5877
5	Info_j Carry out interdepartmental meetings to discuss market trends and developments	.0935	.0797	.2069	.0426	.7812	.1713
6	Info_k Distribute formal information to managerial levels about information on our customers	.0313	-.0618	.2491	-.0085	.6198	.2908
7	Info_l Carry out interdepartmental meetings to discuss data on customer satisfaction	.0327	.0873	.2595	.0235	.6445	.3660
8	Reso_a Distribute budgeted resources to projects and departments	.0214	.8154	.0050	.2015	.0815	-.0104
9	Reso_b Decide which programs to provide resources	.1106	.8420	-.0315	.1514	-.0355	.1096
10	Reso_c Define new hirings	.2930	.4903	.2793	-.1026	.1509	-.0311
11	Reso_d Allocate equipment or materials to projects and departments	.1801	.7156	.0701	.1461	.0311	.0524
12	Reso_e Define priorities within the organization	.0214	.0639	.6702	.2219	.0398	.0298
13	Reso_f Prevent loss of human resources	.0835	.3124	.4215	.4143	-.0509	.1164
14	Reso_i Engage on the development of my successor	.0510	.0333	.6454	-.0458	.1961	.0640
15	Reso_j Help managerial staff to correct their mistakes before others notice them	.2083	.0379	.7032	.0829	.1092	.1311
16	Reso_k Give feedback on performance to managerial staff	.0904	-.0160	.6712	.2443	.2726	.1016
17	Strat_a Translate goals into plans	.1646	.2505	.1585	.7795	.0460	.1847
18	Strat_b Translate goals into individual objectives	.2227	.1644	.1713	.7547	-.0036	.2296
19	Strat_c Monitor activities to support top management objectives	.1548	.0779	.1387	.7100	.2815	.0948
20	Strat_d Carry out interdepartmental meetings to discuss unachieved objectives	.2673	.0750	-.0257	.3377	.7167	-.0723
21	Strat_f Engage in new product or service developments	.6977	-.0010	.0643	.2130	.1258	.1339
22	Strat_g Justify and define new programs	.7188	.0164	.0250	.4119	.1050	.0136
23	Strat_h Renegotiate objectives to facilitate new projects	.7655	.1555	.0619	.0699	.2056	.1940
24	Strat_i Approve resources for trial projects	.6300	.3581	.0664	-.0165	-.0569	.2069
25	Strat_j Explore new sources of supply	.6635	.2227	.3309	.0850	.0106	.0028

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization
Rotation converged in 8 iterations.

Appendix G.....(continued)

According to the results from table G-1, item Reso_f has to be removed from the analysis. The results of the fourth iteration of the procedure are reported in table G-2.

Table G-2 Varimax rotated principal component analysis; rotated matrix after removing item Reso_f. fourth iteration.

Item	Item description	Components					
		1	2	3	4	5	6
1 Info_b	Meet with customers to find out what products or services they will need in the future	.1828	.0343	-.0569	.1765	.1375	.5782
2 Info_c	Engage on in-house market research initiatives	.2513	.0228	-.0246	.0994	.1125	.7541
3 Info_d	Review external reports assessing the quality of our products	-.0388	.0375	.1579	.1829	.1355	.6487
4 Info_e	Meet with those who can influence our end user's purchases	.0511	.0738	.3061	-.0180	.1249	.5946
5 Info_j	Carry out interdepartmental meetings to discuss market trends and developments	.1043	.0666	.2002	.0333	.8007	.1630
6 Info_k	Distribute formal information to managerial levels about information on our customers	.0327	-.0669	.2610	-.0043	.6236	.2744
7 Info_l	Carry out interdepartmental meetings to discuss data on customer satisfaction	.0406	.0805	.2564	.0210	.6551	.3630
8 Reso_a	Distribute budgeted resources to projects and departments	.0250	.8161	-.0102	.1910	.0835	-.0067
9 Reso_b	Decide which programs to provide resources	.1019	.8483	-.0334	.1523	-.0516	.1126
10 Reso_c	Define new hirings	.2711	.5103	.2906	-.0798	.1117	-.0238
11 Reso_d	Allocate equipment or materials to projects and departments	.1793	.7149	.0660	.1380	.0295	.0553
12 Reso_e	Define priorities within the organization	.0389	.0596	.6466	.1918	.0671	.0241
13 Reso_i	Engage on the development of my successor	.0477	.0302	.6578	-.0385	.1911	.0598
14 Reso_j	Help managerial staff to correct their mistakes before others notice them	.1983	.0563	.7253	.0962	.0750	.1390
15 Reso_k	Give feedback on performance to managerial staff	.0817	.0088	.6850	.2609	.2323	.1126
16 Strat_a	Translate goals into plans	.1680	.2590	.1622	.7772	.0313	.1915
17 Strat_b	Translate goals into individual objectives	.2181	.1807	.1916	.7655	-.0322	.2362
18 Strat_c	Monitor activities to support top management objectives	.1479	.0927	.1569	.7255	.2493	.1045
19 Strat_d	Carry out interdepartmental meetings to discuss unachieved objectives	.2589	.0847	-.0072	.3601	.6961	-.0725
20 Strat_f	Engage in new product or service developments	.6888	.0064	.0862	.2253	.1075	.1330
21 Strat_g	Justify and define new programs	.7302	.0166	.0095	.3960	.1130	.0130
22 Strat_h	Renegotiate objectives to facilitate new projects	.7696	.1537	.0568	.0616	.2133	.1922
23 Strat_i	Approve resources for trial projects	.6309	.3577	.0569	-.0306	-.0457	.2025
24 Strat_j	Explore new sources of supply	.6671	.2178	.3154	.0692	.0212	.0102

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 7 iterations.

Appendix G.....(continued)

According to the results from table G-2, item Strat_g is the next item to be removed from the analysis. The results of the fifth iteration of the procedure are reported in table G-3.

Table G-3 Varimax rotated principal component analysis; rotated matrix after removing item Strat_g from the analysis. Fifth iteration.

Item	Item description	Components					
		1	2	3	4	5	6
1	Info_b Meet with customers to find out what products or services they will need in the future	.1997	.0165	-.0680	.2004	.1436	.5599
2	Info_c Engage on in-house market research initiatives	.2874	-.0010	-.0399	.1326	.1173	.7345
3	Info_d Review external reports assessing the quality of our products	-.0503	.0532	.1656	.1711	.1318	.6576
4	Info_e Meet with those who can influence our end user's purchases	.0421	.0909	.3162	-.0318	.1217	.6087
5	Info_j Carry out interdepartmental meetings to discuss market trends and developments	.1124	.0562	.1970	.0466	.8023	.1548
6	Info_k Distribute formal information to managerial levels about information on our customers	-.0063	-.0430	.2762	-.0223	.6195	.2957
7	Info_l Carry out interdepartmental meetings to discuss data on customer satisfaction	.0551	.0735	.2547	.0287	.6556	.3556
8	Reso_a Distribute budgeted resources to projects and departments	.0256	.8288	.0000	.1720	.0812	-.0010
9	Reso_b Decide which programs to provide resources	.1304	.8470	-.0321	.1491	-.0517	.1078
10	Reso_c Define new hirings	.3379	.4721	.2727	-.0473	.1188	-.0533
11	Reso_d Allocate equipment or materials to projects and departments	.1819	.7213	.0721	.1302	.0296	.0594
12	Reso_e Define priorities within the organization	.0286	.0655	.6511	.1849	.0652	.0282
13	Reso_i Engage on the development of my successor	.0654	.0258	.6574	-.0365	.1886	.0596
14	Reso_j Help managerial staff to correct their mistakes before others notice them	.2063	.0503	.7234	.1043	.0744	.1380
15	Reso_k Give feedback on performance to managerial staff	.0945	-.0030	.6792	.2732	.2315	.1028
16	Strat_a Translate goals into plans	.1448	.2570	.1583	.7890	.0317	.1835
17	Strat_b Translate goals into individual objectives	.1968	.1748	.1851	.7827	-.0309	.2264
18	Strat_c Monitor activities to support top management objectives	.1083	.0951	.1561	.7342	.2496	.1012
19	Strat_d Carry out interdepartmental meetings to discuss unachieved objectives	.2488	.0668	-.0167	.3882	.6999	-.0863
20	Strat_f Engage in new product or service developments	.6706	-.0156	.0731	.2678	.1162	.1249
21	Strat_h Renegotiate objectives to facilitate new projects	.7446	.1384	.0498	.0962	.2223	.1919
22	Strat_i Approve resources for trial projects	.6724	.3200	.0368	.0178	-.0368	.1814
23	Strat_j Explore new sources of supply	.7139	.1671	.2881	.1303	.0318	-.0209

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 7 iterations.

As noted in table G-3, item Strat_d loads in component 5. As mentioned before, this item lacks the customer perspective present in the other items loading in component 5. The item was removed and the results of the final component structure are reported in section 4.4, table 12. The reliability of the component was not affected by removing this item, in fact was slightly improved from $\alpha = .757$ to $\alpha = .760$.

Appendix H Oblique rotated principal component analysis

To check for the viability on the independence inherent to an orthogonal rotation, a principal component solution with oblique rotation was conducted with 33 and 22 items. The results are presented in table H-1 and table H-3 respectively. Also, the component correlation matrices for both solutions are reported in tables H-2 and H-4.

Table H-1 Oblique rotated principal component analysis, pattern matrix of 33 items

Item	Components									
	1	2	3	4	5	6	7	8	9	10
1 Info_a	0.001	0.012	0.099	0.907	-0.151	-0.013	0.000	0.005	0.080	0.037
2 Info_b	0.034	0.026	-0.093	0.893	0.069	0.068	0.068	0.053	-0.061	-0.106
3 Info_c	0.104	0.156	-0.080	0.351	0.286	0.065	-0.101	-0.050	-0.492	-0.119
4 Info_d	0.201	-0.029	0.061	0.043	-0.026	-0.016	-0.079	-0.039	-0.735	0.089
5 Info_e	-0.104	-0.083	0.008	-0.039	0.004	0.052	0.184	0.258	-0.748	0.054
6 Info_f	-0.022	0.208	-0.021	-0.033	-0.002	-0.065	0.125	0.605	-0.247	-0.097
7 Info_g	0.033	0.091	0.053	0.127	-0.045	0.005	-0.080	0.719	0.017	0.106
8 Info_h	0.068	0.728	0.115	0.000	-0.027	0.062	0.039	0.215	-0.087	0.042
9 Info_i	-0.061	0.761	-0.007	0.157	0.114	-0.050	0.091	0.138	0.114	0.055
10 Info_j	-0.097	0.522	0.047	0.085	0.025	-0.527	-0.032	-0.065	-0.059	0.109
11 Info_k	-0.100	0.275	-0.040	0.027	0.006	-0.428	-0.083	-0.236	-0.286	0.281
12 Info_l	-0.087	0.224	0.041	0.133	-0.083	-0.380	0.106	-0.095	-0.351	0.188
13 Reso_a	0.158	0.163	0.818	-0.054	-0.072	-0.081	-0.034	-0.009	0.052	-0.079
14 Reso_b	0.100	0.069	0.814	-0.002	0.027	0.110	0.104	-0.032	-0.069	-0.148
15 Reso_c	-0.371	-0.109	0.422	0.169	0.174	-0.002	0.280	0.079	0.080	0.207
16 Reso_d	-0.064	-0.150	0.786	0.075	0.085	-0.080	-0.095	0.041	-0.042	0.102
17 Reso_e	0.238	0.021	-0.025	0.075	-0.030	0.105	0.166	-0.166	0.034	0.689
18 Reso_f	0.482	0.231	0.171	-0.003	0.006	0.123	0.216	0.046	0.057	0.214
19 Reso_g	0.045	0.050	-0.048	0.055	0.013	-0.029	0.925	-0.057	0.055	0.018
20 Reso_h	-0.033	-0.036	-0.007	0.006	-0.025	-0.089	0.899	0.003	-0.085	0.034
21 Reso_i	-0.147	-0.057	0.047	-0.040	0.017	-0.071	0.023	0.043	-0.146	0.676
22 Reso_j	0.015	0.126	-0.044	-0.006	0.185	0.048	0.003	0.327	-0.034	0.553
23 Reso_k	0.217	0.245	-0.105	-0.027	0.040	-0.094	0.050	0.140	-0.020	0.561
24 Strat_a	0.689	-0.065	0.223	0.096	0.105	-0.114	0.009	0.033	-0.096	0.056
25 Strat_b	0.644	-0.072	0.105	0.163	0.206	-0.054	0.022	-0.026	-0.117	0.103
26 Strat_c	0.478	-0.208	0.057	0.045	0.023	-0.422	0.130	0.259	-0.112	0.003
27 Strat_d	0.044	0.051	0.047	0.007	0.124	-0.777	0.155	-0.034	0.030	-0.077
28 Strat_e	0.180	-0.119	0.078	-0.009	0.151	-0.623	0.141	0.287	0.108	-0.018
29 Strat_f	-0.038	-0.173	-0.028	0.117	0.703	-0.150	-0.073	0.121	-0.019	0.081
30 Strat_g	0.241	-0.081	-0.085	0.019	0.701	-0.221	0.060	0.010	0.092	-0.047
31 Strat_h	-0.022	0.117	0.033	0.008	0.768	-0.108	0.063	-0.139	-0.078	-0.040
32 Strat_i	0.005	0.220	0.169	-0.089	0.669	0.202	0.163	-0.132	-0.144	-0.128
33 Strat_j	0.033	0.045	0.142	-0.064	0.685	0.105	-0.014	0.102	0.092	0.240

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.
Rotation converged in 36 iterations.

Appendix H.....(continued)

The component structure reported resulted from the oblique rotation reported in table H-1 is similar to the component structure resulted from the orthogonal virimax rotation reported in section 4.4, table 11. Both results present 10 components in total, with a very similar loading pattern. Information related items (Info_a to Info_l) loaded mainly in 5 components; resource related items (Reso_a to Reso_k) loaded mainly in 3 components, while strategy related items (Strat_a to Strat_j) did it also in 3 components.

As can be seen in table H-2, the relationships between the 10 components are relatively low. The presence of low correlations in the oblique rotation, suggests that it's reasonable to assume interdependence between components resulting from an orthogonal solution of the same items (Field 2005; Tabachnick and Fidell 2007).

Table H-2 Component correlation matrix, oblique rotated solution of 33 items

Component	1	2	3	4	5	6	7	8	9	10
1	1.000	.049	.160	.132	.190	-.109	.141	.103	-.069	.095
2	.049	1.000	.098	.149	.095	-.106	.168	.063	-.251	.221
3	.160	.098	1.000	.150	.263	-.067	.282	.125	-.048	.125
4	.132	.149	.150	1.000	.190	-.180	.139	.109	-.229	.142
5	.190	.095	.263	.190	1.000	-.193	.253	.118	-.155	.149
6	-.109	-.106	-.067	-.180	-.193	1.000	-.161	-.107	.182	-.179
7	.141	.168	.282	.139	.253	-.161	1.000	.179	-.086	.240
8	.103	.063	.125	.109	.118	-.107	.179	1.000	-.103	.174
9	-.069	-.251	-.048	-.229	-.155	.182	-.086	-.103	1.000	-.172
10	.095	.221	.125	.142	.149	-.179	.240	.174	-.172	1.000

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

Table H-3 Oblique rotated principal component analysis, pattern matrix of 22 items

Item	Components					
	Strategy regeneration	Resource allocation	Mentoring	Environment scanning	Strategy implementation	Information diffusion
1 Info_b	0.172	0.001	-0.154	0.544	-0.089	-0.104
2 Info_c	0.176	0.013	-0.137	0.705	-0.047	-0.102
3 Info_d	-0.158	-0.027	0.074	0.610	-0.180	-0.107
4 Info_e	-0.060	-0.053	0.326	0.679	0.092	0.039
5 Info_j	0.064	-0.046	-0.021	-0.081	0.026	-0.892
6 Info_k	0.002	0.100	0.073	0.065	0.031	-0.731
7 Info_l	-0.038	-0.064	0.054	0.153	0.019	-0.741
8 Reso_a	-0.124	-0.823	-0.108	-0.091	-0.165	-0.111
9 Reso_b	-0.036	-0.862	-0.115	0.074	-0.095	0.046
10 Reso_c	0.223	-0.540	0.266	-0.011	0.228	-0.018
11 Reso_d	0.076	-0.733	0.021	0.063	-0.030	0.051
12 Reso_e	-0.024	-0.003	0.545	-0.166	-0.236	-0.167
13 Reso_i	0.009	0.012	0.673	0.073	0.106	-0.070
14 Reso_j	0.129	-0.007	0.719	0.100	-0.049	0.021
15 Reso_k	-0.007	0.059	0.661	0.040	-0.240	-0.129
16 Strat_a	0.070	-0.182	0.032	0.039	-0.790	-0.008
17 Strat_b	0.107	-0.098	0.086	0.103	-0.787	0.079
18 Strat_c	0.102	-0.014	0.122	0.080	-0.660	-0.044
19 Strat_f	0.756	0.061	0.050	0.142	-0.046	0.061
20 Strat_g	0.777	0.073	-0.081	-0.080	-0.291	-0.028
21 Strat_h	0.749	-0.093	-0.063	0.083	0.054	-0.178
22 Strat_j	0.612	-0.170	0.235	-0.098	-0.003	-0.003

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization. Rotation converged in 10 iterations.

The component structure resulted from the oblique rotation reported in table H-3 is similar to the one resulted from the orthogonal virimax rotation reported in section 4.4, table 12. Both results present 6 components in total, with a very similar loading pattern.

As can be seen in table H-4, the relationship between the 6 components is relatively low. The presence of low correlations in the oblique rotation, suggests that it's reasonable to assume interdependence between components resulting from an orthogonal solution of the same items (Field 2005; Tabachnick and Fidell 2007).

Table H-4 Component correlation matrix, oblique rotated solution of 22 items

Components	1	2	3	4	5	6
1	1.000	-.264	.186	.205	-.250	-.193
2	-.264	1.000	-.145	-.087	.205	.092
3	.186	-.145	1.000	.147	-.145	-.322
4	.205	-.087	.147	1.000	-.193	-.314
5	-.250	.205	-.145	-.193	1.000	.218
6	-.193	.092	-.322	-.314	.218	1.000

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.

Appendix I Developing measures for the CEO routine engagement patterns:

Getting factor scores through the regression method

The regression method is a way to calculate factor scores that use the factors, from the factor score coefficient matrix, as weights in the equation $Y_i = b_1 X_1 + b_2 X_2 + \dots + b_n X_n + E_i$, rather than using the factor loadings¹ from the rotated component matrix (Field 2005; Kim and Mueller 1978; Tabachnick and Fidell 2007). The b values in the equation represent the factor score coefficients when calculating scores through the regression method. The factor score coefficient matrix is obtained by multiplying the matrix of factor loadings by the inverse (R^{-1}) of the original correlation or R-matrix (Fidell 2007; Tabachnick and Fidell 2007). The X values represent the data values from the questionnaire items.

This technique ensures that the resulting scores have a mean of 0 and variance equal to the squared multiple correlation between the estimated factor scores and the true factor values. The factor scores obtained through the regression method represent a composite measure for each participant of the study on a particular factor (Field 2005; Tabachnick and Fidell 2007).

¹ The method that uses factor loadings is known as the weighted average (Field 2005).

Normality assumption: K-S test, and skewness and kurtosis statistics
of all subgroups of study

Tests of Normality for Short Tenured and Non-Short Tenured CEOs										
Routines	Subgroup***	Kolmogorov-Smirnov*			Skewness			Kurtosis		
		Statistic	df	Sig.	Statistic	SE	Z-Skew	Statistic	SE	Z-kurt
Environment scanning	N-SH_T	0.058	155	.200**	0.281	0.195	1.444	-0.129	0.387	-0.334
	SH_T	0.084	49	.200**	-0.150	0.340	-0.442	-0.632	0.668	-0.947
Information diffusion	N-SH_T	0.053	155	.200**	-0.161	0.195	-0.825	-0.186	0.387	-0.479
	SH_T	0.063	49	.200**	-0.100	0.340	-0.294	-0.703	0.668	-1.052
Resource allocation	N-SH_T	0.063	155	.200**	0.354	0.195	1.819	0.024	0.387	0.063
	SH_T	0.086	49	.200**	0.415	0.340	1.223	0.070	0.668	0.105
Mentoring	N-SH_T	0.063	155	.200**	0.423	0.195	2.169	-0.069	0.387	-0.179
	SH_T	0.138	49	0.021	0.860	0.340	2.530	0.781	0.668	1.169
Strategy implementation	N-SH_T	0.051	155	.200**	0.222	0.195	1.139	0.124	0.387	0.321
	SH_T	0.077	49	.200**	-0.902	0.340	-2.654	1.800	0.668	2.694
Strategy regeneration	N-SH_T	0.056	155	.200**	0.615	0.195	3.158	1.819	0.387	4.696
	SH_T	0.063	49	.200**	0.200	0.340	0.588	1.518	0.668	2.272

* Lilliefors Significance Correction

** This is a lower bound of the true significance.

*** N-SH_T = Non-short tenure group / SH_T = Short tenure group

Tests of Normality for Long Tenured and Non-Long Tenured CEOs										
Routines	Subgroup***	Kolmogorov-Smirnov*			Skewness			Kurtosis		
		Statistic	df	Sig.	Statistic	SE	Z-Skew	Statistic	SE	Z-kurt
Environment scanning	N-LG_T	0.045	165	.200**	0.052	0.189	0.273	-0.471	0.376	-1.254
	LG_T	0.158	39	0.015	0.717	0.378	1.897	-0.105	0.741	-0.141
Information diffusion	N-LG_T	0.048	165	.200**	-0.163	0.189	-0.865	-0.364	0.376	-0.968
	LG_T	0.087	39	.200**	-0.462	0.378	-1.221	0.155	0.741	0.210
Resource allocation	N-LG_T	0.060	165	.200**	0.482	0.189	2.548	0.040	0.376	0.106
	LG_T	0.093	39	.200**	-0.201	0.378	-0.531	-0.228	0.741	-0.308
Mentoring	N-LG_T	0.086	165	0.005	0.666	0.189	3.522	0.280	0.376	0.745
	LG_T	0.087	39	.200**	-0.061	0.378	-0.161	-0.186	0.741	-0.251
Strategy implementation	N-LG_T	0.030	165	.200**	-0.089	0.189	-0.472	0.370	0.376	0.984
	LG_T	0.105	39	.200**	0.284	0.378	0.752	-0.836	0.741	-1.128
Strategy regeneration	N-LG_T	0.044	165	.200**	0.229	0.189	1.213	1.280	0.376	3.406
	LG_T	0.114	39	.200**	0.984	0.378	2.602	1.940	0.741	2.619

* Lilliefors Significance Correction

** This is a lower bound of the true significance.

*** N-LG_T = Non-long tenure group / LG_T = Long tenure group

Tests of Normality for High Experienced and Non-High Experienced CEOs in Output Functions										
Routines	Subgroup***	Kolmogorov-Smirnov*			Skewness			Kurtosis		
		Statistic	df	Sig.	Statistic	SE	Z-Skew	Statistic	SE	Z-kurt
Environment scanning	N-HI_Exp	0.050	150	.200**	0.296	0.198	1.497	-0.336	0.394	-0.853
	HI_Exp	0.102	32	.200**	0.032	0.414	0.076	-0.003	0.809	-0.004
Information diffusion	N-HI_Exp	0.038	150	.200**	-0.137	0.198	-0.692	-0.439	0.394	-1.114
	HI_Exp	0.080	32	.200**	-0.199	0.414	-0.479	-0.050	0.809	-0.062
Resource allocation	N-HI_Exp	0.062	150	.200**	0.463	0.198	2.337	-0.083	0.394	-0.212
	HI_Exp	0.087	32	.200**	0.812	0.414	1.960	1.432	0.809	1.769
Mentoring	N-HI_Exp	0.086	150	0.009	0.702	0.198	3.547	0.320	0.394	0.814
	HI_Exp	0.096	32	.200**	-0.283	0.414	-0.682	-0.365	0.809	-0.451
Strategy implementation	N-HI_Exp	0.025	150	.200**	-0.026	0.198	-0.131	0.209	0.394	0.532
	HI_Exp	0.117	32	.200**	-0.215	0.414	-0.518	0.695	0.809	0.859
Strategy regeneration	N-HI_Exp	0.045	150	.200**	0.372	0.198	1.879	1.112	0.394	2.826
	HI_Exp	0.182	32	0.009	0.009	0.414	0.021	1.126	0.809	1.391

* Lilliefors Significance Correction

** This is a lower bound of the true significance.

***N-HI_Exp = Non-high experienced CEOs in output functions / HI_Exp = High experienced CEOs in output functions

Appendix J(continued)

Tests of Normality for High Experienced and Non-High Experienced CEOs in Throughput Functions										
Routines	Subgroup***	Kolmogorov-Smirnov*			Skewness			Kurtosis		
		Statistic	df	Sig.	Statistic	SE	Z-Skew	Statistic	SE	Z-kurt
Environment scanning	N-HI_Exp	0.039	144	.200**	0.254	0.202	1.255	-0.298	0.401	-0.743
	HI_Exp	0.118	38	.200**	-0.053	0.383	-0.138	-0.281	0.750	-0.375
Information diffusion	N-HI_Exp	0.040	144	.200**	-0.035	0.202	-0.172	-0.343	0.401	-0.854
	HI_Exp	0.121	38	0.172	-0.675	0.383	-1.762	0.085	0.750	0.113
Resource allocation	N-HI_Exp	0.069	144	0.086	0.613	0.202	3.034	0.315	0.401	0.785
	HI_Exp	0.062	38	.200**	0.096	0.383	0.250	-0.597	0.750	-0.796
Mentoring	N-HI_Exp	0.085	144	0.013	0.602	0.202	2.979	0.099	0.401	0.248
	HI_Exp	0.087	38	.200**	0.322	0.383	0.842	0.477	0.750	0.636
Strategy implementation	N-HI_Exp	0.033	144	.200**	-0.076	0.202	-0.374	0.494	0.401	1.231
	HI_Exp	0.104	38	.200**	0.078	0.383	0.203	-0.883	0.750	-1.178
Strategy regeneration	N-HI_Exp	0.050	144	.200**	0.336	0.202	1.662	0.115	0.383	0.300
	HI_Exp	0.100	38	.200**	1.340	0.401	3.339	0.553	0.750	0.738

* Lilliefors Significance Correction

** This is a lower bound of the true significance.

***N-HI_Exp = Non-high experienced CEOs in throughput functions / HI_Exp = High experienced CEOs in throughput functions

Tests of Normality for CEOs with and with no Higher Education Degree										
Routines	Subgroup***	Kolmogorov-Smirnov*			Skewness			Kurtosis		
		Statistic	df	Sig.	Statistic	SE	Z-Skew	Statistic	SE	Z-kurt
Environment scanning	HI_ED	0.049	188	.200**	0.199	0.177	1.121	-0.392	0.353	-1.110
	N-HI_ED	0.202	18	0.051	1.284	0.536	2.394	2.036	1.038	1.962
Information diffusion	HI_ED	0.039	188	.200**	-0.168	0.177	-0.950	-0.337	0.353	-0.955
	N-HI_ED	0.137	18	.200**	-0.573	0.536	-1.069	-0.304	1.038	-0.293
Resource allocation	HI_ED	0.054	188	.200**	0.354	0.177	1.997	-0.090	0.353	-0.254
	N-HI_ED	0.186	18	0.098	0.866	0.536	1.615	1.163	1.038	1.120
Mentoring	HI_ED	0.078	188	0.007	0.533	0.177	3.006	0.165	0.353	0.468
	N-HI_ED	0.098	18	.200**	0.541	0.536	1.009	0.155	1.038	0.149
Strategy implementation	HI_ED	0.039	188	.200**	-0.037	0.177	-0.207	0.231	0.353	0.655
	N-HI_ED	0.116	18	.200**	0.213	0.536	0.397	-0.704	1.038	-0.679
Strategy regeneration	HI_ED	0.037	188	.200**	0.294	0.177	1.656	0.927	0.353	2.627
	N-HI_ED	0.153	18	.200**	0.371	0.536	0.692	0.673	1.038	0.648

* Lilliefors Significance Correction

** This is a lower bound of the true significance.

*** NI_ED = Higher education degree / N-HI_ED = No higher education degree

Tests of Normality for CEOs from the Prospector subgroup										
Routines	Kolmogorov-Smirnov*			Skewness			Kurtosis			
	Statistic	df	Sig.	Statistic	SE	Z-Skew	Statistic	SE	Z-kurt	
Environment scanning	0.072	63	.200**	0.151	0.302	0.502	-0.530	0.595	-0.891	
Information diffusion	0.076	63	.200**	-0.096	0.302	-0.319	-0.660	0.595	-1.110	
Resource allocation	0.078	63	.200**	0.263	0.302	0.871	-0.570	0.595	-0.958	
Mentoring	0.101	63	0.178	0.740	0.302	2.454	0.186	0.595	0.313	
Strategy implementation	0.075	63	.200**	-0.455	0.302	-1.510	1.063	0.595	1.787	
Strategy regeneration	0.081	63	.200**	0.708	0.302	2.348	1.214	0.595	2.041	

* Lilliefors Significance Correction

** This is a lower bound of the true significance.

Appendix J.....(continued)

Tests of Normality for CEOs from the Analyzer subgroup									
Routines	Kolmogorov-Smirnov*			Skewness			Kurtosis		
	Statistic	df	Sig.	Statistic	SE	Z-Skew	Statistic	SE	Z-kurt
Environment scanning	0.134	66	0.005	0.332	0.295	1.124	-0.040	0.582	-0.068
Information diffusion	0.077	66	.200**	-0.369	0.295	-1.250	-0.083	0.582	-0.143
Resource allocation	0.064	66	.200**	0.358	0.295	1.215	1.324	0.582	2.275
Mentoring	0.070	66	.200**	0.451	0.295	1.529	0.235	0.582	0.403
Strategy implementation	0.062	66	.200**	-0.023	0.295	-0.077	-0.565	0.582	-0.971
Strategy regeneration	0.091	66	.200**	0.701	0.295	2.375	3.028	0.582	5.202

* Lilliefors Significance Correction

** This is a lower bound

Tests of Normality for CEOs from the Defender subgroup									
Routines	Kolmogorov-Smirnov*			Skewness			Kurtosis		
	Statistic	df	Sig.	Statistic	SE	Z-Skew	Statistic	SE	Z-kurt
Environment scanning	0.065	77	.200**	0.239	0.274	0.872	-0.196	0.541	-0.363
Information diffusion	0.073	77	.200**	-0.149	0.274	-0.545	-0.157	0.541	-0.290
Resource allocation	0.077	77	.200**	0.633	0.274	2.311	0.159	0.541	0.293
Mentoring	0.071	77	.200**	0.373	0.274	1.362	-0.193	0.541	-0.356
Strategy implementation	0.053	77	.200**	0.122	0.274	0.444	0.003	0.541	0.005
Strategy regeneration	0.071	77	.200**	-0.114	0.274	-0.416	0.222	0.541	0.409

* Lilliefors Significance Correction

** This is a lower bound of the true significance.

Tests of Normality for Low Performer and Non-Low Performer Organizations										
Routines	Subgroup***	Kolmogorov-Smirnov*			Skewness			Kurtosis		
		Statistic	df	Sig.	Statistic	SE	Z-Skew	Statistic	SE	Z-kurt
Environment scanning	N-Low_Perf	0.048	162	.200**	0.119	0.191	0.623	-0.424	0.379	-1.118
	Low_Perf	0.096	44	.200**	0.479	0.357	1.340	0.683	0.702	0.973
Information diffusion	N-Low_Perf	0.039	162	.200**	-0.183	0.191	-0.962	-0.290	0.379	-0.764
	Low_Perf	0.094	44	.200**	-0.239	0.357	-0.669	-0.538	0.702	-0.767
Resource allocation	N-Low_Perf	0.049	162	.200**	0.514	0.191	2.698	0.315	0.379	0.831
	Low_Perf	0.093	44	.200**	0.190	0.357	0.530	-0.538	0.702	-0.767
Mentoring	N-Low_Perf	0.081	162	0.011	0.548	0.191	2.874	0.114	0.379	0.302
	Low_Perf	0.070	44	.200**	0.333	0.357	0.931	-0.048	0.702	-0.069
Strategy implementation	N-Low_Perf	0.046	162	.200**	0.094	0.191	0.495	0.226	0.379	0.596
	Low_Perf	0.099	44	.200**	-0.305	0.357	-0.854	-0.190	0.702	-0.270
Strategy regeneration	N-Low_Perf	0.028	162	.200**	-0.079	0.191	-0.414	0.280	0.379	0.738
	Low_Perf	0.154	44	0.010	0.987	0.357	2.762	1.867	0.702	2.660

* Lilliefors Significance Correction

** This is a lower bound of the true significance.

*** N-Low_Perf = Non-low performer organizations / Low_Perf = Low performer organizations

Tests of Normality for Top Performer and Non-Top Performer Organizations										
Routines	Subgroup***	Kolmogorov-Smirnov*			Skewness			Kurtosis		
		Statistic	df	Sig.	Statistic	SE	Z-Skew	Statistic	SE	Z-kurt
Environment scanning	N-Top_Perf	0.065	163	0.085	0.360	0.190	1.892	-0.040	0.378	-0.105
	Top_Perf	0.086	43	.200**	-0.456	0.361	-1.263	-0.210	0.709	-0.296
Information diffusion	N-Top_Perf	0.056	163	.200**	-0.163	0.190	-0.855	-0.304	0.378	-0.805
	Top_Perf	0.091	43	.200**	-0.325	0.361	-0.899	-0.343	0.709	-0.484
Resource allocation	N-Top_Perf	0.063	163	.200**	0.516	0.190	2.715	0.224	0.378	0.593
	Top_Perf	0.085	43	.200**	0.006	0.361	0.016	-0.350	0.709	-0.493
Mentoring	N-Top_Perf	0.070	163	0.052	0.504	0.190	2.653	0.069	0.378	0.182
	Top_Perf	0.136	43	0.044	0.703	0.361	1.944	0.564	0.709	0.796
Strategy implementation	N-Top_Perf	0.035	163	.200**	-0.012	0.190	-0.062	0.080	0.378	0.211
	Top_Perf	0.089	43	.200**	-0.125	0.361	-0.347	1.051	0.709	1.482
Strategy regeneration	N-Top_Perf	0.080	163	0.012	0.548	0.190	2.883	2.012	0.378	5.321
	Top_Perf	0.082	43	.200**	-0.027	0.361	-0.075	-0.456	0.709	-0.643

* Lilliefors Significance Correction

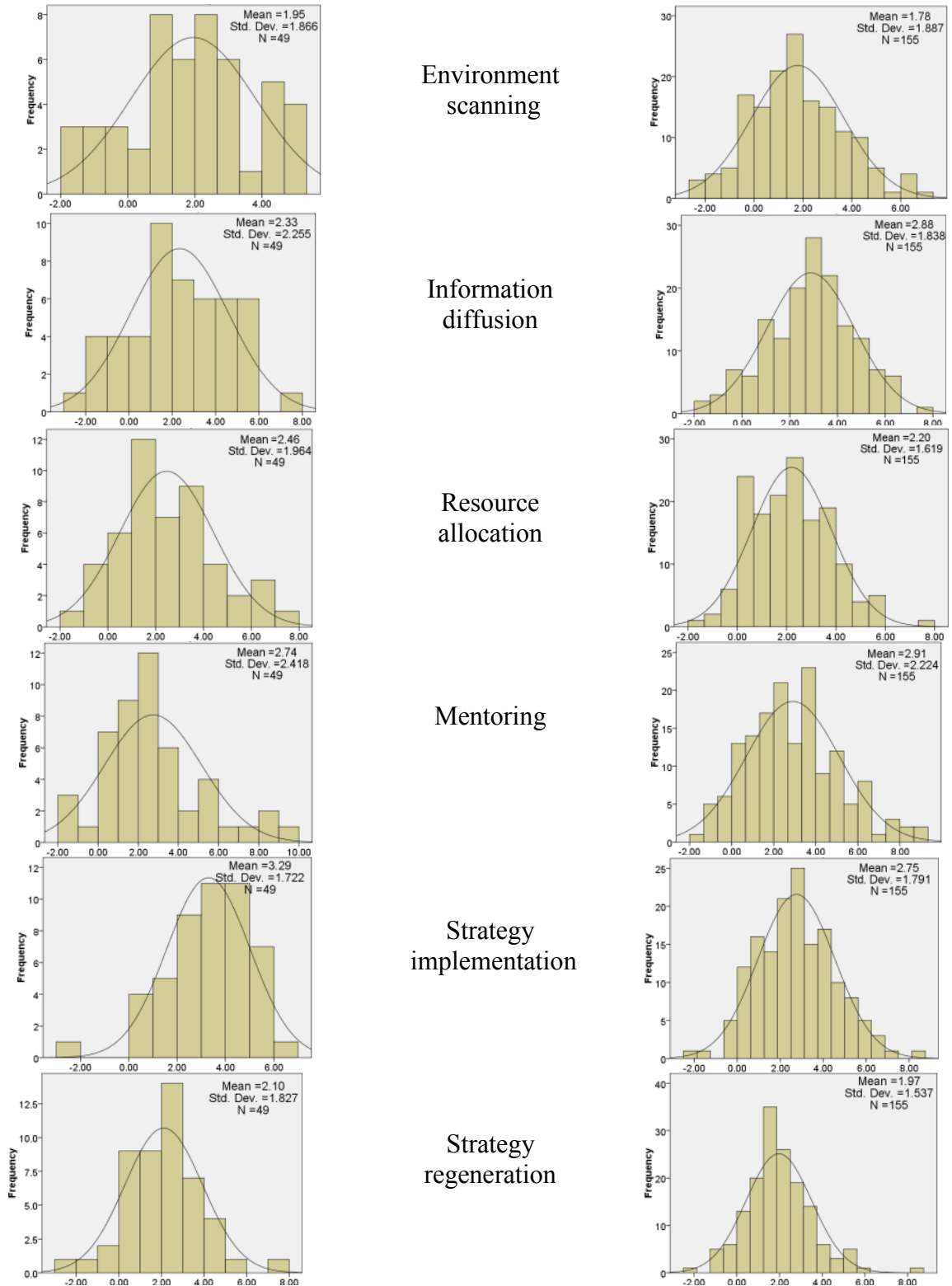
** This is a lower bound of the true significance.

*** N-Top_Perf = Non-top performer organizations / Top_Perf = Top performer organizations

Frequency histograms for tenure based subgroups.

Short Tenure Group

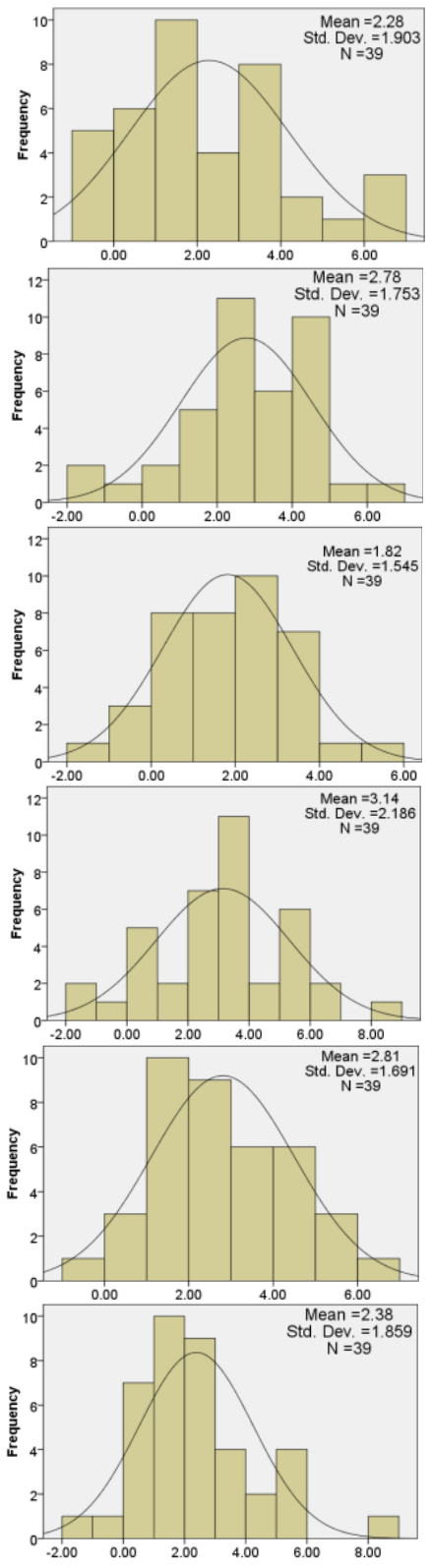
Non-Short Tenure Group



Frequency histograms for tenure based subgroups.

Long Tenure Group

Non-Long Tenure Group



Environment scanning

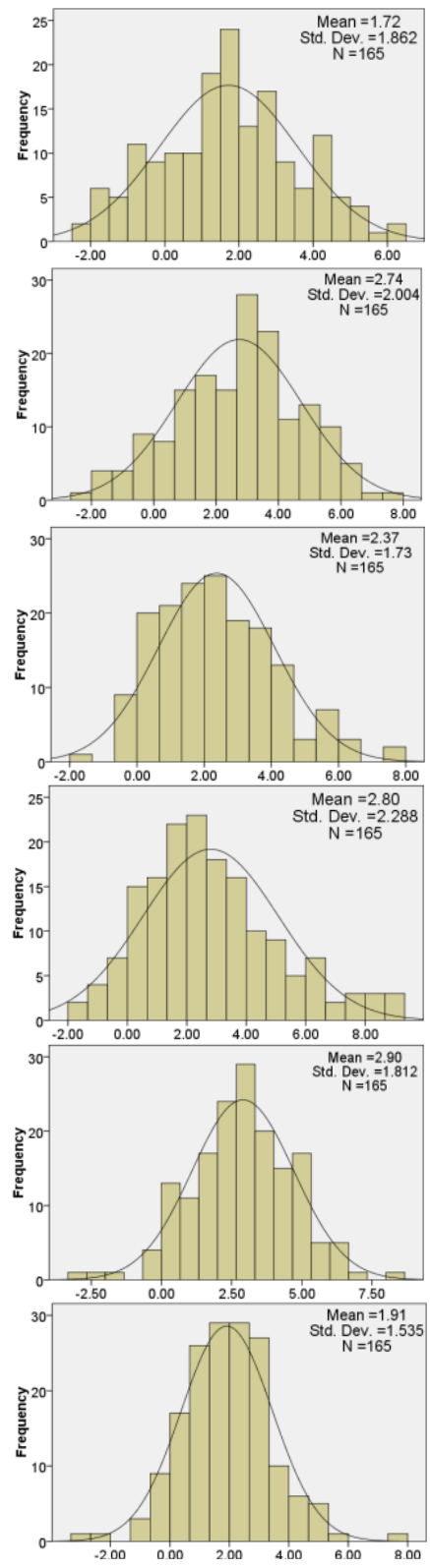
Information diffusion

Resource allocation

Mentoring

Strategy implementation

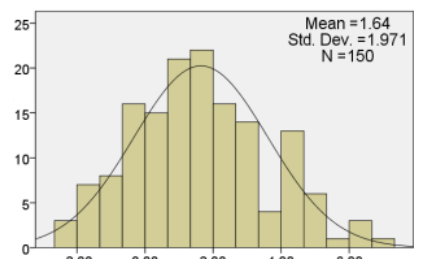
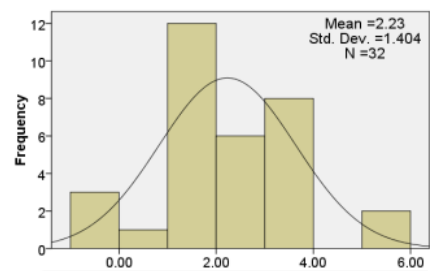
Strategy regeneration



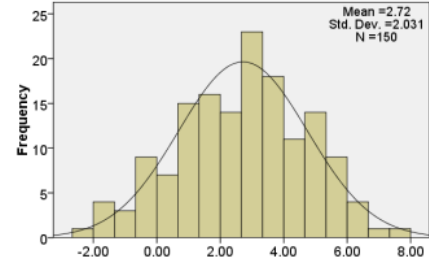
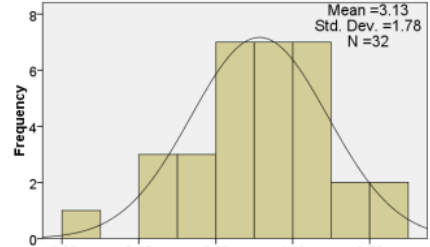
Frequency histograms for output functions experienced subgroups.

High Experienced Group

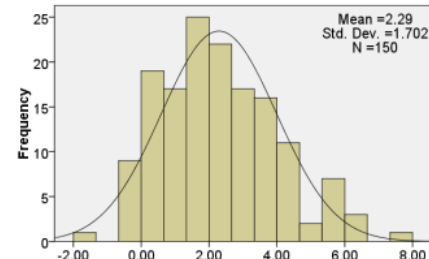
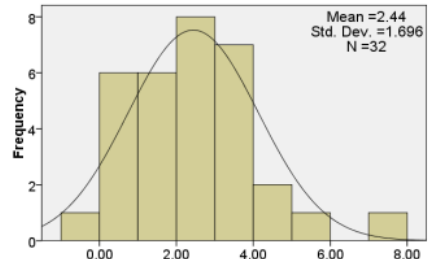
Non-High Experienced Group



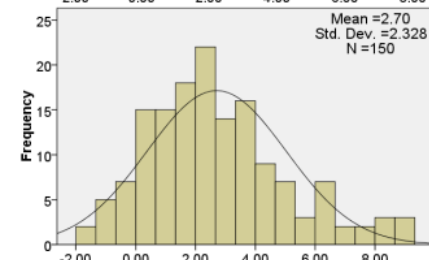
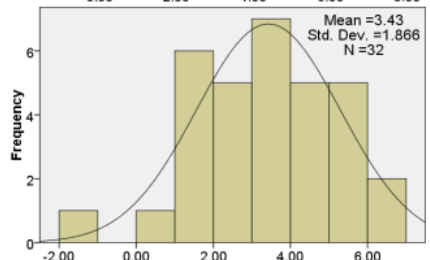
Environment scanning



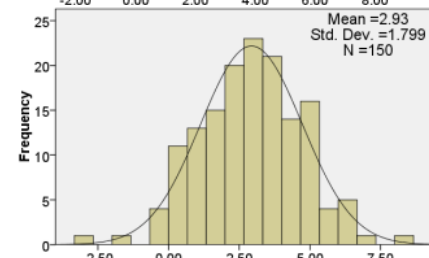
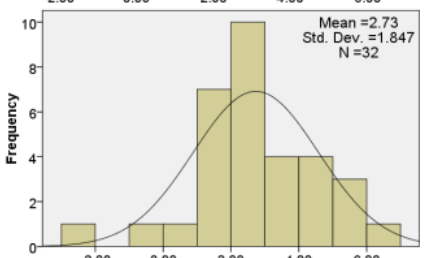
Information diffusion



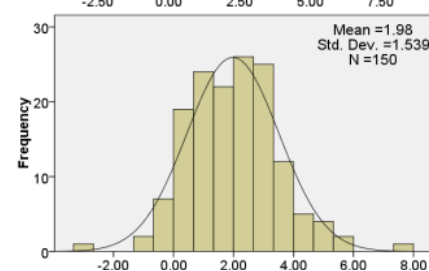
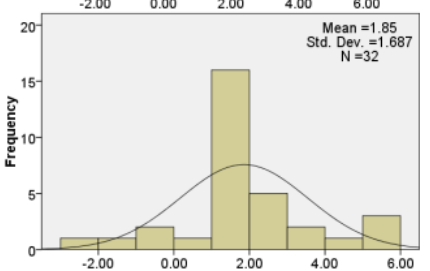
Resource allocation



Mentoring



Strategy implementation

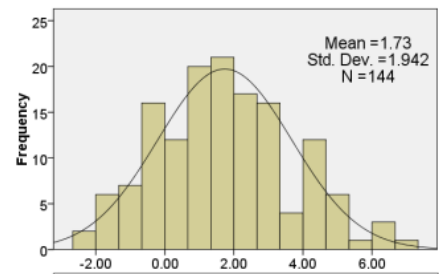
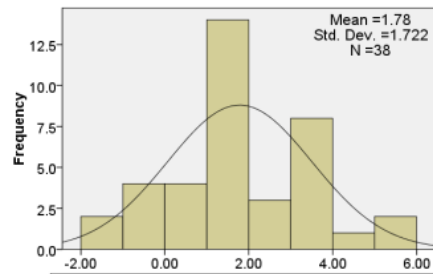


Strategy regeneration

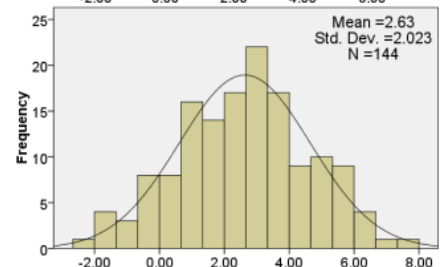
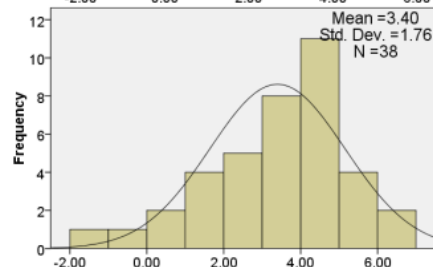
Frequency histograms for throughput functions experienced subgroups.

High Experienced Group

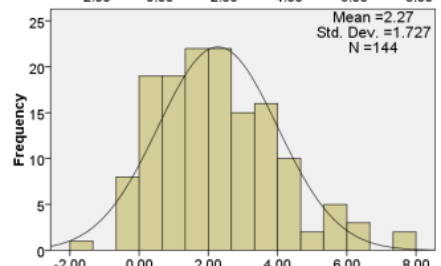
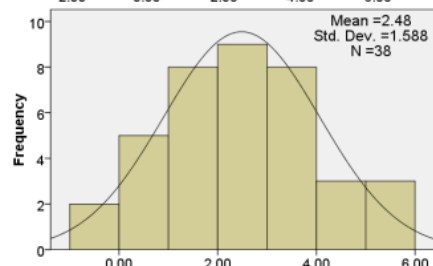
Non-High Experienced Group



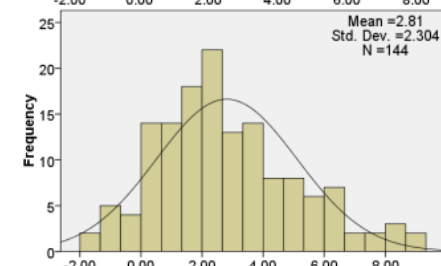
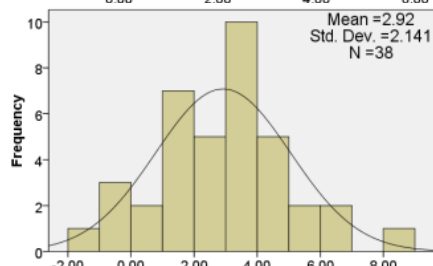
Environment scanning



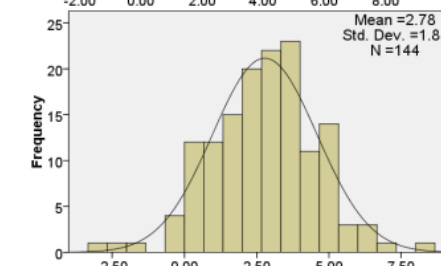
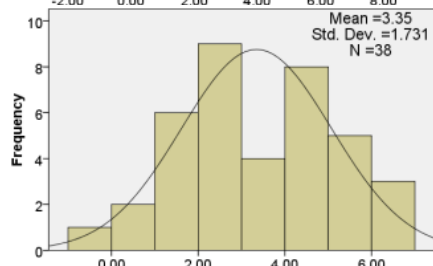
Information diffusion



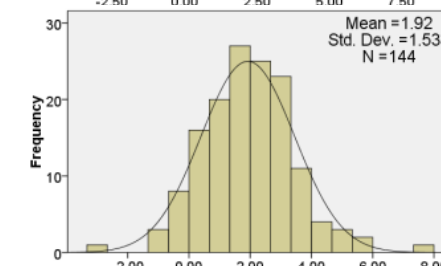
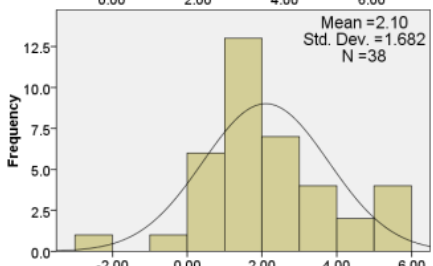
Resource allocation



Mentoring



Strategy implementation

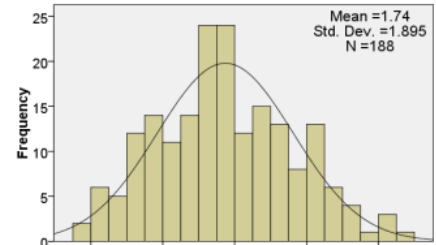
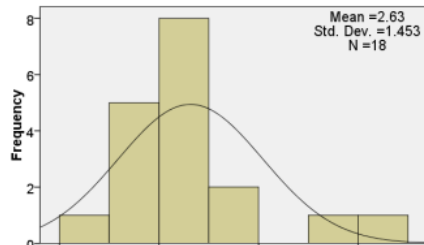


Strategy regeneration

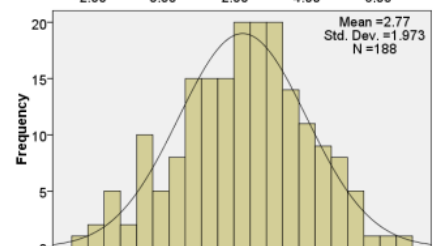
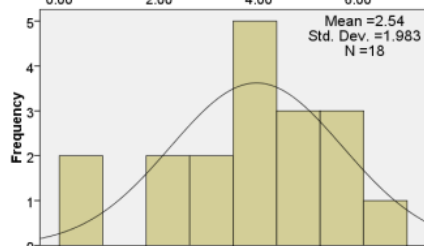
Frequency histograms for education level subgroups.

Group: No higher education degree

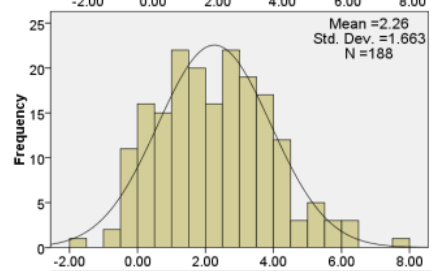
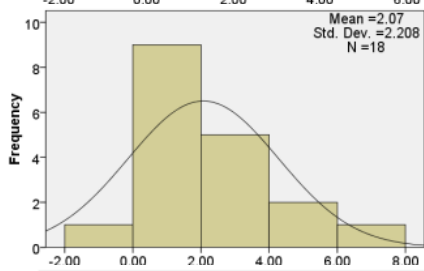
Group: Higher education degree



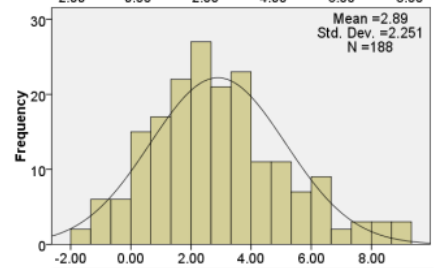
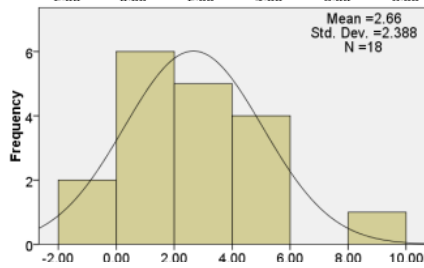
Environment scanning



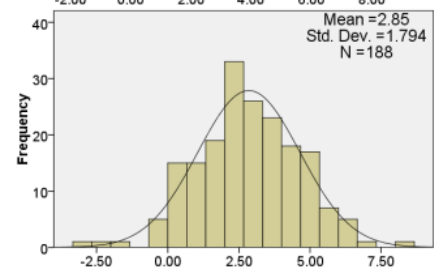
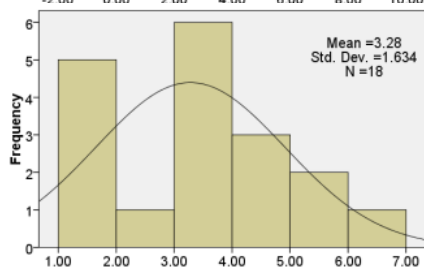
Information diffusion



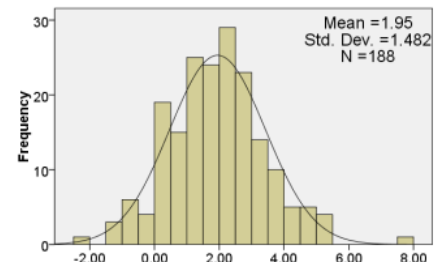
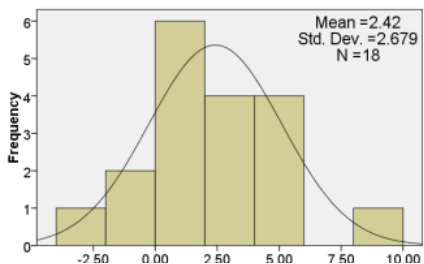
Resource allocation



Mentoring

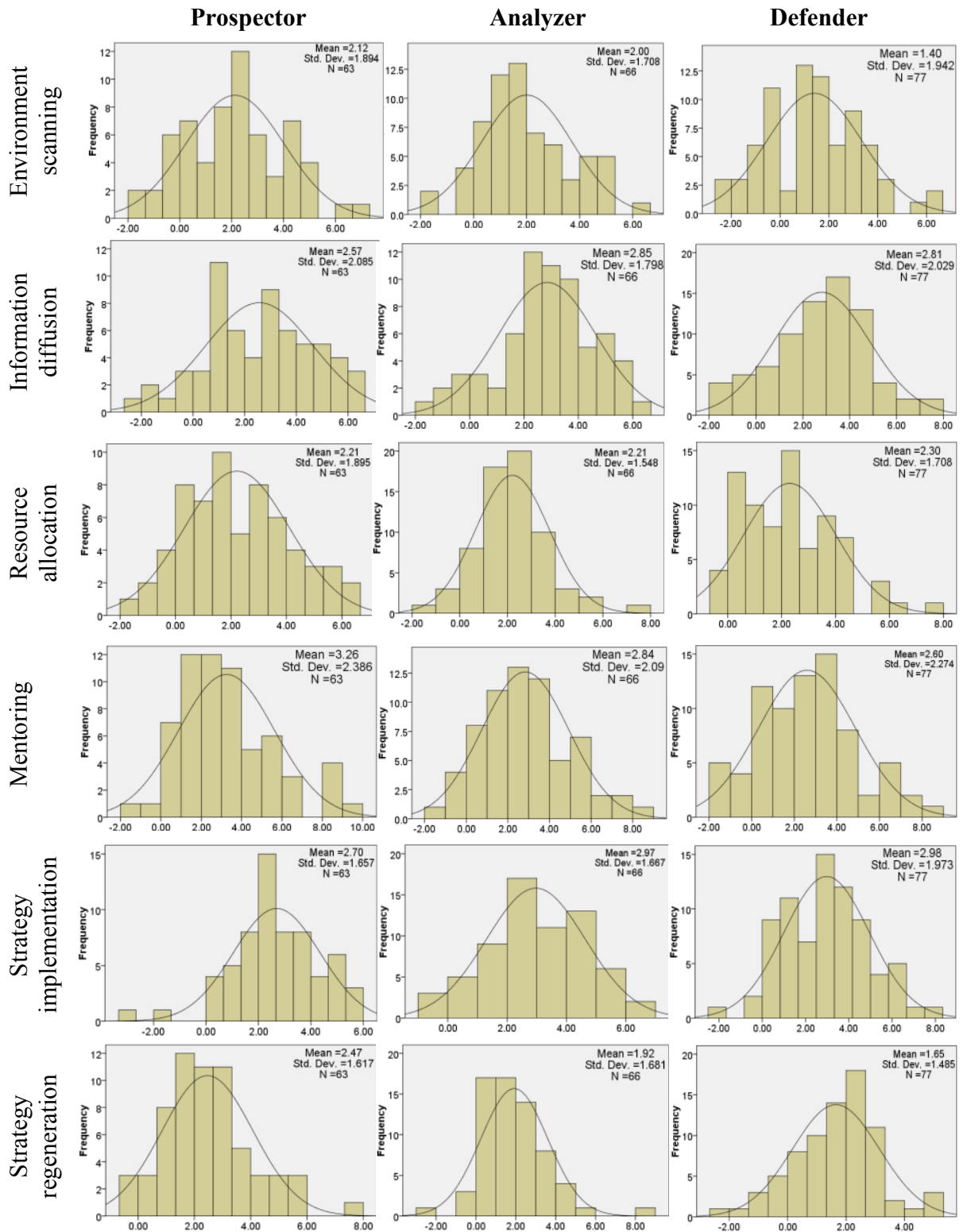


Strategy implementation



Strategy regeneration

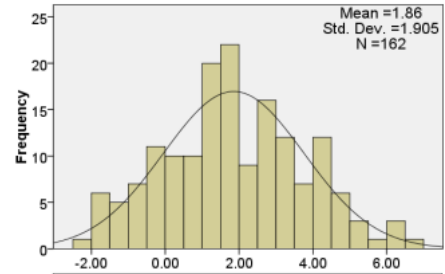
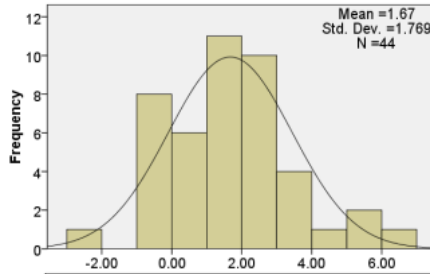
Frequency histograms for strategy subgroups



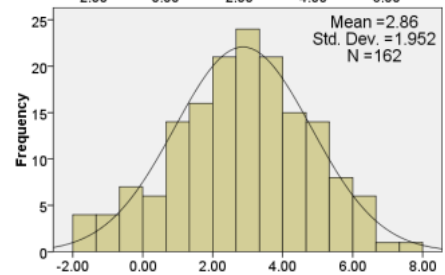
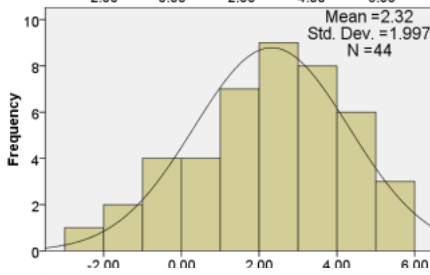
Frequency histograms for performance based subgroups.

Low Performers

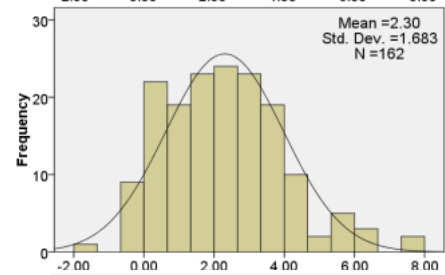
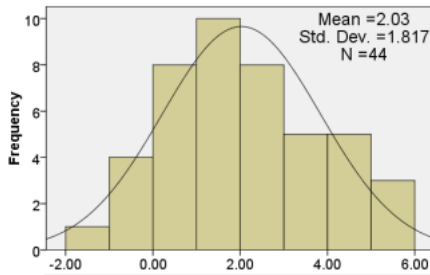
Non-Low Performers



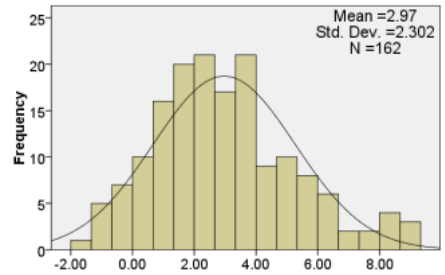
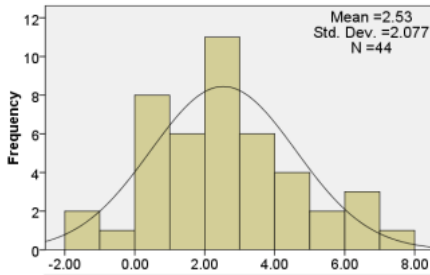
Environment scanning



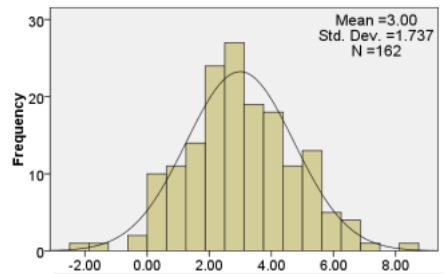
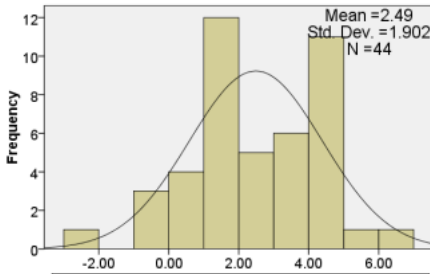
Information diffusion



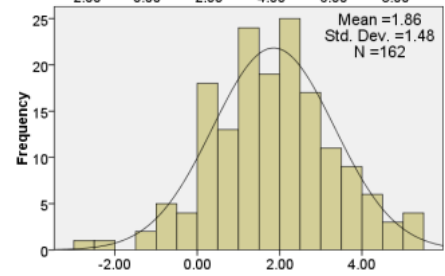
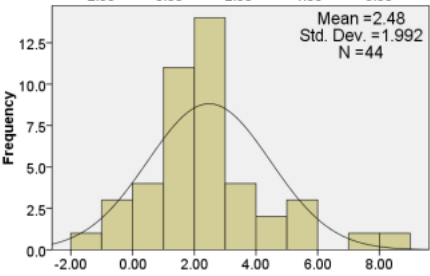
Resource allocation



Mentoring



Strategy implementation

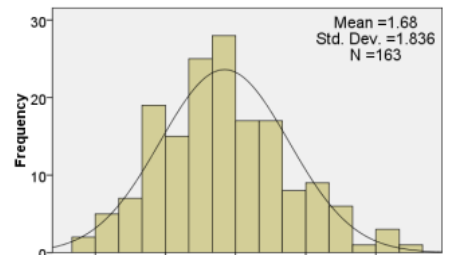
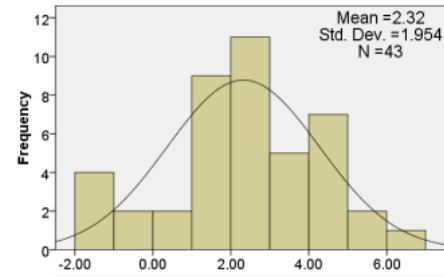


Strategy regeneration

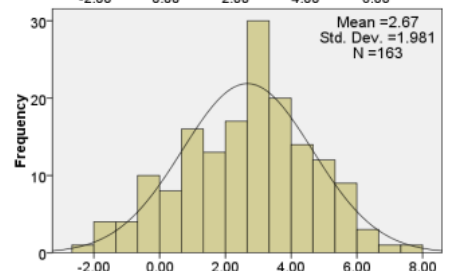
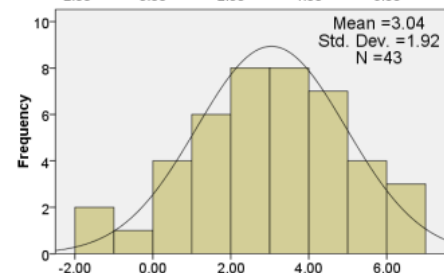
Frequency histograms for performance based subgroups.

Top Performers

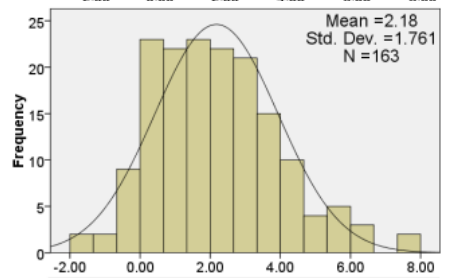
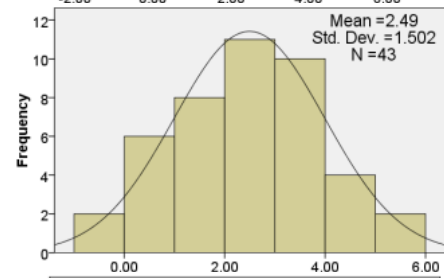
Non-Top Performers



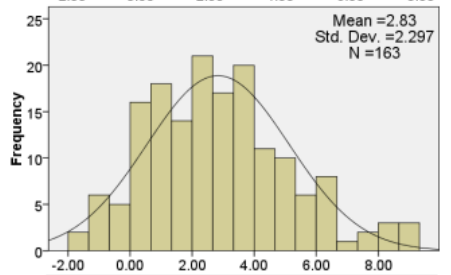
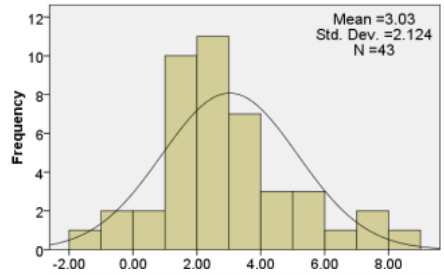
Environment scanning



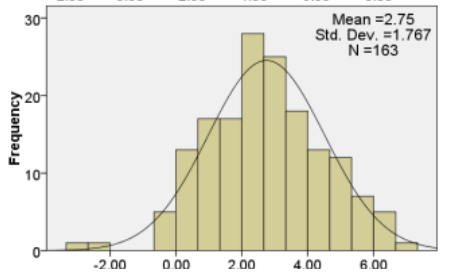
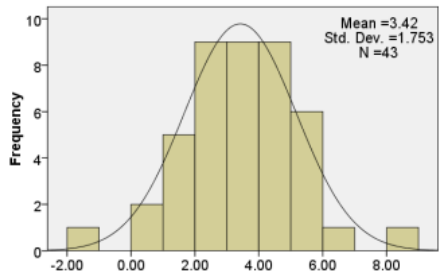
Information diffusion



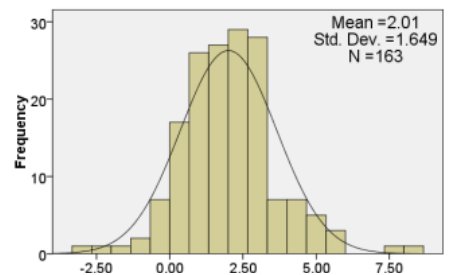
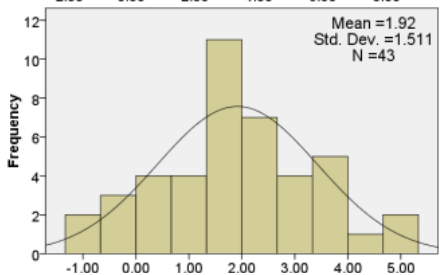
Resource allocation



Mentoring



Strategy implementation



Strategy regeneration

Appendix L

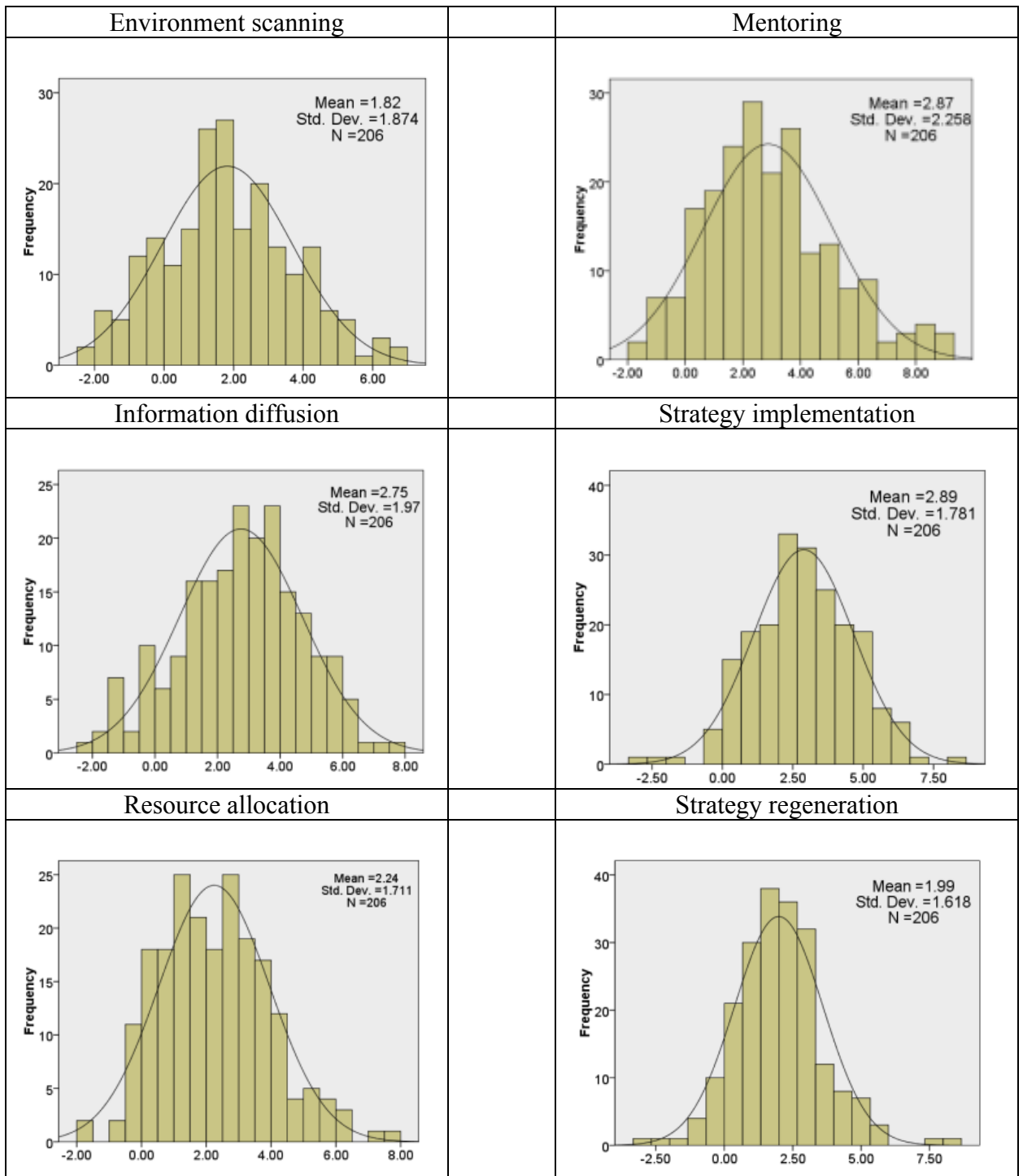
Normality assumption: K-S test, and skewness and kurtosis statistics
for the overall sample

Routines	Kolmogorov-Smirnov ^a			Skewness		Kurtosis	
	Statistic	df	Sig.	Statistic	SE	Statistic	SE
Environment scanning	.044	206	.200*	.187	.169	-.280	.337
Information diffusion	.044	206	.200*	-.197	.169	-.340	.337
Resource allocation	.055	206	.200*	.417	.169	.110	.337
Mentoring	.076	206	.006	.527	.169	.129	.337
Strategy implementation	.031	206	.200*	-.033	.169	.188	.337
Strategy regeneration	.056	206	.200*	.458	.169	1.654	.337

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Appendix M Normality assumption: histograms for the overall sample



Appendix N Homogeneity assumption: Levene's test for all groups of study

Test of Homogeneity of Variance* for Short Tenured and Non-Short Tenured CEOs				
	Levene Statistic	df1	df2	Sig.
Environment scanning	.007	1	202	.933
Information diffusion	4.347	1	202	.038
Resource allocation	2.103	1	202	.149
Mentoring	.000	1	202	.990
Strategy Implementation	.211	1	202	.646
Strategy regeneration	1.916	1	202	.168

* Based on the mean

Test of Homogeneity of Variance* for Long Tenured and Non-Long Tenured CEOs				
	Levene Statistic	df1	df2	Sig.
Environment scanning	.215	1	202	.643
Information diffusion	1.083	1	202	.299
Resource allocation	.481	1	202	.489
Mentoring	.066	1	202	.797
Strategy Implementation	.000	1	202	.998
Strategy regeneration	1.042	1	202	.309

* Based on the mean

Test of Homogeneity of Variance* for High Experienced and Non-High Experienced CEOs in Output Functions				
	Levene Statistic	df1	df2	Sig.
Environment scanning	4.170	1	180	.043
Information diffusion	1.122	1	180	.291
Resource allocation	.119	1	180	.730
Mentoring	1.072	1	180	.302
Strategy implementation	.024	1	180	.877
Strategy regeneration	.199	1	180	.656

* Based on the mean

Test of Homogeneity of Variance* for High Experienced and Non-High Experienced CEOs in Throughput Functions				
	Levene Statistic	df1	df2	Sig.
Environment scanning	1.034	1	180	.311
Information diffusion	1.060	1	180	.305
Resource allocation	.269	1	180	.604
Mentoring	.271	1	180	.603
Strategy implementation	.119	1	180	.730
Strategy regeneration	.217	1	180	.642

* Based on the mean

Test of Homogeneity of Variance* for CEOs with and with no Higher Education Degree				
	Levene Statistic	df1	df2	Sig.
Environment scanning	3.210	1	204	.075
Information diffusion	.004	1	204	.950
Resource allocation	1.178	1	204	.279
Mentoring	.183	1	204	.669
Strategy implementation	.191	1	204	.663
Strategy regeneration	10.365	1	204	.001

* Based on the mean

Appendix N(continued)

Test of Homogeneity of Variance* for CEOs from Prospector and Non-Prospector Organizations				
	Levene Statistic	df1	df2	Sig.
Environment scanning	.291	1	204	.590
Information diffusion	1.538	1	204	.216
Resource allocation	3.094	1	204	.080
Mentoring	.488	1	204	.485
Strategy implementation	1.888	1	204	.171
Strategy regeneration	.037	1	204	.848

* Based on the mean

Test of Homogeneity of Variance* for CEOs from Analyzer and Non-Analyzer Organizations				
	Levene Statistic	df1	df2	Sig.
Environment scanning	1.659	1	204	.199
Information diffusion	2.197	1	204	.140
Resource allocation	3.291	1	204	.071
Mentoring	1.123	1	204	.291
Strategy implementation	.244	1	204	.622
Strategy regeneration	.044	1	204	.834

* Based on the mean

Test of Homogeneity of Variance* for CEOs from Defender and Non-Defender Organizations				
	Levene Statistic	df1	df2	Sig.
Environment scanning	.411	1	204	.522
Information diffusion	.048	1	204	.828
Resource allocation	.006	1	204	.937
Mentoring	.097	1	204	.756
Strategy implementation	2.695	1	204	.102
Strategy regeneration	.534	1	204	.466

* Based on the mean

Test of Homogeneity of Variance* for Low Performer and Non-Low Performer Organizations				
	Levene Statistic	df1	df2	Sig.
Environment scanning	1.015	1	204	.315
Information diffusion	.137	1	204	.712
Resource allocation	.769	1	204	.381
Mentoring	.717	1	204	.398
Strategy implementation	1.718	1	204	.191
Strategy regeneration	1.949	1	204	.164

* Based on the mean

Test of Homogeneity of Variance* for Top Performer and Non-Top Performer Organizations				
	Levene Statistic	df1	df2	Sig.
Environment scanning	.211	1	204	.647
Information diffusion	.003	1	204	.959
Resource allocation	1.603	1	204	.207
Mentoring	.705	1	204	.402
Strategy implementation	.041	1	204	.839
Strategy regeneration	.055	1	204	.815

* Based on the mean

Appendix O Correlation matrix for the variables of study

		Correlation matrix															
		Short tenure	Long tenure	Output experience	Throughput experience	Less years formal educ.	Prospector	Analyzer	Defenders	Low performer (a)	Top performer	Environment Scanning	Information diffusion	Resource allocation	Mentoring	Strategy implement.	Strategy regeneration
Short tenure	1.000																
Long tenure	-.273***	1.000															
Output experience	-.237***	.378***	1.000														
Throughput experience	-.176**	.135*	.402***	1.000													
Less years of formal educ.	-.094	.069	.152**	.120*	1.000												
Prospector	.102	.004	-.031	-.080	.056	1.000											
Analyzer	.028	.090	-.042	.020	-.102	-.456***	1.000										
Defender	-.125*	-.091	.069	.054	.045	-.513***	-.530***	1.000									
Low performer	.026	.153**	-.079	-.148**	.048	.040	-.079	.038	1.000								
Top performer	.075	-.098	.138*	.054	.053	-.030	-.020	.048	-.268***	1.000							
Environment scanning	.038	.118*	.119*	.011	0.135**	.109	.069	-.170**	-.040	.139**	1.000						
Information diffusion	-.119*	.008	.080	.157**	-.033	-.061	.036	.023	.114*	.077	-.027	1.000					
Resource allocation	.065	.128*	.033	.050	-.032	-.012	-.014	.025	-.066	.075	-.009	.080	1.000				
Mentoring	-.032	.059	.122*	.020	-.029	0.113*	-.012	-.096	-.080	.035	.041	-.017	-.009	1.000			
Strategy implementatio	.130*	-.021	-.042	.128*	.068	-.072	.031	.038	.117*	.154**	-.037	-.032	.015	.000	1.000		
Strategy regeneration	.036	.115*	-.031	.047	.083	.196***	-.028	-.160**	.121*	-.023	-.080	-.049	-.057	.009	.007	1.000	

*, Correlation is significant at the 0.1 level (2-tailed).

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

***, Correlation is significant at the 0.01 level (2-tailed).

a = for the correlation between the performer based group and strategy regeneration routine the Spearman correlation coefficient is reported