

**Top Management Team Diversity and Firm
Performance: The Effects of Team Orientation
and Process**

“A Study of Australian SMEs”

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DECLARATION OF ORIGINALITY OF RESEARCH

I certify that the research described in this dissertation has not already been submitted for any other degree.

I certify that to the best of my knowledge all sources used and any help received in the preparation of this dissertation have been acknowledged.

Signature.....

DEDICATIONS

To my family; mother Mahin, brothers Hamid & Saeed, and sister Fariba who have always been there for me. I wouldn't have made it without their unconditional love, incredible support, and endless encouragement. Thanks so much for sticking with me in thick and thin.

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LIST OF ABBREVIATIONS

Abbreviation	Description
ABS	Australia Bureau of Statistics
AGFI	Adjusted Goodness of Fit Index
AMOS	Analysis of Momentum Structures
ANOVA	Analysis of Variance
ANZSIC	Australian and New Zealand Standard Industry Classification
ASV	Average Shared Squared Variance
AVE	Average Variance Extracted
BI	Behavioral Integration
CAQDS	Computer-Assisted Qualitative Data Analysis Software
CEO	Chief Executive Officer
CFA	Confirmatory Factor Analysis
CoVs	Coefficients of Variation
CR	Composite Reliability
EM	Expectation-Maximization method
EO	Entrepreneurial Orientation
FIML	Full Information Maximum Likelihood method
GFI	Goodness of Fit Index
IBM	International Business Machines Corporation
ICC	Intra-class Correlation Coefficient
IFI	Incremental Fit Index
INN	Innovativeness
IRA	Inter-rater Agreement
IRR	Inter-rater Reliability
IT	Information Technology
MAR	Missing At Random
MBA	Master of Business Administration
Mc	Constrained Model
MCAR	Missing Completely At Random
METAE	Metacognitive Experience
METAK	Metacognitive Knowledge
MGED	Metacognitive Experience Diversity
MGKD	Metacognitive Knowledge Diversity
MGSM	Macquarie Graduate School of Management
Mn	Null Model
MO	Market Orientation

Ms	Saturated Model
MSV	Maximum Shared Squared Variance
Mt	Theoretical Model
Mu	Unconstrained Alternative Model
NSW	New South Wales
NT	Northern Territory
PRO	Proactiveness
QLD	Queensland
R&D	Research and Development
RISK	Risk Taking
RMSEA	Root-Mean-Square Error of Approximation
ROA	Return on Asset
ROE	Return on Equity
ROI	Return on Interest
SA	Southern Australia
S-as-P	Strategy-as-Practice
SCDTs	Sequential Chi-Square Difference Tests
SEM	Structural Equation Modeling
SME	Small to Medium-sized Enterprise
SPSS	Statistical Package for Social Sciences
TAFE	Technical And Further Education
TLI	Tucker-Lewis Index
TMT	Top Management Team
UK	United Kingdom
US	United States
WA	Western Australia

PUBLICATIONS BASED ON THIS RESEARCH

Peer-Reviewed Conference Papers

Sadeghinejad, Z., and Najmaei, A. (2013) “Top Management Team Entrepreneurial Behavior: Insights from Team Process”, under Review for presentation at the 27th Australia and New Zealand Academy of Management Conference.

Sadeghinejad, Z., and Najmaei, A. (2012) “Towards a Metacognitive view of Strategic Choice”, proceedings of the 26th Australia and New Zealand Academy of Management Conference.

Sadeghinejad, Z., and Najmaei, A. (2010) “Research Design in Upper Echelons Theory: A Philosophical Analysis”, paper presented at the ASCPRI Social Science Methodology Conference, university of Sydney, Sydney, Australia, November 2010.

Working Papers

Sadeghinejad, Z., (2013). Top Management Team Diversity and Firm Performance: New Insights from Metacognition (August 1, 2013). Available at SSRN: <http://ssrn.com/abstract=2304629>

Sadeghinejad, Z., (2013). An Analytical Review of the Research on Upper Echelons Theory (August 1, 2013). Available at SSRN: <http://ssrn.com/abstract=2304623>

Sadeghinejad, Z., (2013). How Does Metacognition Matter in the Behavior of Chief Marketing Executives? (August 1, 2013). Available at SSRN: <http://ssrn.com/abstract=2304625>

ABSTRACT

Previous research on the relationship between top management team (TMT) diversity and firm performance has reported inconsistent findings. Following scholars' suggestions and in an attempt to provide a better understanding of the role of TMT diversity, this study examines a relatively new aspect of managerial cognition known as "metacognition". It integrates insights from entrepreneurship literature with the upper echelons perspective to introduce the concept of TMT metacognitive diversity to the existing discussion on the TMT diversity-firm performance relationship. To further reveal how and under what conditions TMT metacognitive diversity functions effectively, this study integrates entrepreneurial orientation and TMT behavioral integration as a mediator and moderator respectively.

Eleven hypotheses were developed and tested using the structural equation modeling (SEM). To supplement the survey data, seven semi-structured interviews (two TMTs) were conducted. Based on both the quantitative and qualitative findings, several theoretical and managerial implications were developed.

This research makes a contribution to both upper echelons and entrepreneurship literature. It enriches upper echelons research by going beyond the traditional focus on TMT demographics and directly measuring managerial cognition. It advances the entrepreneurship literature by explaining entrepreneurial initiatives from the upper echelons perspective. Suggestions are made for future research.

-CHAPTER ONE-

INTRODUCTION AND OVERVIEW

1.1 Introduction

In today's complex and competitive business environment, firms cannot rely solely on their Chief Executive Officer's (CEO) capabilities; instead, they rely on the combined capacities of their top managers who shape organizational outcomes as a team (Cannella, Park, and Lee, 2008; Carpenter, Geletkanycz, and Sanders, 2004). Management is a shared activity in which top managers share tasks, and to some extent power, with each other (Hambrick and Mason, 1984). It is, therefore, the collective cognitions and capabilities of the top management team (TMT) which determine the firm's direction (Hambrick, 2007; Knockaert, et al., 2011; West, 2007).

The importance of the TMT and their collective cognitions stems from the theory of upper echelons (Hambrick and Mason, 1984) – this is the idea that top managers' cognition and values as a team influence their interpretation of the situation they confront, and, in turn, their choice making and performance (Hambrick, 2007; Hambrick and Mason, 1984). To further understand this phenomenon, Hambrick and Mason (1984) suggested that a TMT's demographic attributes (e.g. age, functional background, and education) can be used as useful proxies of top managers' cognition and value in light of the difficulties encountered in collecting psychological data.

Since their work in the 1980s there has been a surge of interest in applying upper echelons assumptions. The majority of research has followed Hambrick and Mason's (1984) suggestion of applying demographics as proxies of managerial cognition (Buyl, Boone, and Matthyssens, 2011). Consequently, research has frequently measured

diversity across the different demographic characteristics of top managers as a proxy of cognitive diversity to examine organizational outcomes (Kaplan, 2011; Nielsen, 2010).

TMT demographic diversity refers to the distributional differences among top management team members with respect to their demographics (Bell, et al., 2011). Despite the wide body of research, the findings on the influence of TMT demographic diversity on firm performance have been inconsistent. That is, while positive effects have been observed by some researchers, other studies have found negative or non-significant effects of TMT demographic diversity (Nielsen and Nielsen, 2013; Wei and Wu, 2013).

These inconsistencies have led to two main suggestions for further research which if addressed may result in increased clarity about the role of TMT diversity in firm performance and will further develop the upper echelons model. First, several scholars (e.g. Kaplan, 2011; Qian, Cao, and Takeuchi, 2013 ;Wei and Wu, 2013) have suggested that demographics are not precise approximations of managerial cognition, and therefore the focus should move from demographics to the more direct measure of cognitive attributes. Second, the direct link between diversity and performance cannot reveal the potential impacts of diversity (e.g. van Knippenberg and Schippers, 2007). Rather, this direct relationship requires a broader analysis of the potential mediating and moderating effects (Buyl, et al., 2011a; Talke, Salomo, and Kock, 2011). Mediating variables are important to the understanding of these phenomena as they explain how team diversity converts into firm outcomes (Carmeli, Schaubroeck, and Tishler, 2011) while moderating variables illuminate under what conditions diversity is beneficial or otherwise (Ling and Kellermanns, 2010).

Given these suggestions, recently entrepreneurship scholars (Haynie, Shepherd, and colleagues, 2009, 2010, and 2012) have focused on the concept of metacognition. Metacognition refers to individuals' knowledge of, and control over, their own cognitive

processes (Baron, et al., 2013; Flavell, 1979; Nambisan and Baron, 2012). It differs from cognition in the way that it describes the higher-order cognitive process through which individuals recognize multiple ways of framing a problem or decision task, and consciously consider the alternatives to address a decision task (Haynie and Shepherd, 2009; Haynie, Shepherd, and Patzelt, 2012).

Metacognitive knowledge and metacognitive experience are two main components of metacognitive ability (Flavell, 1979, 1987; Haynie, et al., 2012). Metacognitive knowledge refers to “one’s conscious and cognitive understanding of people, tasks, and strategy” (Flavell, 1987; Haynie, et al., 2010:222), whereas metacognitive experience refers to “one’s conscious experiences that are cognitive and affective in nature” (Flavell, 1987; Mitchell, Shepherd, and Sharfman, 2011:686). Whilst these concepts have been operationalized in the education (e.g. Baker, 1989) and psychology literature (e.g. Batha and Carroll, 2007; Sanna and Schwarz, 2007) they are relatively new in the entrepreneurship and strategic management literature. Recent studies have suggested that metacognitive knowledge and experience play a significant role in both entrepreneurs’ and managers’ decisions and actions (Baron, et al., 2013; Haynie, et al., 2012; Mitchell, et al., 2011).

This study focuses on diversity in TMT members’ metacognitive knowledge and experiences and investigates their impacts on firm performance. Metacognition as a psychological concept which carries with itself the ability to measure an individual’s cognitive process (Haynie and Shepherd, 2009) has the potential to contribute to the upper echelons model and inform its existing literature. This study further addresses the second suggestion of the literature to move beyond the direct link. It examines the mediating role of entrepreneurial orientation and the moderation effects of TMT behavioral integration.

Entrepreneurial orientation reflects a firm's top management's tendency to take calculated risks, be innovative, and exhibit strategic proactiveness (Covin and Slevin, 1989; Zhao, et al., 2011). The dynamic and uncertain nature of entrepreneurial orientation requires managers to rely more on their metacognitive abilities (Haynie, et al., 2012; Nambisan and Baron, 2012). Entrepreneurial orientation has also been shown to have important performance implications (e.g. Alegre and Chiva, 2013; Miller and Le Breton-Miller, 2011). Therefore, entrepreneurial orientation could be considered as the conduit through which TMT metacognitive diversity contributes to firm performance.

TMT behavioral integration reflects the extent to which TMT members engage in mutual and collective interaction (Hambrick, 2007). Such team integration is important because if team members are fragmented, then their composition (e.g. diversity) is of little consequence in their decisions and actions (Hambrick, 2005, 2007). In fact, the upper echelons model's predictive strength has been argued to be dependent on TMT behavioral integration (Hambrick, 2007; Ling and Kellermanns, 2010; Rost and Osterloh, 2010). Accordingly, this study adopts a contingency lens to provide explanations of how the interactive effect of TMT diversity and behavior contributes to a firm's activities and performance.

This study focuses on the top management teams of small to medium-sized enterprises (SMEs). The small and simpler structure of these firms makes the role of the TMT more evident than in large firms (Cao, Simsek, and Zhang, 2010; Ling, et al., 2008). SMEs' top managers are often involved in both the firm's operations and strategies (Cao, et al., 2010; Lubatkin, et al., 2006), thus their decisions and actions impact in a more direct way on a firm's performance. The influence of TMT metacognitive diversity on firm performance, therefore, can be viewed more clearly from their lens.

The remaining parts of this chapter discuss the rationale, knowledge gaps, significance, and contribution of the study. The chapter concludes with research questions and the arrangement of the study chapters.

1.2 Research Rationale

Strategic management scholars have long taken it for granted that managers influence a firm's behavior. While some researchers have focused on the role of individual CEOs (e.g. Nadkarni and Herrmann, 2010), others have drawn attention to top managers as a team (e.g. Wei and Wu, 2013). Advocates of the latter approach argue that focusing on an entire team of top managers will provide stronger explanations of a firm's outcomes (Hambrick, 2007). Each top manager brings his/her own perspective and cognition to contribute to a firm's decision-making and actions; therefore, it is the collective cognition and perspective of top managers which guides the direction of the firm (West, 2007). Nonetheless, TMT research has often used demographics rather than managerial cognition, and left important gaps in scholars' understanding of actual TMT behavior and its impacts (Hambrick, 2007; Kaplan, 2011).

Metacognition has been argued as an important cognitive resource useful in the understanding of a wide range of tasks and situations, in particular, uncertain and dynamic ones (Baron and Henry, 2010). Individuals basically vary in their metacognitive abilities (Haynie, et al., 2012), thus, it is expected that there would be different levels of this ability in a team of top managers. Capturing and understanding this diversity is important as decision-making within the firm involves all managers at the top level (Olson, Parayitam, and Bao, 2007; Qian, et al., 2013). In this respect, metacognitive diversity as a significant differentiator amongst top managers could be expected to have

firm-level implications. It could offer new insights into actual TMT behavior and its impacts.

Intending to provide further insights into how and when TMT metacognitive diversity functions effectively, this study draws on the concepts of entrepreneurial orientation and TMT behavioral integration as a mediator and moderator respectively. The focus on entrepreneurial orientation is appropriate as it captures top management's tendency towards entrepreneurial activities (Zhao, et al., 2011), so, it could be explained from the upper echelons perspective. In particular, the influences of metacognitive knowledge and experience are more evident in the context of entrepreneurial activities and behavior (e.g. Baron and Henry, 2010; Haynie, et al., 2012; Nambisan and Baron, 2012) such as entrepreneurial orientation (Baron, et al., 2013). Given that entrepreneurial orientation is an important factor in a firm's ability to compete and perform effectively (Engelen, et al., 2012; Simsek, Heavey, and Veiga, 2010), it could serve to yield a better analysis of the influences of TMT metacognitive diversity on firm performance.

The team members' mutual interaction and collaboration to carry out tasks is an important factor in a team's ability to utilize their differences and act upon them (Hambrick, 2007). Such team behavior, known as "behavioral integration," has been acknowledged as a condition to better capitalize on TMT diversity (Boone and Hendriks, 2009). It has been introduced as a refinement of the upper echelons logic and an important moderator of the model (Carmeli, et al., 2011; Hambrick, 2007). This study proposes the moderating role of TMT behavioral integration to develop a better understanding of when diversity in team members' metacognitive abilities could enhance performance.

The applicability of the upper echelons model in small businesses differs from large firms (Buyl, et al., 2011a; Carmeli and Shteigman, 2010). This can be attributed to a number of factors such as control. In SMEs control is more centralized and concentrated at the top of the organization (Davis, et al., 2010) and top managers have both operating and strategic roles (Cao, et al., 2010). They possess fewer intervening levels of management (Ling, et al., 2008), and simpler organizational systems and governance mechanisms (Carmeli and Shteigman, 2010; Lubatkin, et al., 2006; Simsek, et al., 2005), thus, the influence of TMTs on firm performance can be viewed more clearly from their lens. This approach is assumed to bring about new empirical evidence for understanding the upper echelons perspective from a closer angle.

1.3 Knowledge Gaps

It has been argued that demographic diversity is not adequate for understanding the differences in the cognition and perspectives of top managers (Wei and Wu, 2013). TMT demographics do not convey adequate information for explaining TMT impacts on organizational outcomes (Carmeli, et al., 2011). Despite these concerns, there is still a lack of research on cognitive diversity and how it could contribute to a firm's performance. Measuring cognitive attributes seems the next step in advancing the understanding of the implications of TMT diversity. Accordingly, this study proposes that metacognitive knowledge and experience could afford new insights into the upper echelons model and further inform its existing research. Despite their importance, they have received relatively little attention in either managerial or entrepreneurial contexts (Haynie and Shepherd, 2009). This scarcity is also seen in the upper echelons literature.

In addition to this scarcity, it has also been suggested that TMT research requires a broader analysis of the mediating and moderating effects (Boone and Hendriks, 2009; Carmeli, et al., 2011). This study integrates entrepreneurial orientation as a mediator to

answer the recent calls in both TMT and entrepreneurship literature to apply the upper echelons perspective to the study of entrepreneurial orientation (Miller, 2011). More notably, cognition research in entrepreneurship has mainly focused on the individual level of analysis (West, 2007). Metacognition research is not an exception in this regard. By examining metacognition at the team level, this study will also contribute to this side of the entrepreneurship and cognition literature (Dierdorff and Ellington, 2012).

With the intention of realizing better when TMT metacognitive diversity makes a difference and reducing the existing gaps identified by upper echelons scholars (e.g. Carmeli, 2008; Carmeli, et al., 2011; Ling, et al., 2008), this study investigates the moderating role of TMT behavioral integration. Despite its important moderating role in the basic upper echelons relationships, TMT behavioral integration has received little attention (Boone and Hendriks, 2009; Hambrick, 2007; Ling, et al., 2008).

This study focuses on SMEs as a proper but neglected setting for studying TMT influences (Cannella, et al., 2008; Carmeli and Shteigman, 2010). These firms rely more on their top managers' abilities to perform (Lubatkin, et al., 2006), yet, they have received relatively less attention in the upper echelons literature (Carmeli and Shteigman, 2010; Escribá-Esteve, Sánchez-Peinado, and Sánchez-Peinado, 2009).

The expected contributions of this research are explained in the next section.

1.4 Significance and Contribution of the Study

This research offers a fourfold contribution to the existing body of management research. First, unlike many existing TMT studies which focus on demographic attributes, this study focuses on TMT metacognitive diversity as a relatively new aspect of TMT composition that captures the differences in the types and processes used by team

members to make decisions, solve problems, and carry out tasks (Haynie, et al., 2010; Haynie and Shepherd, 2009; Mitchell, et al., 2011).

Second, by developing a mediational model this study will contribute to both upper echelons and entrepreneurship literature. It will advance the knowledge about the role of TMT metacognitive diversity in firm performance by integrating entrepreneurial orientation as a potential reflection of top managers' metacognitive ability (Baron, et al., 2013; Haynie, et al., 2012; Nambisan and Baron, 2012) and significant determinant of firm performance (Simsek, et al., 2010). Existing entrepreneurship research has mainly focused on an individual level of analysis (e.g. Baron, et al., 2013; Mukherji, Mukherji, and Hurtado, 2011); this study examines metacognition at the team level and explains entrepreneurial initiatives from the upper echelons perspective. In doing so, this study will contribute to this side of entrepreneurship and cognition literature (Dierdorff and Ellington, 2012; Miller, 2011).

Third, given the important, yet still to be fully explained moderating role of TMT behavioral integration (Carmeli, 2008; Ling, et al., 2008), this study will offer new insights and explanations about when TMT metacognitive diversity makes a difference or otherwise.

The final contributory aspect of this research pertains to the strategic management of small firms. Despite the significance of small businesses in the entrepreneurial performance of economies (Davis, et al., 2010; Terziovski, 2010), they have received little attention from the upper echelons perspective. A review of extant literature shows that many dimensions of the upper echelons theory, such as the strategic role of TMT (Carmeli, 2008), has remained unclear and yet to be explained (Buyl, et al., 2011a ;Cannella, et al., 2008; Cao, et al., 2010; Carmeli and Shteigman, 2010). Therefore, the

findings of this research provide an empirically supported setting for explaining the role of top management in the performance of small firms.

1.5 Contribution to the Practice of Management

Many of the contributions this research makes to the field of strategic management and entrepreneurship also extend to practitioners. First, metacognition could be developed by training (Nambisan and Baron, 2012; Schmidt and Ford, 2003), so the empirical findings of this study could provide the CEOs with important insights into their top managers' training policies.

Second, TMT behavioral integration can be influenced by management intervention (Magni, et al., 2009), so this study could afford practical insights into team members' interaction and collaboration, the impacts and their management within a firm.

Third, entrepreneurial orientation is an important factor in a firm's success (Simsek, et al., 2010). Examining it from a metacognitive perspective, which could be developed through training, and team behavioral integration, which could be managed, brings about important practical implications for the firm's survival and success.

Fourth, top managers' metacognition and ability to work as part of a team could be important factors in TMT development. Thus, this study could offer important implications for managerial practice to build a competent team.

Finally, and from a diversity management perspective, studying the influences of diversity in TMT members' underlying attributes such as metacognition, and the conditions under which it is beneficial or otherwise, allows this study to provide important implications for diversity management to consider (van Knippenberg, Haslam, and Platow, 2007).

1.6 Research Questions

Despite the magnitude of research on the upper echelons theory, the field of research remains open to further investigation as to the role of TMT cognitive diversity in firm performance. To advance this line of research, this study focuses on the concepts of metacognitive knowledge and experience and applies them to the existing discussion on the TMT diversity-firm performance relationship. Furthermore, in an effort to provide a better understanding of the mechanism through which TMT metacognitive diversity contributes to a firm's performance, this study proposes entrepreneurial orientation as a mediator. Given this, the predictive strength of the model has been argued to be contingent upon team behavioral integration. That is, the consequences of TMT metacognitive diversity depend on the level of the team members' mutual interactions and collaboration. However, such a contingency approach has not been fully adopted to examine how team behavioral integration influences the contribution of TMT diversity to the firm's activities and outcomes. Thus, it is the intention of this study to address this by answering the following research questions (a detailed discussion of these research questions is provided in Chapter 3):

Q1: To what extent is the association between TMT metacognitive knowledge diversity and SMEs' performance influenced by the team's behavioral integration?

Q2: To what extent is the association between TMT metacognitive experience diversity and SMEs' performance influenced by the team's behavioral integration?

Q3: To what extent does the interaction between TMT metacognitive knowledge diversity and behavioral integration impact the team's entrepreneurial orientation as a determinant of SMEs' performance?

Q4: To what extent does the interaction between TMT metacognitive experience diversity and behavioral integration impact the team's entrepreneurial orientation as a determinant of SMEs' performance?

Furthermore, research on TMT has been widely conducted on large firms and has left many questions about the role of TMT aspects in the small business context (Cannella, et al., 2008; Carmeli and Shteigman, 2010). Given the importance of small businesses in the national and global economy (Carmeli and Shteigman, 2010; Zahra, Neubaum, and Naldi, 2007), and in technological development (Rosenbusch, Brinckmann, and Bausch, 2011), answering the question below could provide important insights:

Q5: What are the implications of this integrated model for both the strategic management of small firms and small business policymakers?

The conceptual model consisting of the study constructs and their hypothetical relationships is illustrated as Figure 1.

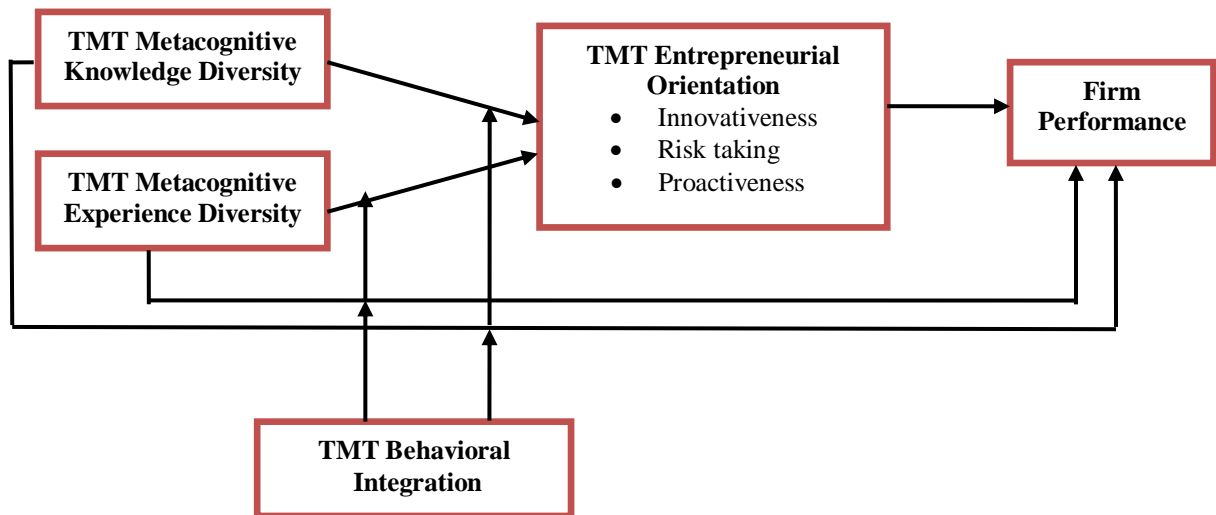


Figure 1: The Conceptual Model

1.7 Overview of the Organization of the Thesis

This thesis is organized into seven chapters. The first chapter is the introduction. It overviews the key constructs of the research, explains research questions, and discusses the significance and contribution of the research. It then shows what areas must be emphasized in Chapter two and offers a simple road map to the arrangement of the thesis.

Chapter two is the review of the literature. It examines the key constructs of the research as explained in Chapter one and accordingly goes through the body of literature on upper-echelons theory, metacognition, entrepreneurial orientation, and team behavioral integration.

The third chapter develops the conceptual model and explains the research questions and hypotheses. It hypothesizes the key areas of investigation based on the review of literature and research questions (Chapters one and two). It technically links Chapters one and two to Chapter four and shows how empirical findings can contribute to the current state of knowledge.

Chapter four discusses the research methodology of the study. It explains the research methods including the data collection process, sampling scheme, and data analysis techniques. It also discusses the validity and reliability of the study's research approach. This chapter provides the setting for data analysis and verification of hypotheses which were developed in Chapter three.

Chapter five presents the data analysis and results. It explains how collected data were analyzed and interpreted and how research hypotheses were tested. It discusses the ways in which research questions and hypotheses were addressed and objectives fulfilled.

Chapter six discusses the key findings of the research, and addresses the key issues and questions raised in Chapter one, and the implications of the results.

Chapter seven discusses the key issues raised in Chapter one such as the contribution of the study. It also explains the key limitations of the research and discusses areas for future research.

The following figure (Figure 2) presents a schematic road map for this arrangement.

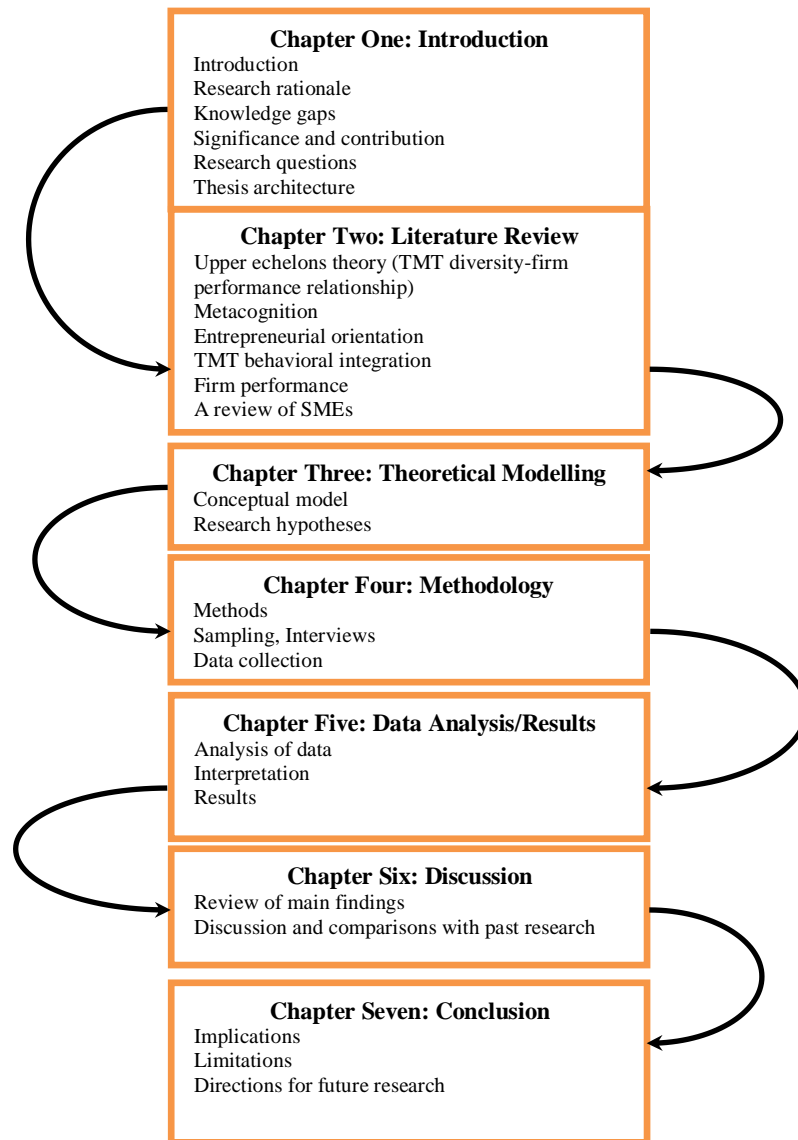


Figure 2: Arrangement of Chapters

1.8 Summary

In this chapter the upper echelons theory was introduced and it was argued that directly measuring TMT cognitive attributes and integrating relevant moderating and mediating variables into the TMT diversity-firm performance relationship would expand the current state of knowledge in upper echelons literature. Accordingly, the key constructs including metacognition, TMT behavioral integration, and entrepreneurial orientation were briefly reviewed to illustrate the grounding of the research and underline the key areas of focus. Then, the significance and theoretical contributions of the research were discussed. It was argued that employing this new set of variables would offer new insights into both the upper echelons and entrepreneurship literature.

-CHAPTER TWO-

LITERATURE REVIEW

2.1 Introduction

This chapter presents an overview of the literature relating to the underpinning theories of the study and is organized into eight sections. The first section provides an overview of the upper echelons theory and summarizes prior research on the link between TMT demographic diversity and firm performance. The second section reviews the existing literature on the concept of metacognition. The literature pertaining to the concepts of entrepreneurial orientation, TMT behavioral integration, and firm performance is reviewed respectively. A brief introduction to SMEs is presented in the last section.

2.2 Upper Echelons Theory

Strategic management scholars have long taken it for granted that managers influence a firm's behavior. The discussion about the role of top management is not new (Finkelstein and Hambrick, 1990). The theoretical work of Barnard (1938) and Selznick (1957), for instance, developed a rationale to include top managers in the analysis of organizations (Hambrick, 1989). It was Chester Barnard (1938) who underlined the role of top management (Finkelstein and Hambrick, 1990). In this regard, Hambrick and Mason's (1984) theoretical perspective known as "upper echelons" highlighted the role of top managers as a team in shaping organizational outcomes. The upper echelons perspective consists of three major postulations. First, top managers take action based on their cognition, personal experiences, and values. Second, the characteristics of top managers as a team are more predictive of organizational outcomes than are individual

CEOs. Third, demographic attributes can serve as proxies of top managers' cognitions and values (Hambrick, 2005).

The theory is built on the premise of the behavioral view of the firm (Cyert and March, 1963; March and Simon, 1958), and the concept of dominant coalition (Cyert and March, 1963). The behavioral theory of the firm claims that complex decisions are mostly the result of behavioral factors (e.g. bounded rationality, multiple and conflicting goals, various aspiration levels, etc.) rather than a mechanical quest for economic optimization or entirely rational analysis based on complete information (Carpenter and Fredrickson, 2001; Finkelstein and Hambrick, 1990; Hambrick and Mason, 1984; Nielsen, 2010). As Cannella and Holcomb (2005:201) noted, "there are far too many complexities in most strategic situations for complete rationality to exist, so decision-makers must work within the bounds of their own intellects."

Based on this theoretical perspective, Hambrick and Mason (1984) suggested that as strategic choices are essentially complex and ambiguous they have a large behavioral component (pp. 195). That is, top managers typically face a tremendous amount of information which requires their attention (Finkelstein and Hambrick, 1990). Recognizing what is important and how to respond to it (e.g. making strategic choices) depends, to a great extent, on their interpretation of the situation (Finkelstein and Hambrick, 1990; Hambrick, 2007). Given that processing such a large amount of information is more complicated than top managers can comprehend, they then bring their own cognitive base and values, which initiates a screen between the situation and their eventual perception of it (Hambrick and Mason, 1984:195). Their eventual perception combined with their value and cognition helps them to interpret and simplify the situation to make strategic choices (Finkelstein and Hambrick, 1990; Hambrick and Mason, 1984). As a result, managers' cognition, values, and perception influence their interpretations of the situations they

encounter, and subsequently their strategic choices. Those strategic choices, in turn, influence their firm's outcomes (Hambrick, 2007).

Hambrick and Mason (1984) viewed organization as a social cohesion and placed emphasis on the top management team (TMT) as the dominant coalition of the organization. They proposed that management is a shared activity in which top managers, instead of an individual top executive, make strategic choices and accordingly shape organizational outcomes (Hambrick, 1995). Therefore, the study of cognition, values, and perception of the team increases the potential strength of the theory to predict (Hambrick and Mason, 1984).

Given that cognition, values, and perception are difficult to measure, they posited that observable/demographic characteristics such as age, tenure, functional background, education, etc. can be reasonable proxies of these complicated psychological dimensions. They accordingly developed 21 propositions linking TMT background/demographic characteristics (i.e. age, functional track, experience, formal education, socio-economic background, financial position, group heterogeneity) to their strategic choice and subsequent organizational outcomes. Hambrick and Mason (1984) reasoned that in the development of the upper echelons perspective it is essential to focus on background/demographic characteristics due to the restrictions in measuring managerial psychological dimensions.

Although Hambrick and Mason (1984) viewed TMT demographics as an important factor in shaping organizational outcomes, they are not the only, or first authors to argue the impact of organizational demographics on performance (Carpenter and Reilly, 2006). For instance, Pfeffer (1983) outlined the concept of organizational demography and defined "organizational demography" as the study of the composition of a social entity in terms of its members' attributes such as age, sex, and educational level (Pfeffer, 1983:

303). Pfeffer (1983) offered a way of associating individual- and organizational-level characteristics (Wagner, Pfeffer, and O'Reilly, 1984), and more importantly established the basic rationale for directly linking TMT demographics to organizational performance (Smith, et al., 1994).

Given the above, Hambrick and Mason (1984) synthesized the previous works into one comprehensive theoretical framework (Carpenter and Reilly, 2006). Their work gave rise not only to a new perspective but also to a methodology through which researchers have been able to link different organizational outcomes to the attributes of the most powerful actors of the firm (Carpenter, et al., 2004; Smith, et al., 1994). The basic notion of upper echelons theory is illustrated in Figure 3 below.

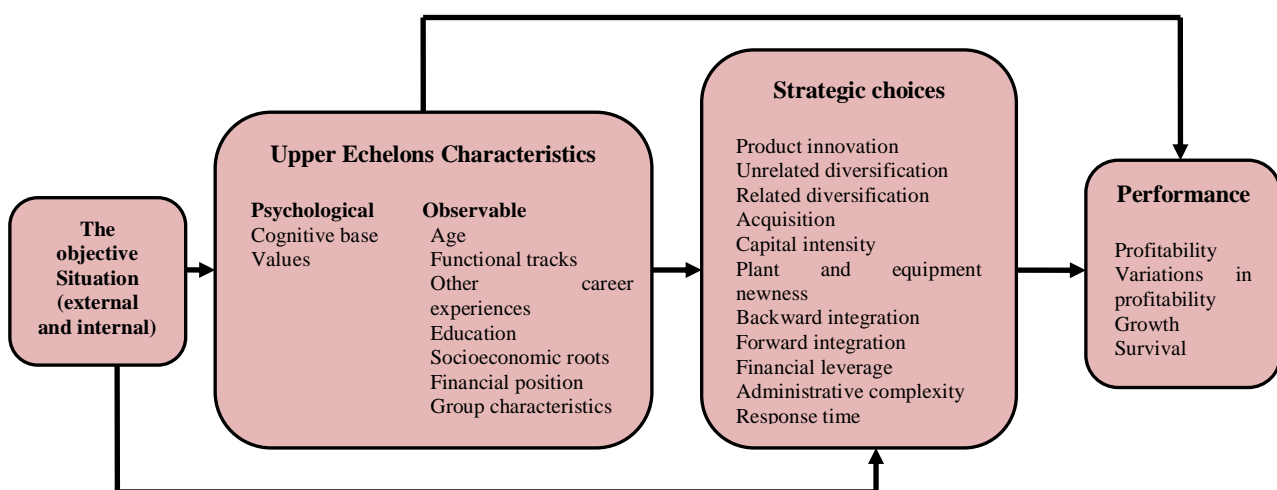


Figure 3: Doctrine of Upper Echelons Model (Hambrick and Mason, 1984)

Since the theory of upper echelons was developed, the terms “upper echelons” and “TMT” have received considerable attention. There has been a surge of interest in applying the upper echelons assumptions which has led to a large body of literature investigating the influences of different TMT demographics on a wide variety of organizational outcomes such as performance (Boone and Hendriks, 2009; Buyl, et al., 2011a; Carpenter, 2002; Nielsen and Nielsen, 2013; Norburn and Birley, 1988; Talke, et

al., 2010; Wagner, et al., 1984), innovativeness (Bantel and Jackson, 1989; Qian, et al., 2013; Talke, et al., 2010, 2011), corporate failure (Hambrick and D'Aveni, 1992), internationalization (Athanassiou and Nigh, 2002), and organizational change (Clark and Soulsby, 2007). A review of this body of literature shows that the topic of TMT demographic diversity or heterogeneity, which is the variation among team members' demographics (Hambrick, Cho, and Chen, 1996), has been the primary focus of the literature (Nielsen, 2010). TMT demographic diversity has been recognized as one of the central constructs in upper echelons research (Pegels, Song, and Yang, 2000). It has long served as an indicator of TMT cognitive diversity (Certo, et al., 2006; Olson, et al., 2007) and a predictor of firm performance (Hambrick, 2007).

Despite the extensive research on the relationship between TMT demographic diversity and firm performance, the findings have been inconsistent with respect to whether diverse teams do or do not lead to better performance (Buyl, et al., 2011a; Nielsen, 2010). In light of these inconsistencies, there have been a number of suggestions to complement and readdress research to better understand top managers and their impacts. Before reviewing those suggestions, first the concepts of "TMT" and "diversity" are elaborated on to give a better understanding of the concept of "TMT demographic diversity." Then, a summary of prior research on the association between TMT demographic diversity and firm performance is provided to illustrate what has been found in prior studies.

2.2.1 Top Management Team (TMT)

Until the 1980s, research on strategic leadership was mainly concentrated on the behavior of an organization's strategic leader (Carmeli, et al., 2011). In the 1980s, the term "top management team" or TMT was introduced into the management literature

(Hambrick, 1995). The TMT lies at the heart of the upper echelons theory and is defined as the dominant coalition of the firm. This dominant coalition acts as a firm's decision-making unit (Bantel and Jackson, 1989), and thus consists of the CEO and several of his or her most senior managers (Finkelstein, 1992). Consequently, TMT refers to a relatively small group of very powerful and important executives at the top of an organization (Hambrick, 1995; Wei and Lau, 2012).

Despite this simple definition of TMT, a review of literature reveals different operationalizations and identifications. There has not been a generally accepted definition of who forms the TMT (O'Reilly, Snyder, and Boothe, 1993). Table 1 below provides a summary of some definitions and sources of TMT information applied by prior research.

Table 1: Some Definitions of TMT and its Identification

No	Authors	TMT operationalization	Source of Information
1	Wagner, et al., (1984)	"Officers with titles of vice-president or above."	Standard & Poor's database
2	Bantel and Jackson(1989)	"Managers who actively involved in decisions relate to products and services, marketing, delivery systems and operations, and general management and administration."	Determined by CEO
3	Finkelstein and Hambrick (1990)	"All corporate officers who were also board members."	Dun & Bradstreet Reference Book of Corporate Management.
4	Michel and Hambrick (1992)	"All officers above the level of vice president as well as officers who were on the board of directors."	Dun & Bradstreet Reference Book of Corporate Management.
5	Bantel(1994)	"Managers who are involved in firm decision making with ongoing interactions on strategic issues for the firm."	Determined by CEOs.

6	Hambrick, et al., (1996)	“All executives above the vice-president level.”	Dun & Bradstreet Reference Book of Corporate Management.
7	Boeker(1997)	“Those managers reporting directly to the chief executive.”	Market companies and the firms themselves.
8	Simons, Pelled, and Smith (1999)	“The executives who actively participated in strategic decision making.”	Determined by CEOs.
9	Simons and Peterson (2000)	“The executives who are regularly involved in strategic decisions of the firm.”	Determined by CEOs.
10	Carpenter and Fredrickson(2001)	“The top two tiers of an organization's management.”	Dun & Bradstreet Reference Book of Corporate Management.
11	Collins and Clark(2003)	“The managers who are involved in deciding the large and strategic issues facing the firm.”	Determined by CEOs.
12	Cho and Hambrick(2006)	“All executives above the level of vice president, for an average of about seven.”	Dun & Bradstreet Reference Book of Corporate Management.
13	Barkema and Shvyrkov(2007)	“Heads of the main functional departments who are the main governing body of the firm for strategic decisions.”	The annual reports
14	Cannella, et al., (2008)	“All executives with titles above the rank of vice president or serving on the firm's board of directors.”	Dun & Bradstreet's Reference Book of Corporate Management
15	Yoo, et al., (2009)	“All individuals with titles of senior vice president and above.”	Dun and Bradstreet's Reference Book of Corporate Management, Standard and Poor's Register of Corporations, Directors and Executives, and 10-K and Proxy Statements.
16	Alexiev, et al., (2010)	“Senior executives who are responsible for strategy formulation and implementation.”	Determined by CEO

17	Cao, et al., (2010)	“Organizational members who make or are involved with decisions affecting the company’s strategy, in other words, the very top-level members.”	Determined by CEO
18	Ling and Kellermanns (2010)	“Those at the apex of the firm and actively involved in strategic decision making.”	Determined by CEO
19	Simsek and Heavey (2011)	“Organizational members who are involved in deciding the significant strategic issues facing the firm.”	Determined by CEO
20	Clark and Maggitti (2012)	“Number of individuals involved in firm strategic decision-making.”	Determined by CEO
21	Nielsen and Nielsen (2013)	“The executive team listed in the company annual reports.”	Company Annual Reports and Web sites
22	Hutzschenreuter and Horstkotte (2013)	“All of the members of the management board.”	Annual Reports

As the above table illustrates, the TMT is typically identified based on the top managers’ information listed in publicly available documents or by CEOs through a survey or an interview (Nielsen, 2010). In the context of small and medium-sized firms, however, the most common method of identifying TMT members is to ask the CEOs to identity their fellow top managers (e.g. Buyl et, al., 2011a; Cao, et al., 2010; Simsek and Heavey, 2011). This is largely due to data on the top management team of these firms not being publicly available and subsequently the CEOs have been recognized as the most knowledgeable people in this regard (e.g. Buyl, et al., 2011a; Simsek, et al., 2010). This approach, as noted by Pitcher and Smith (2001:14), represents the best hope for accuracy.

Accordingly, consistent with prior research on SMEs, this study defines the TMT as “organizational members who make or are involved with decisions affecting the company’s strategy” (Cao, et al., 2010:1280) and asks CEOs to identify their top managers. This approach will be elaborated in the research methodology chapter.

Having reviewed the TMT definitions, the next section explains the concept of diversity and TMT demographic diversity.

2.2.2 What Does Diversity Mean?

Diversity is defined as the distributional differences among the members of a team with respect to a common attribute (Bell, et al., 2011; Harrison and Klein, 2007). As pointed out by Harrison and Klein (2007), diversity can be conceptualized and operationalized in three different ways: separation, variety, and disparity. Separation captures differences in opinion, position, attitudes, or values among team members. Variety captures differences in kind or category, such as knowledge, skills, information, and experience among team members. And finally, disparity captures differences in concentration of valued social assets or resources such as status and pay among team members (Biemann and Kearney, 2010; Harrison and Klein, 2007; Nielsen, 2010).

Given the explanation of diversity and the TMT definition presented in the previous section, TMT diversity can be defined as the distributional differences among top management team members with respect to a specific attribute. The term “TMT demographic diversity” refers to differences among top management team members with respect to their demographics such as age, tenure, education level, and functional background (Bell, et al., 2011; Pelled, Eisenhardt, and Xin, 1999). Demographics could be classified as immutable attributes such as age, gender, and ethnicity; attributes such as organizational tenure or functional area, which describes individuals’ relationships with

organizations; and attributes such as marital status, which shows individuals' positions within society (Lawrence, 1997:5).

The concept of TMT demographic diversity, as mentioned earlier, has been the particular interest of researchers over the past few decades. This is because, on the basis of the upper echelons perspective, demographic diversity is a reasonable proxy of cognitive diversity which can be easily obtained through archival data (Hambrick, 2007) or survey approaches (Nielsen, 2010). Nonetheless, the lack of clarity in the findings on the relationship between TMT demographic diversity and performance has made researchers question the potential of demographics as an indicator of underlying managerial attributes.

The next section reviews the literature on the link between TMT demographic diversity and firm performance.

2.2.3 TMT Demographic Diversity and Firm Performance

A significant amount of research suggests that TMTs play an important role in influencing firm performance (Certo, et al., 2006). In particular, TMT demographic diversity has been shown to have significant performance implications (Cannella, et al., 2008). This is based on the premise that, if TMT demographic diversity has implications for team behaviors and those behaviors are integral to effective management, then it is more likely to influence performance (Carpenter, 2002). Given this logic, researchers have widely applied TMT demographic diversity to predict firm performance. The findings, however, have been inconsistent. That is, while positive effects have been observed by some researchers, some studies have found negative or non-significant effects of TMT demographic diversity (Nielsen and Nielsen, 2013; Wei and Wu, 2013). For the purpose of a comprehensive review, and in order to better illustrate prior findings,

previous research is grouped and reviewed based on its results (i.e. positive, negative, and non-significant).

Some research studies provide evidence for the beneficial effects of TMT demographic diversity. For instance, Murray (1989) found that temporal diversity (dissimilarity in age, organizational tenure, and team tenure) was positively related to the long-term performance of the firms operating in the oil industry. Eisenhardt and Schoonhoven (1990) studied newly founded US semiconductor firms and showed that TMT industry experience positively influenced the firms' growth. Smith et al. (1994) similarly found that educational-level diversity was positively related to the firms' return on investment and sales growth. Hambrick et al. (1996) showed the positive relationships between TMT demographic diversity (i.e. functional backgrounds, education, and company tenure) and changes in both market share growth and profit growth. They argued that TMT demographic diversity overall had positive effects on airline performance in terms of changes in market share and profits.

Pegels et al. (2000) demonstrated a significant link between TMT demographic diversity and the competitive market behavior and subsequent performance of firms. Consistent with these studies, Barsade et al. (2000) conducted a study on a sample of 62 US TMTs and showed that TMT functional diversity was positively associated with firm stock market returns. Later, Carpenter (2002) found that TMT educational, functional, and tenure diversity positively influenced firm performance at low levels of environmental complexity. Dwyer, Richard, and Chadwick (2003) showed a positive relationship between the gender diversity-growth orientation interaction and performance. They further suggested that gender diversity provides a team with novel insights, perspectives, creativity, and experience which may promote and support expansion into new markets.

Gong (2006) provided evidence for the beneficial effects of TMT nationality diversity on subsidiary performance. Their findings suggested that a nationally diverse TMT is important for developing a successful subsidiary. Similarly, Nielsen and Nielsen (2013) showed that TMT nationality diversity facilitated firm performance through the access it provides to diverse institutional experiences and multiple information processing. In addition to these empirical works, Certo et al. (2006) employed a meta-analysis to investigate the empirical studies examining the TMT diversity-firm performance relationship. Their systematic analysis of prior studies revealed that, although diversity in some demographic attributes such as functional backgrounds, experience, and tenure has been shown to be beneficial to a firm's return on assets, it would not necessarily be the same across all demographics and performance indicators.

Given the above studies reporting the beneficial effects of TMT demographic diversity, a diverse TMT has been argued to possess multiple skills, knowledge, and perspectives which provide them with an increased level of information (Certo, et al., 2006; Shin, et al., 2012). This is mainly based on the information/decision-making perspective (Williams and O'Reilly, 1998). This perspective suggests that diversity affords the team a greater range of task-relevant knowledge and skills, and different perspectives which enhance their functioning and performance (Homan, et al., 2008; Kearney, Gebert, and Voelpel, 2009; Nielsen and Nielsen, 2013; Wei and Wu, 2013).

Contrary to this positive side of TMT demographic diversity, a series of empirical studies has reported negative findings. For instance, Murray (1989) showed that occupational diversity was negatively associated with short-term performance. O'Reilly et al. (1993) studied a sample of electronics firms and showed that TMT tenure diversity was negatively related to adaptive change. They further argued that teams with diverse tenure were not effective in team functioning and were less adaptive to organizational

change. Smith et al. (1994) similarly found that TMT experience diversity was negatively associated with a firm's return on investment. Their study suggested that this negative effect was because teams with different levels of experience confront conflict in decision-making.

Amason, Shrader, and Tompson (2006) reported the negative effects of TMT demographic diversity (i.e. age, education, and functional background) on novel ventures' performance such as sale growth. Their findings suggested that homogeneous teams were more favorable in highly novel ventures where close, frequent, and informal interactions are required. Olson, Parayitam, and Twigg (2006) similarly showed that age diversity was negatively related to both strategic choice and firm performance.

One potential explanation for this negative side of diversity comes from the perspectives of the social categorization and similarity/attraction (Williams and O'Reilly, 1998). The social categorization perspective holds that dissimilarities and differences among team members may produce the classification of others as either in-group or out-group (van Knippenberg and Schippers, 2007). Given that individuals are more likely to think positively of their own group and more negatively about other groups (Certo, et al., 2006; van Knippenberg, et al., 2011), such classification and categorization may engender emotional conflict (Pelled, et al., 1999), with in-group biases, and team conflict (Jackson, Joshi, and Erhardt, 2003), which will all impact the team performance negatively (Certo, et al., 2006; Smith, et al., 1994; Wei and Wu, 2013).

The social categorization view is complemented by the similarity/attraction perspective (van Knippenberg and Schippers, 2007). The similarity/attraction perspective (Williams and O'Reilly 1998) suggests that people favor working with similar rather than dissimilar people (Homan, et al., 2008; Kearney, et al., 2009). This view implies that

homogeneous teams function well together due to their shared attributes which, creates a synergistic effect on performance (Bell, et al., 2011; Horwitz, 2005; Shin, et al., 2012).

Given these two major theoretical viewpoints (information/decision-making and the social categorization perspective) regarding the potential positive and negative effects of diversity, it has been argued that the social categorization view is more relevant to diversity in observable attributes such as age, gender, and race/ethnicity. Since such attributes are obvious, they are more likely to initiate categorization among team members (Barkema and Shvyrkov, 2007). In contrast, the positive effects explained by the information/decision-making perspective are more likely to be the case for task-related diversity such as cognitive or informational diversity (in terms of demographics, functional, or educational background diversity) (Bell, et al., 2011; Kearney, et al., 2009; Shin, et al., 2012; van Knippenberg, et al., 2004).

Having reviewed the research reporting positive and negative effects of diversity, there exists some empirical evidence indicating that TMT demographic diversity has no significant impact on firm performance. For instance, Wiersema and Bantel (1992) reported that TMT age, organizational tenure, and team tenure diversity were not significantly associated with strategic change. Michel and Hambrick (1992) reported no significant performance implications of a variety of measures of TMT demographic diversity. Smith et al. (1994) found no association between TMT functional background diversity and firm performance. Similarly, Cannella et al. (2008) found no significant relationship between dominant functional diversity and firm performance.

Given this overview, to better illustrate the prior mixed findings Table 2 below has been developed.

Table 2: A Summary of Some Prior Studies on the Link between TMT Demographic Diversity and Firm Performance

Authors	TMT Characteristics Looked At	Sample
Eisenhardt and Schoonhoven (1990)	Industry experience diversity	Newly founded US semiconductor firms
Smith et al. (1994)	Educational-level diversity	High-technology firms
Hambrick et al. (1996)	Functional backgrounds, education, and company tenure	US airlines
Barsade et al. (2000)	Functional diversity	US top management Teams
Bunderson and Sutcliffe (2002)	Intrapersonal functional diversity	Business unit
Carpenter (2002)	Educational, functional, and tenure diversity	Large and medium-sized firms
Dwyer et al. (2003)	Gender diversity	Banks
Gong (2006)	Nationality diversity	Subsidiaries
Olson et al. (2006)	Functional diversity	Firms in telecommunication industry
Cannella et al. (2008)	Tenure diversity, intrapersonal functional diversity	A sample of large firms from different industries
Boone and Hendriks(2009)	TMT functional-background diversity	IT firms
Souitaris and Maestro (2010)	Tenure, age, and educational diversity	New technology ventures
Buyl et al. (2011a)	Functional Diversity	Information Technology firms
Talke et al. (2011)	Educational , Functional ,Industrial and Organization Background Diversity	Publicly listed manufacturing firms

Rivas (2012)	Functional background diversity	Largest European and United States service and industrial firms
Wei and Lau (2012)	Age and tenure diversity	A sample of Chinese firms
Nielsen and Nielsen (2013)	Nationality diversity	Swiss listed firms representing 32 industries
Murray (1989)	Occupational diversity	Firms in oil industry
Haleblian and Finkelstein (1993)	Tenure and functional diversity	Firms in computer industry
O'Reilly et al. (1993)	Tenure diversity	Electronics firms
Smith et al. (1994)	Experience diversity	High-technology firms
Simons et al. (1999)	Educational-level diversity	A sample of manufacturing Firms
Bunderson and Sutcliffe (2002)	Dominant function diversity	Business unit
Amason et al. (2006)	Age, education, and functional background diversity	Novel ventures
Olson et al. (2006)	Age diversity	Firms in telecommunication industry
Wiersema and Bantel (1992)	Age, organizational tenure, and team tenure diversity	A sample of large manufacturing firms
Smith et al. (1994)	Functional background Diversity	High-technology firms
West and Schwenk (1996)	Gender and education diversity	A sample of single businesses or subsidiary/division
Cannella et al. (2008)	Dominant functional diversity	A sample of large firms from different industries

	Positive effects
	Negative effects
	Non- significant effects

In light of such inconsistent findings, several scholars have begun to provide explanations and suggestions to bring clarity to the role of TMT diversity in firm performance. The next section explains them.

2.2.4 What is Required to Improve Clarity?

As shown in the previous section, although the demographic-based TMT studies have provided ample evidence for the role of TMT diversity in organizational performance and made a significant contribution to the strategy literature (Pitcher and Smith, 2001; Priem, et al., 1999), there are still a number of criticisms which if addressed may improve clarity about the role of TMT diversity in firm performance. For instance, some researchers have attributed the mixed results to the inconsistency in TMT definition and specification across studies (e.g. Carpenter, et al., 2004; Certo, et al., 2006; Nielsen, 2010; Pettigrew, 1992), the conceptualization of the diversity construct (e.g. Simsek and Heavey, 2011), and the method of investigation (Nielsen, 2010; Pettigrew, 1992; Priem, et al., 1999). With respect to TMT identification, Pettigrew (1992:178) pointed out that “rather than assuming titles and positions as indicators of involvement in choice and change processes, the first task for the process scholar is to identify which players are involved, and why.”

Amongst those criticisms, two are dominant in upper echelons research. First, a number of scholars noted that demographics are not precise approximations of TMT cognitive bases, and thus research needs to move beyond applying demographics as a surrogate for such underlying attributes (e.g. Kilduff, Angelmar, and Mehra, 2000; Qian, et al., 2013; Souitaris and Maestro, 2010; Zahra and Wiklund, 2010). Inconsistent findings have led researchers to conclude that demographics do not yield adequate information in explaining the TMT impacts on organizational outcomes (Carmeli, et al., 2011). Despite their measurement accuracy (Pfeffer, 1983; Priem, et al., 1999) and the

advantages of data availability (Escribá-Esteve, et al., 2009; Hambrick, 2007), replicability (Lawrence, 1997), and being more practical (Bantel and Jackson, 1989), demographics have inherent shortcomings and limitations in reflecting the substantive attributes of TMTs and their actual behavior (Kilduff, et al., 2000; Priem, et al., 1999). The demographic-based TMT studies have been criticized for their reliance on demographic indicators while their potential to capture the cognitive attributes of top managers is questionable (Olson, et al., 2007).

As stated by Priem et al. (1999:939), “demographic-based diversity TMT research sacrifices explanation in favor of prediction and prescription in favor of description.” It is apparent that measuring TMT diversity using more psychological constructs is the next step in advancing the existing understanding of actual TMT information processing behavior, choice making and resulting performance (Hambrick, 2007; Qian, et al., 2013; Zahra and Wiklund, 2010). Despite this line of criticism, few have examined diversity using psychological attributes such as top managers’ beliefs and preferences (e.g. Miller, Burke, and Glick, 1998; Olson, et al., 2007), perceptions of group processes (Kilduff, et al., 2000), locus of control (Boone and Hendriks, 2009), and thinking (Wei and Wu, 2013). For instance, Olson et al. (2007) measured diversity in top managers’ beliefs and preferences about strategic goals (Miller, et al., 1998) and found that it facilitated task conflict which is important for strategic decision-making. More recently, Wei and Wu (2013) measured diversity in managers’ ways of thinking and showed that such differences were not significantly associated with firm performance.

The second criticism relates to the causal link between TMT diversity and organizational outcomes (e.g. Priem, et al., 1999). It has been argued that the link is not as straightforward as scholars previously assumed (e.g. Smith, et al., 1994). The direct link could not adequately capture the potential impacts of diversity (Camelo, Fernández-Alles,

and Hernández, 2010; van Knippenberg and Schippers, 2007). Rather, this direct relationship might require a broader analysis of the potential mediating and moderating variables which translate diversity into action and clarify the conditions under which diversity has positive or negative effects on organizational performance (Buyl, et al., 2011a; Talke, et al., 2011). Following these suggestions, scholars have shifted their focus to identify the potential moderators and mediators which account for the effects of diversity. A number of organizational and environmental factors have been investigated and it has been argued that mediation and moderation are complementary in understanding how TMT diversity functions (Wei and Wu, 2013).

With respect to mediating variables, for instance, Lee and Park (2006) examined the mediating role of international alliances. They showed that international alliances partially mediated the association between TMT international exposure diversity and firm internationalization. Olson et al. (2006) found that strategic choice mediated the relationship between TMT functional diversity and firm performance. Recently, Talke et al. (2011) suggested that the effects of TMT diversity in educational, functional, industrial, and organizational background on performance were partially mediated by strategic innovation orientation.

As with mediator variables, moderators have also received a good deal of attention in the literature. For example, Carpenter (2002) found that the positive links between TMT educational, functional, and tenure diversity and performance were moderated by complexity indicated by a firm's international strategy. More recently, Buyl et al. (2011a) examined the moderation effects of CEO attributes (e.g. functional background, status as founder) on the relationship between TMT functional diversity and performance. Their findings indicated that CEO and TMT attributes interacted in realizing the potential benefits of TMT functional diversity. Qian et al. (2013), based on their study of the chief

executive officers and chief technology officers of 122 Chinese firms, argued that a good institutional support lessens both the cognitive and affective tension of a functionally diverse TMT and makes them appreciate more each others' functional background. Nielsen and Nielsen (2013) found that the relationship between TMT nationality diversity and performance was more pronounced for longer-tenured teams, highly internationalized firms, and munificent environments.

As with these factors, intervening TMT processes have been argued to provide an enhanced understanding of the role of TMT diversity in organizational outcomes. In particular, Lawrence (1997) questioned the use of demographic characteristics as an indicator of TMT psychological and intervening processes and highlighted a need to integrate intervening team processes. She criticized the demographics-based TMT research which assumed that demographic predictors are correlated with presumed intervening processes which remain in a "black box" (Lawrence, 1997; Priem, et al., 1999). Unraveling TMT processes, therefore, has been seen as an essential potential refinement to the upper echelons theory (Carmeli, et al., 2011; Hambrick, 2005).

Accordingly, team processes which refer to the team's behavior and actions such as communication and social integration (Smith, et al., 1994), debate (Simons, et al., 1999), TMT socio-behavioral integration (e.g. Chen, Lin, and Michel, 2010), information exchange frequency (e.g. Ling and Kellermanns, 2010), and behavioral integration (e.g. Zahra and Wiklund, 2010) have been shown to add important explanatory power and help illuminate the link between TMT diversity and performance (Nielsen, 2010).

Given the above, Table 3 below provides a summary of moderating and mediating variables established in the literature.

Table 3: A Summary of Moderating and Mediating Variables Examined in Prior Studies

Authors	Sample	Moderating/Mediating Variables Looked At	Summary of Findings
Wiersema and Bird (1993)	Firms listed on the Tokyo Stock Exchange	Moderator: Ethnological context	Ethnological context could impact demographic effects in organizations.
Smith et al. (1994)	High-technology firms	Mediators: Social Integration and Communication	The findings showed that TMT diversity had both direct and indirect effects on firm performance.
Keck (1997)	Cement and minicomputer firms	Moderator: Environmental context	Diverse teams were found to be more productive in turbulent environments. In contrast, in stable environments homogeneous teams were more effective.
Pelled et al. (1999)	Electronics divisions of three major corporations	Mediators: Task and emotional conflict	The findings showed that TMT functional background diversity engendered task conflict (but multiple types of diversity drove emotional conflict) which in turn had favorable effects on cognitive task performance.
Simons et al.(1999)	A sample of manufacturing firms	Moderator: Debate Mediator: Decision comprehensiveness	The data showed that debate increased the tendency for diversity to enhance performance. Decision comprehensiveness partially mediated the interactive effects.
Bunderson and Sutcliffe (2002)	Business units	Mediator: Information sharing	The positive relationship between TMT intrapersonal functional diversity and unit performance was mainly explained by improved information sharing.

Carpenter (2002)	Large and medium-sized firms	Moderator: Internationalization	Diversity was shown to have a positive relationship with performance at low levels of complexity, but a negative one at high levels of complexity indicated by a firm's international strategy.
Auh and Menguc (2005)	SBU's operating in a variety of manufacturing industries	Moderator: Interfunctional coordination	The results revealed that the effect of TMT diversity on innovativeness was positive as interfunctional coordination increased.
Amason et al. (2006)	Novel ventures	Moderator: The level of venture novelty	It was found that more diverse TMTs performed less well than more homogeneous TMTs in highly novel ventures.
Lee and Park (2006)	A sample of firms operating in different industries	Mediator: International alliances	It was found that international alliances partially mediated the relationship between TMT international exposure diversity and firm internationalization.
Olson et al. (2006)	Firms in telecommunication industry	Mediator: Strategic choice	Results showed that strategic choice played a mediating role in the relationship between TMT functional diversity and firm performance.
Olson et al. (2007)	A sample of firms operating in health care industry	Mediator: task conflict Moderator: Competence-based trust	It was found that task conflict mediated the effects of cognitive diversity on decision outcomes. Competence-based trust was shown to heighten the relationship between cognitive diversity and task conflict.
Cannella et al. (2008)	A sample of large firms from different industries	Moderators: Colocation of TMT members and environmental uncertainty	The effects of TMT functional diversity on firm performance was shown more positive as

			the proportion of TMT members with offices in the same location increased. Similarly, the effects of TMT intrapersonal functional diversity were more positive as environmental uncertainty increased.
Boone and Hendriks(2009)	IT firms	Moderators: TMT collaborative behavior, information exchange and decentralized decision making	The results suggested that collaborative behavior, information exchange and decentralized decision making positively moderated the association between TMT functional-background diversity and performance.
Ling and Kellermanns (2010)	Family firms	Moderator: Information exchange frequency within the TMT	The results indicated that family firm-specific sources of TMT diversity had more positive effects on firm performance when the information exchange among TMT members was more frequent.
Talke et al.(2010)	A sample of firms with a dominant or single-product business from manufacturing sectors	Mediators: Focus on innovation fields and new product portfolio innovativeness	The results revealed that TMT diversity had a strong impact on the strategic choice of firms to focus on innovation fields which drove new product portfolio innovativeness and firm performance.
Zahra and Wiklund (2010)	New ventures	Moderator: TMT Behavioral Integration	TMT functional-background diversity contributed more to the firm's product innovation when the team was integrated.
Buyl et al. (2011a)	Information Technology firms	Moderator: CEO Characteristics	The results revealed that CEO and TMT attributes interacted in realizing the potential benefits of TMT functional diversity.

Talke et al. (2011)	Publicly listed manufacturing firms	Mediators: Strategic innovation orientation and firm innovativeness	The results emphasized the importance of TMT diversity as antecedent for innovation strategy and outcomes.
Eesley, Hsu and Roberts (2013)	A sample of ventures founded between 1931 and 2003	Moderator: Commercialization environment	The study suggested that diverse founding teams were likely to achieve high performance in a competitive commercialization environment.
Heavey and Simsek(2013)	Small to medium-sized high-tech firms	Moderator: Perceived technological uncertainty	It was found that the favourable effects of diversity were defused under conditions of uncertainty.
Kunze, Boehm and Bruch(2013)	German small and medium-sized firms	Mediator: Perceived negative age-discrimination climate Moderators: Top managers' negative age stereotypes and diversity-friendly HR policies	The results suggested that low negative top managers' age stereotypes and high diversity-friendly HR policies were likely to avoid the negative relation of age diversity with organizational performance transferred through the negative age-discrimination climate.
Nielsen and Nielsen (2013)	Swiss listed firms representing 32 industries	Moderators: TMT tenure, firm internationalization and industry munificence	The results showed that the relationship between TMT nationality diversity and performance was more pronounced for longer-tenured teams, highly internationalized firms, and munificent environments.
Qian et al. (2013)	Chinese technology firms	Moderators: Competitive and institutional environments	The results showed that the impact of TMT functional diversity on conflicts is contingent upon the beneficence of a firm's institutional environment.

Wei and Wu (2013)	Chinese firms	Mediator: TMT's elaboration of task-related information Moderators: Team interdependence and team cohesion	The results showed that TMT's elaboration of task-related information mediated the interactive effects of TMT cognitive diversity and both team interdependence and team cohesion on firm performance.
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Having reviewed the scholars' suggestions, this study attempts to address them in three distinct ways to improve clarity about the role of TMT diversity in performance. First, building upon the recent entrepreneurship research using the concept of metacognition (Haynie, Shepherd, and colleagues, 2009, 2010, and 2012), this study suggests that metacognition (and accordingly metacognitive resources) has the potential to be introduced to the upper echelons model to inform this area of research. Incorporating metacognition as a psychological concept and direct measure of an individual's cognitive process in the TMT diversity-firm performance relationship would provide new insights into existing research on TMT diversity and its impacts.

Second, rather than examining the direct relationship, this study proposes the mediational effects of entrepreneurial orientation and the moderating role of TMT behavioral integration. It suggests that theoretical insights from entrepreneurship into the upper echelons model could inform both literatures on TMT entrepreneurial behavior and impacts. Furthermore, examining the moderation effects of TMT behavioral integration would reveal when TMT metacognitive diversity could be expected to have more positive effects on firms' entrepreneurial activities and performance. Taken together, this integrated model would enrich the theoretical explanations of the relationship between TMT diversity and firm performance and contribute to the upper echelons model as well as the entrepreneurship literature.

The third contributory aspect of this research relates to its methodology. Quantitative approaches have been widely used in TMT research. This has yielded a number of calls for more in-depth investigation of TMT behavior and its impacts (e.g. Carpenter, et al., 2004; Nielsen, 2010). In order to answer these calls, in addition to the survey, this study includes a number of semi-structured interviews with TMT members. Combining quantitative and qualitative data allows this research to yield a better understanding of the hypothetical relationships between TMT metacognitive diversity, process, and subsequent impacts. Furthermore, careful attention is given to defining and identifying team members as well as the conceptualization of the diversity construct. All these methods will be elaborated in the methodology chapter (Chapter 4).

Given the above, the following sections provide the definitions of metacognition and investigate the literature that informs this area. Before that, a brief discussion on the concept of cognition is presented.

2.3 From Cognition to Metacognition

Our behavior is the result of the way our brain does its information processing (Simon, 1957). It has been well documented in psychology (Schroder, Driver, and Streufert, 1967) and management (McGaffey and Christy, 1975; Taylor, 1975) that human information processing is far less than perfect due to its limited processing capacity (Simon, 1957). As a consequence, we tend to employ heuristics or shortcuts in our information processing which may result in biases (cognitive tilts). These biases prevent us from taking optimal action (e.g. making the optimal choice) and achieving desired goals (Baron and Ward, 2004). Debate on these biases is lengthy and rich in psychology, business, and management literature (Barnes, 1984; Gilovich, Griffin, and Kahneman, 2002; Schwenk, 1986; Simon, Houghton, and Aquino, 2000; Tversky and Kahneman, 1974). Nonetheless,

the question that remains open is how individuals regulate their cognitive limitations to maximize the likelihood of achieving goals. As will be shown in the following sections, this question has stimulated research into metacognition.

Cognition refers to the activities of thinking, knowing, and processing information (Armstrong and Hird, 2009:421). Cognitive psychology conceives cognition in terms of “representational structures in the mind and computational algorithms that operate on those structures” (Thagard, 1996, p. 10 cited in Gavetti and Rivkin, 2007:437). In management and organization science, a central tenet is that executives are information workers (Carmeli, Tishler, and Edmondson, 2012). That is, they spend their time absorbing, processing, and disseminating information about issues, opportunities, and problems (Walsh, 1995:280). This tenet has given rise to the cognitive view of executives which is also interchangeably referred to the behavioral view of strategy (Lovallo and Sybony, 2010). The cognition of executives, or their information processing abilities, puts boundaries around a firm’s behavior including the ability to pursue and therefore compete for opportunities (Gavetti, 2011).

Cognition goes beyond simple know-what and know-how: it covers rationality, perception, mindset, mental models, interpretation, emotion, intuition, value judgment, feeling, and morality (Noteboom, 2009). The cognition of individuals evolves over time. It is partly inborn such as cognitive styles (Armstrong, et al., 2011), and partly constructed by experience along life trajectories (Noteboom, 2009). Therefore, different individuals have different cognitive structures due to the extent that their life trajectories differ (Noteboom, 2009:4). These differences determine different patterns of information processing (Armstrong, Cools, and Sadler-Smith, 2012). Importantly, the knowledge and experience that an individual has gained over his or her life trajectories influence, to a greater or lesser extent, his or her information processing. This issue has been well

documented and studied in upper echelons literature. For instance, demographic factors as proxies of executives' cognition have largely been studied by scholars (Hambrick, 2007). These proxies include age, tenure, level of education, scope of education such as business-related degree or general degree, job-related and non-related experience, and variety of industrial experience amongst many other factors (Bell, et al., 2011).

Despite the extensive research, the issue of how executives monitor and control their use of knowledge and experience in the processing of information is still unclear. This issue is significant, in particular, for the upper echelons perspective. Executives have discretion and make choices based on their free will (Child, 1997); they apply their knowledge and experience based on their personal discretion. The ability of executives to apply knowledge and experience is limited (Walsh, 1995), thus there are situations where executives have to make choices for which they do not have the required knowledge or experience, or, at best, have only partial knowledge and experience. Under these circumstances they ought to be able to regulate and control the use of their knowledge and experience (Perfect and Schwartz, 2004). Such abilities are driven by their metacognition. Metacognition is defined as one's knowledge and experience about one's own cognitive processes (Flavell, 1979), i.e. knowledge and experience about anything cognitive. However, it can be reasonably broadened to include anything psychological such as knowledge and experience about emotions and motives (Flavell, 1987:22). It must be distinguished from cognition as it is a more abstract level of cognitive activity (Flavell, 1979).

More precisely, metacognition is a higher-level heuristic applied by individuals to process information about their environment (Kozhevnikov, 2007). Contemporary research in metacognition has two parallel roots: cognitive psychology of the 1960s (e.g. Hart, 1965) and post-Piagetian developmental psychology of the 1970s (e.g. Flavell,

1979; Perfect and Schwartz, 2004:2). The essence of this stream of research is that individuals can develop a cognitive mechanism in the form of self-controlling and self-monitoring abilities over their cognitive functioning (i.e. information processing) (Kholodnaya, 2002). The significance of this higher-level mechanism is that it gives individuals a cognitive flexibility (Kozhevnikov, 2007). This flexibility refers to the conscious allocation of cognitive resources (i.e. knowledge and experience). Put simply, the absence of metacognition leads to an automatic processing of information, whereas its presence enables individuals to consciously regulate and control the use of their knowledge and experience (Kholodnaya, 2002).

Metacognition is believed to influence the numerous daily behaviors of individuals (Baron, 2007; Nambisan and Baron, 2012; Schwartz and Perfect, 2004). Given its conscious and flexible functioning, metacognition plays a key role in individuals' adaptability (Haynie and Shepherd, 2009). That is, it mediates the relationship between an individual and his or her environment (Kozhevnikov, 2007:477). Individuals have two primary cognitive resources, namely "knowledge" and "experience," which are used in their information processing. Similarly, metacognition has been divided into the self-controlling and self-monitoring of knowledge and experience (Flavell, 1987). In fact, metacognition works through two primary processes, namely monitoring and control (Blume and Covin, 2011; Flavell, 1979; Schmidt and Ford, 2003). The next section elaborates these two.

2.3.1 Structure and Function of Metacognition

It has been argued that metacognition consists of two primary functions: monitoring and control (Blume and Covin, 2011; Flavell, 1979; Schmidt and Ford, 2003). Metacognitive monitoring refers to "those processes that allow the individual to observe,

reflect on, or experience his or her own cognitive processes” (Schwartz and Perfect, 2004:4). It can be reflected in expressions like “feeling-of-knowing judgment,” “ease-of-learning judgment,” and “comprehension judgment” (Flavell, 1979).

Monitoring includes such processes as “identifying the task, checking, and evaluating one’s progress, and predicting the outcomes of that progress” (Blume and Covin, 2011; Schmidt and Ford, 2003:407). Metacognitive control refers to the “conscious and non-conscious decisions that an individual makes based on the output of his or her monitoring processes” (Schwartz and Perfect, 2004:4). Control processes are revealed by the behaviors a person engages in as a function of monitoring, for example if an individual feels that a particular issue has not been adequately comprehended he or she keeps asking or continues studying it (Schwartz and Perfect, 2004:4).

The metacognitive control process is critical in learning, making effective judgments, and the knowledge sharing of individuals (Schmidt and Ford, 2003). As noted, metacognitive monitoring and control work in tandem and thereby enable an individual to regulate his or her brain information processing, based on the requirements of the task at hand. This self-regulation mechanism requires the use of knowledge and experience as two sources of metacognitive abilities (Schwartz and Perfect, 2004). Therefore, two aspects of cognition which are monitored and controlled by metacognitive processes are knowledge and experience (Flavell, 1979).

Metacognitive knowledge refers to the part of one’s acquired knowledge that has to do with cognitive, or perhaps better considered as psychological, matter (Flavell, 1987). It contains one’s total knowledge base that pertains to one’s cognitive area as a whole. This knowledge can be subdivided into three components: knowledge of person variables, knowledge of task variables and knowledge of strategy variables (Flavell, 1987). Thus, it

refers to “one’s conscious and cognitive understanding of 1) people, 2) tasks, and 3) strategy” (Haynie, et al., 2010:222).

Knowledge of person variables refers to the acquired knowledge and beliefs concerning what human beings are like as cognitive organisms (affective, emotional, motivational, perceptual etc). It is subcategorized into intra-individual, which represents components such as self-efficacy, and confidences in learning, and inter-individual, which relates to the social interaction between individuals and universals that covers general knowledge (Flavell, 1987).

Knowledge of task variables covers the acquisition of knowledge about how the nature of the information which is encountered affects and constrains how one should deal with it. Given this, different kinds of tasks require different information-processing demands (Flavell, 1987).

Finally, knowledge of strategy variables is about how to achieve various goals. Cognitive strategies must be distinguished from metacognitive strategies (Haynie, et al., 2010). A cognitive strategy is designed to achieve some cognitive goals or subgoals, such as finding a sum of numbers, but a metacognitive strategy adds the numbers again to be sure that the total is correct. A cognitive strategy is about making cognitive progress and the metacognitive strategy is about monitoring the cognitive process. It must be noted that the knowledge of person, task, and strategy always interact (Flavell, 1987). In other words, it is almost impossible to isolate one of these three knowledge domains from the other two.

Metacognitive experience is conscious experiences that are cognitive and affective (Flavell, 1979). What makes them a metacognitive experience is their relationship with some cognitive endeavor or enterprise, most frequently a current ongoing endeavor (Flavell, 1987). This relates to any affective or cognitively conscious experience that is

pertinent to the conduct of intellectual life; often it is directly related to the conduct in an ongoing situation or enterprise. Therefore, it plays a very important role in everyday cognitive life (Flavell, 1979). As one grows older one learns how to interpret and respond appropriately to the different ranges of experiences in life (Flavell, 1987). In other words, metacognitive knowledge and experience develop over time and regulate the use of heuristics in making choices (Flavell, 1976; Haynie, et al., 2012; Melot, 1998). They are two main components of one's metacognitive ability (Flavell, 1979, 1987; Haynie, et al., 2010; Haynie, et al., 2012).

The extent to which individuals use their metacognitive ability is a function of their metacognitive awareness (Flavell, 1979; Haynie, et al., 2010). Metacognitive awareness refers to the feeling and experience an individual has when he or she engages in cognitive processes, such as retrieval (Schwartz and Perfect, 2004:5). A metacognitively aware individual could distinguish that he or she is not very good at certain kinds of cognitive tasks but pretty good at other tasks (Nambisan and Baron, 2012:11). This is specifically important for those cognitive tasks which are characterized by uncertainty, newness, and dynamism (Haynie and Shepherd, 2009).

Given these explanations, it would be important to know when metacognition occurs.

2.3.2 When Metacognitive Abilities Occur

The metacognitive abilities of individuals can be seen under particular circumstances. This makes it very difficult to distinguish between what is “meta” and what is cognition (Brown, 1987). Flavell (1979:28) argues that metacognition is most likely to occur when a situation explicitly demands or elicits it, such as when justifying or defending an important claim. It is also likely to occur in situations where it is important to make correct inferences, judgments, and decisions. In other words, when an individual's cognitive enterprise is perceived as being in difficulty, metacognition goes up (Flavell,

1987). These difficulties might have been caused by a high degree of risk or uncertainty involved in the enterprise. In these situations, monitoring and control processes attempt to regulate the acquisition and processing of information (Flavell, 1979). On the other hand, when attention and memory resources are pre-empted by more urgent experiences, such as pain, anxiety, or depression, metacognition is less likely to occur or to be applied (Flavell, 1979).

Given today's complex and competitive business environment (Cannella, et al., 2008) and managerial tasks which are characterized by uncertainty and dynamism, managers are more likely to deploy their metacognitive knowledge and experience to carry out their tasks. This could be particularly true for managers of SMEs who confront greater uncertainty (Camisón and Villar-López, 2010).

The next section reviews the previous research on the concept of metacognition.

2.3.3 Metacognition: An Overview of Past Research

2.3.3.1 Metacognition in Marketing and Consumer Behavior

Scholars in the marketing field, and in particular the area of consumer behavior, have been the most active employers of metacognition. Wright (2002) argued that consumers' knowledge and experience about the marketplace form their marketplace metacognition which impacts their social intelligence and purchase behavior. Similarly, Schwarz (2004) acknowledged the importance of consumers' metacognitive knowledge and experience in their decision-making. Further, Labroo and Mukhopadhyay (2008) argued that consumers with metacognitive knowledge and experience are better able to control emotions in making purchase decisions. Wan, Hong, and Sternthal (2009) advanced this research by showing that consumers make brand judgments using their metacognitive regulatory power (i.e. monitoring and control). Tsai and McGill (2011) and Dubois, Rucker, and

Tormala (2011) showed that consumers with metacognitive abilities had more confidence in making purchase decisions and communications about products. In the same line of thinking, Lee and Shavitt (2009) found that metacognitive experiences affect the perceived understanding of a brand and influence subsequent choices made by consumers.

Pocheptsova, Labroo, and Dhar (2010), taking a closer look, found that metacognitive difficulty faced by consumers about a specific purchase decision resulted in an enhanced judgment. In other words, a greater metacognitive ability would enhance consumer choice making. Similarly, Schrift, Netzer, and Kivetz (2011) argued that metacognition can be used to explain complicated choice making to consumers.

Given the above research, it could be argued that marketing scholars have long recognized the role of consumers' metacognitive components (i.e. knowledge, experience, monitoring, and control) in their behaviors. Brand choice, market behavior and communications by consumers have been shown to be influenced by their metacognition. This bears out the general assumption that metacognition is a key component of people's everyday lives.

2.3.3.2 Metacognition and Entrepreneurial Adaptability

Entrepreneurship scholars have long leveraged the cognitive perspective to shed light on a wide range of entrepreneurship phenomena (Grégoire, Corbett, and McMullen, 2011). Recently, Haynie and Shepherd (2009) employed the concept of metacognition to develop an inventory for measuring the cognitive adaptability of entrepreneurs. Their study was based on the premise that metacognitive monitoring and control enable an individual to be dynamic, flexible, and self-regulating. These three aspects comprise the capability of cognitive adaptability which is deemed to be a fundamental aspect of entrepreneurs in today's dynamic and uncertain environment. The authors argued that

metacognitive adaptability is not about why an entrepreneur takes a specific action but rather it aims to explain the higher-order processes that result in formulating the specific task and evaluation of subsequent actions.

Similarly, Haynie et al. (2010) developed a view of the entrepreneurial mindset based on the situated metacognition. They suggested that metacognitive abilities are significant abilities for entrepreneurs who have to act under uncertainty. The authors further argued that a metacognitive model of the entrepreneurial mindset can explain how entrepreneurs' metacognitive abilities allow them to be adaptive and think beyond existing knowledge structures. Baron and Henry (2010) endeavored to examine how and why some new ventures grow rapidly while others fail, and how entrepreneurs in rapidly growing ventures gain the required capabilities. They suggested that intense and deliberate practice is a key source of success for these entrepreneurs. They further highlighted the role of metacognition as a cognitive resource that influenced their committed, prolonged practice.

Arora, Haynie, and Laurence (2013) extended the applicability of the entrepreneurial metacognitive model into the counterfactual thinking domain. The authors argued that reflection on counterfactual thoughts to pursue an opportunity is a metacognitive entrepreneurial behavior. In their study, individuals with better metacognitive abilities (metacognitive experience) could retrieve their past experience in developing more effective future entrepreneurial behavior. Mukherji et al. (2011) applied the measure developed by Haynie and Shepherd (2009) to examine metacognition in a sample of entrepreneurs. Their findings suggested that metacognition could be considered important to the activities and actions of entrepreneurs. Blume and Covin (2011) proposed that entrepreneurs' metacognitive skill is positively associated with their development of expert entrepreneurial schemas.

Haynie et al. (2012) modelled 10,000 “entrepreneurial decisions” nested within 217 individuals and showed that individuals inexperienced in the entrepreneurial process who employ metacognitive resources use feedback more successfully than others, implying that metacognitive ability presents an important mechanism for the development of expert performance. Similarly, Nambisan and Baron (2012) proposed that metacognitive capabilities would enhance entrepreneurs’ decision-making and choices related to competing technology development goals. More recently, Baron et al. (2013) observed positive associations between entrepreneurs’ metacognitive knowledge and components of entrepreneurial orientation (i.e. innovativeness, risk taking, and proactiveness). They argued that metacognitive knowledge would facilitate managing the challenges posed by these strategies, and thus encourage entrepreneurs to adopt them.

In summary, research in entrepreneurial metacognition appears to be growing. The core logic of this body of research is that metacognitive abilities could be a significant component of entrepreneurial success. These abilities enable entrepreneurs to adapt cognitively, discover opportunities, and pursue them more effectively. Entrepreneurship scholars have depicted metacognition as an important resource for entrepreneurs to carry out their tasks (e.g. Haynie, et al., 2012).

Given that entrepreneurship and strategy are closely related there are reasons to assume that metacognition could provide valuable insights into strategy literature. In this respect, Hodgkinson and Healey (2011) argued that executives’ metacognition is a key driver of firms’ abilities to develop dynamic capabilities. Mitchell et al. (2011) studied 2,048 decisions made by 64 CEOs of technology SMEs and showed that executives with a greater metacognitive experience are less likely to make erratic decisions. The favorable effects of executives’ metacognition on their strategic decision-making are consistent with the results found in entrepreneurship studies.

Although a growing body of entrepreneurship research has suggested the important role of metacognition in entrepreneurial decisions and activities (e.g. Baron and Henry, 2010; Blume and Covin, 2011; Nambisan and Baron, 2012), strategic management literature in general, and upper echelons research in particular, are still lacking theoretical as well as empirical research on executives' metacognition and its impacts. From a strategic management perspective, metacognition is relevant to research on the micro-foundations of strategy. Micro-foundations in strategy are increasingly garnering attention (Coff and Kryscynski, 2011; Foss, 2011). This domain generally talks about activities of individuals and specifically executives as micro-level factors that influence macro-level behavior (i.e. firms, markets, and industries) (Fellin and Foss, 2006). Micro-foundational discussions particularly pertain to cognitive factors of behavior (Foss, 2011).

Furthermore, there is reason to believe that the metacognitive view is relevant to the growing interest in the strategy-as-practice (S-as-P) perspective. S-as-P advocates the notion of strategy as an emergent phenomenon and subscribes to investigation of the practice of strategizing through the behavior of its main actors (i.e. executives) (Johnson, et al., 2007). One of the central issues in S-as-P is cognitive drivers of managerial behavior (Floyd, et al., 2011). So, understanding the role of executives' metacognitive abilities and processes in their strategizing practices is directly pertinent to the S-as-P research stream.

From a more specific view, extending the metacognitive view into the top management team level would provide insights into how combined cognition of top managers impacts the firm's strategic direction.

2.3.4 Metacognition: Implications for the Upper Echelons Model

Strategic management scholars have always sought to explain why the behavior of firms varies. Over the past few decades, since the influential works of Herbert Simon

(1947, 1957), scholars have increasingly paid attention to cognitive drivers of executives' behavior as a crucial precursor to a firm's strategic behavior (Buyl, et al., 2011b; Narayanan, Zane, and Kemmerer, 2011). The notion of the managerial cognitive process refers to the upper echelons theory—the idea that the TMT's cognitive processes are important to their interpretation of the situation and choice making (Buyl, et al., 2011b; Hambrick, 2007; Hambrick and Mason, 1984). Understanding of how executives' cognition influences their administrative behavior could afford worthwhile insights into the human side of strategy and oppose the deterministic view of strategic management by placing executives' cognitive attributes between the firm and its business ecosystem. In particular, such understanding at top management team level will enrich the existing upper echelons literature which asserts that a focus on an entire team of top managers could provide strong explanations of organizational behavior (Hambrick, 2007).

In light of the emerging research on the concept of metacognition, this study focuses on metacognitive resources, metacognitive knowledge, and metacognitive experience. Individuals, however, vary in their metacognitive resources (Flavell, 1979, 1987; Haynie, et al., 2012). It is this aspect that forms the core of this study, the variability between TMT members and its impacts on a firm's entrepreneurial behavior and performance. Metacognition could be particularly relevant as it reflects managers' understanding of their own cognition (Baron, Tang, and Hmielecki, 2011; Nambisan and Baron, 2012). It could be considered as an important factor in managers' understanding of their own decision-making and action (Mitchell, et al., 2011; Nambisan and Baron, 2012) and their firms accordingly. As decision-makers, managers would probably bring such understanding to an administrative situation (Hambrick and Mason, 1984) which influences the team choice making and resulting action. Thus, metacognitive resources could be utilized to inform existing upper echelons research trying to find out how

diversity in top managers' cognitive processes contributes to their behavior and performance.

TMT diversity, as noted earlier in this chapter, is defined as distributional differences among top management team members with respect to a common attribute. In relation to metacognitive knowledge and experiences, diversity reflects the degree to which top managers differ with respect to these metacognitive resources. This diversity will see differences in the types and processes used by team members to make decisions, solve problems, and carry out tasks (Haynie and Shepherd, 2009; Haynie, et al., 2010; Mitchell, et al., 2011). It is a significant differentiator and could be expected to have important firm-level implications. In particular, it has been argued that metacognition is more important for tasks characterized by uncertainty and dynamism such as entrepreneurial ones (Haynie and Shepherd, 2009). Such tasks make top managers deploy their metacognitive abilities more to carry out them (Baron, et al., 2013; Haynie, et al., 2010; Nambisan and Baron, 2012). Entrepreneurial orientation as a top management's tendency towards entrepreneurial activities (Zhao, et al., 2011) exemplifies such tasks. It could be a potential reflection of TMT metacognitive ability and a factor which is important to the performance of the firm (Miller, 2011). Accordingly, the mediating role of entrepreneurial orientation will be examined in this study.

The next section reviews the existing literature on the concept of entrepreneurial orientation.

2.4 Entrepreneurial Orientation

This section reviews the literature on the concept of entrepreneurial orientation (EO). The structure of this section is as follows. First, the concept of entrepreneurship is reviewed and its association with entrepreneur and entrepreneurial activities will be

explained. Then, to extend the notion to a firm-level phenomenon, the concept of business orientation and accordingly entrepreneurial orientation will be illustrated. This discussion is followed by a review of the historical development of the concept of entrepreneurial orientation in the business literature. Building on this discussion, two views of entrepreneurial orientation will be distinguished and discussed. The last section reviews the research on the concept of EO from the strategic leadership perspective.

2.4.1 Entrepreneurship, Entrepreneur, and Entrepreneurial

The three concepts of “entrepreneurship,” as the set of activities carried out by an entrepreneur or the field that studies these activities, “entrepreneur” and “entrepreneurial,” as the characteristics or attributes that capture the essence of entrepreneurship, have long been discussed in the economics and business literature (e.g. Ahuja and Lampert, 2001; Burgelman, 1983; Cornwall, 1998; Covin and Miles, 1999; Dess, Lumpkin, and McGee, 1999; Djankov, et al., 2006; Drucker, 1986; Ireland and Webb, 2007; Ireland, Reutzell, and Webb, 2005; Jones and Coviello, 2005; Tripathi, 1985; Westfall, 1969). This body of research has its roots in economics and it has been argued that the notion of entrepreneurship is as old as economics itself (Cole, 1946; Soltow, 1968). However, the contemporary literature attributes the current understanding of entrepreneurship as a field of study and entrepreneur as a unit of study to the works of Joseph Schumpeter (1934) and Israel Kirzner (1973).

Schumpeter was interested in the new theory of capitalism and economic prosperity based on change and innovation. Therefore, he proposed that economic wealth is not created by capital accumulation; rather it is generated by innovative activities that use capital in new ways. He called these new ways “new combinations” (Schumpeter, 1934, 1928:377). This idea was further developed by Austrian economists and most notably

Kirzner (1973). According to Kirzner, entrepreneurship is all about discovering and exploiting previously unexploited opportunities by using new combinations of resources. Therefore, Kirzner (1973) shifts the focus of attention from new combinations to opportunities and advocates the study of entrepreneurship as a process rather than an outcome (innovation in Schumpeter's view) (Foss, et al., 2008). According to this view, some individuals have some behavioral or personal elements that enable them to be alert to opportunities and thus they are called "entrepreneurs." He further assumed that the actions of entrepreneurs lead to a better allocation of resources. By analogy, entrepreneurship leads to better allocation of resources in a market economy (Kirzner, 1973). Hence, entrepreneurship is the most important force in today's markets.

In spite of this plethora, as stated by Thomas and Mueller (2000), the study of entrepreneurs and entrepreneurship has undergone a metamorphosis as scholars from diverse fields such as sociology, anthropology, and business strategy apply their disciplinary concepts to the antecedents and consequences of this field of inquiry. This fact underscores the significance of entrepreneurship as a growing discipline, but simultaneously unveils the difficulty of mapping the realm of entrepreneurship. In this regard, the extant body of literature throws light on a gap in the body of entrepreneurship knowledge. This gap exists between the theoretical structure of the construct of entrepreneurship that entails entrepreneurial activities of individuals and firms across different disciplines and practical developments of entrepreneurship in different economic and industrial sectors. For instance, in an attempt to determine the boundaries of the field of entrepreneurship as a scholarly domain and address this gap, Shane and Venkataraman (2000: 218) defined entrepreneurship as "the scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited." Therefore, the essence of entrepreneurship is all about

discovering and exploiting an opportunity (Schumpeter, 1934; Tripathi, 1985). This is consistent with the widely accepted view of Stevenson (1983) that entrepreneurship is a style of management or executive leadership in which opportunities are pursued and exploited without regard to resources currently controlled. Ireland et al. (2001) also advocated this view by describing entrepreneurship as a context-dependent social process through which individuals and teams create wealth by bringing together unique packages of resources to exploit marketplace opportunities.

Given these definitions of entrepreneurship as a whole, the field has been criticized for its inability to define who an entrepreneur is. For example, Penrose (1959) argued that an entrepreneur is an enterprising manager who explores and exploits opportunities. Hartmann (1959) took a different position and argued that an entrepreneur is different from a manager in that an entrepreneur is fully autonomous and has all the required authority but a manager is not fully autonomous and has limited authority in an organizational setting.

Given the above, the field of entrepreneurship used to be dominated in terms of who the entrepreneur is and what he or she does. The problem with this approach is that entrepreneurship involves the nexus of two phenomena: the presence of lucrative opportunities and the presence of enterprising individuals who exploit those opportunities. Hence, a more appropriate view of entrepreneurship could be as the field of examining how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited. Consequently, the field involves the study of sources of opportunities; the processes of discovery, evaluation, and exploitation of opportunities; and the set of individuals, the team of corporate actions which discovers, evaluates, and exploits them (Shane and Venkataraman, 2000:218). In this sense, Shane (2000) argued that there are three schools of thought in entrepreneurship research related

to the discovery of opportunity and formation of innovative actions that lead to exploit them (page 449):

1. Neoclassical Equilibrium Theories: Generally equilibrium theories assume that markets are composed of maximizing agents whose collective decisions about prices clear markets. In the equilibrium framework, no one can discover a misalignment that would generate an entrepreneurial profit because, at any point in time, all opportunities have been recognized and all transactions perfectly coordinated. Because an equilibrium framework does not allow people to recognize opportunities that others do not see, equilibrium theories explain entrepreneurship by identifying individuals who prefer to become entrepreneurs.
2. Psychological Theories: This school sees individual entrepreneurs instead of corporate actions and argues that entrepreneurship is a function of stable characteristics possessed by some people and not others. According to this perspective, enduring human attributes—such as the need for achievement, willingness to bear risk, self-efficacy, internal locus of control, and tolerance for ambiguity—lead some people and not others to choose entrepreneurship and become successful entrepreneurs, and in the case of firms these characteristics of leaders may be reflected in the firm's strategies to create entrepreneurial firms.
3. Austrian Theories: Austrian economists believe that equilibrium approaches fail to offer a satisfying theoretical framework for understanding market processes. They believe that a viable theory of a market system cannot assume equilibrium

but must explain how a market would achieve that equilibrium from non-equilibrium initial conditions.

These classical notes highlight the role of a wide range of resources and procedures involved in entrepreneurship.

Entrepreneurship and its elements have been consolidated and remained central over the last few years as stated above. As a consequence, entrepreneurship has been crystallized as a multifaceted construct (Dess, et al., 1999; Drucker, 1986; Ireland, et al., 2001; Shane and Venkataraman, 2000; Stevenson and Jarillo, 1990) which is directly or indirectly related to disciplines as diverse as marketing, organizational behavior, strategic management, finance, and human resource management (Herron, Sapienza, and Smith-Cook, 1991, 1992). Although the construct of entrepreneurship has been widely studied, in today's world of business, entrepreneurial procedures and dynamism of innovation, speed of opportunity recognition, approaches of employing resources to elicit value from deciphered opportunities, and also the nature of entrepreneurial opportunities have all undergone radical changes (Bruton, Ahlstrom, and Obloj, 2008; Djankov, et al., 2006; Ireland and Webb, 2007; Ireland, et al., 2005; Jones and Coviello, 2005).

Given the above, entrepreneurship is a distinct field of research deserving specific scholarly attention (Venkataraman, 1997). Currently entrepreneurship is regarded as one of the most significant domains of business and management literature (Davidsson, 2003). In line with this notion, this section discusses the meaning and importance of this domain.

As discussed earlier in this chapter, this study focuses on the concept of entrepreneurial orientation. To address and explain what entrepreneurial orientation means, the notion of business orientation will first be illustrated.

2.4.2 Business Orientation: Strategic, Marketing and Entrepreneurial

Business orientation was originally coined by Khandwalla (1977). According to Khandwalla, an organization's style or orientation is "an internal set of operating beliefs and norms which comprises management's philosophy of business" (Miles and Munilla, 1993:44). This definition mirrors the dictionary's definition of orientation as long-lasting thought, interest, or inclination (Pearson, 1993). Therefore, the business orientation of an organization is basically its interest in a particular aspect of the business. Kotler (1988) adopted this definition and argued that the business orientation of an organization or a firm represents an underlying philosophy and consciousness that navigates all its internal and external activities. Accordingly, it describes how a business defines itself, its mission, and objectives (Pearson, 1993; Woodside, 2005). Miles and Munilla (1993) argued that, since business orientation is essentially a philosophy held by managers of the business which influences both their strategic and tactical decisions, it can be assessed by observing a business's internal and external behavior.

Given this description, different authors from different disciplines have extended the notion of business orientation into various types of management philosophies. These different types of a firm's orientation have been subsequently linked with the firm's market performance in order to explain why some firms outperform others. Some of the key extensions are market orientation (Jaworski and Kohli, 1993), eco-orientation (Miles and Munilla, 1993), innovation orientation (Siguaw, Simpson, andENZ, 2006), technology orientation, customer orientation, and learning orientation (Pearson, 1993), strategic orientation (Venkatraman, 1989), and entrepreneurial orientation (Covin and Slevin, 1988).

The key assumption shared by these scholars is that an orientation generates the behaviors intended to ensure the viability and performance of the business (Hakala,

2011). Therefore, firms with a more favorable orientation towards a key factor such as customers can outperform not-favorably oriented competitors. Additionally, since each orientation generates its intended behavior, scholars have argued that a firm should develop multiple orientations to stay competitive. In order to summarize this literature, Hakala (2011) stated that four types of orientation have received the most attention in the business and management literature including technology (also known as innovation or product) orientation, learning orientation, market orientation, and entrepreneurial orientation.

As one of the main constructs of the study, the next section explains the concept of entrepreneurial orientation and reviews its historical development.

2.4.3 Historical Development of Entrepreneurial Orientation

The notion of entrepreneurial orientation (EO) as a firm-level characteristic was developed by Miller (1983) based on the concept of business orientation of Khandwalla (1977). Miller's intention was to capture the entrepreneurial activities of the firm. He argued that EO does not focus on who does the activities; rather its focus is to see what organizational processes and aspects are involved in an organization that is behaving entrepreneurially. Other scholars extended this logic (Covin and Slevin, 1988) into a new organizational construct that distinguishes entrepreneurial firms from non-entrepreneurial firms. Since entrepreneurship has been the driving force of markets, scholars have also argued that the entrepreneurial orientation of a firm can be an important predictor of its market performance (Miller, 2011). As a result, literature on strategy and entrepreneurship suggests that EO can offer some explanations for the performance variations of firms in a market.

On the basis of this reasoning, empirical and conceptual research on the role and importance of entrepreneurial orientation has blossomed over the past few decades (e.g. Alegre and Chiva, 2013; Kreiser, et al., 2013; Real, Roldán, and Leal, 2012; Slevin and Terjesen, 2011; Wales, Parida, and Patel, 2013). The evolution of this concept can be explained in three stages.

In the first stage, Miller (1983) used the notion of conservative and entrepreneurial firms originally developed by Miller and Friesen (1982) to develop a concept of a firm's entrepreneurial orientation. According to this view, two opposing types of firm could exist in a market known as conservative and entrepreneurial. Conservative firms see innovation as an unnecessary strategic move and pursue innovative moves only when environmental changes force them in a reactive way. In contrast, entrepreneurial firms consider innovation as a necessary logic and pursue it aggressively and proactively. Drawing on this logic, Miller (1983) argued that the essence of entrepreneurial firms can be captured through the interplay between three interdependent and highly correlated processes of innovativeness that refers to a tendency to engage in product-market innovations, proactiveness that is a tendency to be the first in competitive moves and beating competitors to the punch and risk taking as a propensity to engage in risky ventures. He then borrowed the logic of the firm's orientation (Khandwalla, 1977) to develop a configurational approach to studying entrepreneurship at the firm level. This configuration suggests that "the manner and extent to which entrepreneurship would be influenced by factors such as personality of leaders, structure of the firm and strategies of the firm would, to a large extent, depend upon the nature of the organization" (Miller, 1983:770) and this nature can be reflected in the entrepreneurial orientation of the firm. According to Miller (2011), the choice of these three attributes is based on the study of

classical works on entrepreneurship (e.g. Cole, 1946; Hartmann, 1959; Knight, 1921; Schumpeter, 1934; Shapero, 1975) and commonalities between them.

The second stage is characterized by the increasing recognition and popularity of entrepreneurial orientation. Noticeably, the works of Covin and Slevin (1986, 1988, and 1989) further clarified the concept and put it at the centre of research into strategy and entrepreneurship. This strand can be summarized as follows. Covin and Slevin (1986) coined the term “entrepreneurial orientation” as a three-dimensional firm-level construct based on the work of Miller (1983). In their 1988 research they further elaborated this construct and argued that a firm’s entrepreneurial orientation is in fact its top management team’s entrepreneurial orientation, also known as “top management team entrepreneurial style.” This style makes the firm behave and grow in an entrepreneurial mode. The last point made by Covin and Slevin (1988) is that the impact of this style on the firm’s performance is contingent upon the context in which the firm operates and the internal characteristics of the firm such as its structure. For example, firms with non-bureaucratic and more flexible structures can enjoy more from innovation than firms with a bureaucratic and less flexible structure. Finally, Covin and Slevin (1989) extended their previous work by testing the relationship between the orientation of small firms and their performance under the two environmental conditions of hostility and benignity. They argued and empirically found that entrepreneurial conservatism determines the strategic posture of a firm. For small firms this posture interacts with the environmental conditions and explains performance variations in a predictable fashion. Their findings suggest that an entrepreneurial strategic posture could be particularly beneficial to small firms in hostile environments, and, conversely, conservation may be strategically beneficial in benign environments.

Building on these findings, Covin and Slevin (1990) further extended the concept of EO into the organizational context by stating that the three dominant aspects of EO (i.e. innovativeness, risk taking, and proactiveness) pervade “the organization at all levels and reflect the top managers’ overall strategic philosophy on effective management practice” (page 7). Thus, EO offers a conceptual base on which to study recurring patterns in organizations that behave entrepreneurially. The key assumption of this phase is that entrepreneurship can be firm-level behavior as opposed to the traditional view of individual-level behavior, and, as a result, the ultimate dependent variable is firm performance not individual profit maximization. This conceptual shift denotes that an entrepreneurial firm has a unique strategic posture (i.e. EO) that is formed by the interactions between internal variables (i.e. top management values, resources, competencies, culture), strategic variables (i.e. the firm’s mission, strategies, business practices) and external variables (i.e. environmental dynamism, hostility, etc.). This model was then empirically tested by Covin and Slevin (1990). The empirical evidence showed that in high-tech small firms EO is reflected in the mission statement and strategies of the firm and subsequently growth strategies are influenced by the EO. This correlation leads to the implementation of strategies that drive market share growth.

Building on this work and the fact that EO in the entrepreneurship literature and market orientation (MO) in the marketing literature had been increasingly studied and used as factors explaining differential performance, Miles and Arnold (1991) endeavored to examine how and to what extent these two firm orientations differ. This was an important clarifying research as it showed that these two orientations are correlated but capture different aspects of firms’ behaviors. Therefore, the position of EO was further substantiated as a unique organizational construct.

Extending this strand, Ramachandran and Ramnarayan (1993) observed that managers of entrepreneurial (i.e. ventures with a high degree of EO) ventures in India use networking in a different fashion from managers of non-entrepreneurial ventures. They found that entrepreneurially oriented managers see networking as an important means of acquiring resources necessary for the creation and growth of a new venture.

As can be seen, the first phase of the evolution of EO was dominated by clarifying the concept and its attributes, leading to the second phase in which the construct gained further clarity, momentum, and popularity as a firm-level attribute that positively influences the performance of the firm when environmental conditions are competitively tough such as in high-tech industries and hostile markets.

The third phase is, however, distinct from the other two in that it began with a reconceptualization and refinement of the conceptual structure of EO and continues with new empirical and theoretical research. Lumpkin and Dess (1996) refined the three-dimensional view of EO and argued that this view fails to capture the true entrepreneurial nature of a firm and thus EO ought to be measured by the five dimensions of autonomy, innovativeness, risk taking, proactiveness, and competitive aggressiveness. This remark differentiates this phase from the first two. Lumpkin and Dess (1996) asserted that EO initially originates from the strategic choice perspective in which managers have agency and undertake purposeful enactment to impact the performance of their firm. This EO refers to “the processes, practices, and decision-making activities that lead to entrepreneurial activities and mainly new entry” (page 136).

The two additional dimensions of this extended view of EO can be described as follows: autonomy refers to a tendency toward independent and autonomous action and the intentionality to carry forward the specific actions required to launch entrepreneurial initiatives such as different types of innovation and competitive aggressiveness is “the

propensity to directly and intensely challenge the competitors to achieve entry or improve position, that is, to outperform industry rivals in the marketplace” (page 148). Therefore, it is a type of intensity and head-to-head posturing that is often needed to compete with existing rivals.

In addition to proposing these two extra dimensions of EO, Lumpkin and Dess (1996) refined the definition of three dominant dimensions of EO. For instance, they argued that innovativeness is, in fact, a firm’s tendency “to engage in and support new ideas, novelty, experimentation, and creative processes that may result in new products, services, or technological processes” (page 142). It was also noted that innovativeness can vary in the degree of radicalness of the resultant innovation. That is, an innovative firm can launch a radically new or incrementally new innovative product or service. Moreover, risk taking is also related to concepts such as risk propensity, risk preference, and willingness to engage in risky actions or pursue risky options. To clarify this dimension, Lumpkin and Dess (1996) argued that risk is always about uncertainty and pursuing unknown but potentially rewarding options. Finally, they suggested that proactiveness is essentially “a forward-looking perspective that is accompanied by innovative or new-venturing activity” (page 147) which is based on acting in anticipation of future problems, needs, or changes. Therefore, proactiveness is largely associated with quickness of innovation and being first to launch an innovative move. Adding to this debate, Lumpkin and Dess (1997) further argued that the dimension of proactiveness is ambiguous and equivocal and can be replaced with competitive aggressiveness in order to make the conceptual structure of EO more relevant and practical.

In another attempt to extend the notion of EO and refine its dimensionality, Knight (1997) used two dimensions of proactiveness and innovativeness in a relatively different structure. According to Knight, innovativeness can be captured by product line, product

change, and R&D leadership of the firm, whereas proactiveness can be described by launching new techniques, competitive postures, risk-taking proclivity, environmental boldness, and a competitive decision-making style. These two resemble the five dimensions of Lumpkin and Dess (1996) within a different conceptual ordering. However, the main contribution of the work of Knight was its ability to test this view of EO in both English and French contexts in order to extend the boundaries of the outside of the US (i.e. the origin of Miller (1983), Covin and Slevin (1986), and Lumpkin and Dess (1996)).

Following this logic other scholars also tried to expand the boundaries of EO into new dimensions in order to see: 1) how EO interacts with other constructs such as country of origin and cultures, and 2) how a combination of different views of EO and other factors can create a more complete and pronounced explanation for the variations in firm performance.

These two objectives form the main impetus behind the ongoing research on EO. For instance, in a study that addresses the former line of research, Lee and Peterson (2000) proposed that the EO of firms is related to the culture of their country of origin. They further postulated that “a culture that is low on power distance, weak in uncertainty avoidance, masculine in nature, individualistic, achievement oriented, and universalistic will engender a strong EO, characterized by autonomy, proactiveness, competitive aggressiveness, innovativeness, and risk taking; a strong EO will ultimately lead to increased entrepreneurship and global competitiveness” (page 415). Similarly, Mueller and Thomas (2001) found that innovativeness is promoted more in individualistic cultures (e.g. the US and Canada) than in collectivist cultures (e.g. Singapore and China). In the same line of reasoning, Kemelgor (2002) observed that there is no significant difference

between firms in the Netherlands and US in terms of the importance and implementation of EO.

From a different perspective and pertinent to the latter line of inquiry, Wiklund (1999) argued that EO is a resource-consuming strategic logic, that is, it requires a large allocation and commitment of resources to activities such as innovation, experimentation, and risky ventures. Thus, its impacts on performance can just be seen in the short term. He accordingly studied small firms in Sweden for three years (1996-98) and found that the relationship between EO and performance is sustainable. Consequently he pointed out that investing in EO is a beneficial competitive strategic move for resource-constrained firms such as SMEs.

Given this heightened debate on the role of EO and how it is associated with other factors, Lyon, Lumpkin, and Dess (2000) intended to further advance the debate on the relationship between EO and firm performance. They reviewed the literature and found that researchers tend to use a selective combination of items proposed by Covin and Slevin (1986) and Lumpkin and Dess (1996) through different methods. Therefore, literature is suffering from a lack of consistency and clarity. They observed that different items of EO are being measured in three ways that add to the theoretical and empirical confusion surrounding the EO-performance relationship. These three ways include: 1) managers' perception of their firms' EO (survey items), 2) firm-level objective data on resource allocations such as the use of "R&D intensity, measured as the ratio of research and development expenditures to the firm's total number of employees, as a proxy for innovation. Measures of propensity for risk taking could include indicators of financial leverage, such as total debt to total equity, as well as an indicator of business risk" (page 1061), and 3) observing firms' behaviors by content analysis of their missions, and news headlines on the competitive behaviors of the firms. Examples could be measuring

“aggressiveness through assessing the number of actions, time to respond to a rival’s action, etc., or measuring innovativeness by exploring the number of innovative actions” (page 1060).

Lyon et al. (2000) suggested that each approach has advantages and disadvantages that are complementary to operationalizing EO. Therefore, a contingency view in which different approaches are chosen according to organizational and environmental factors can enhance this debate and lead to a more accurate understanding of how and when EO is conducive to better performance.

Lumpkin and Dess (2001) tested the claims of Lyon et al. (2000) by using only two dimensions of EO (proactiveness and competitive aggressiveness) with data from 94 small firms in the US and observed that the association between these two dimensions and firm performance depends on the industry life cycle and environmental dynamism. More specifically, proactive strategies were more important in the early stages of an industry whereas competitive aggressiveness was more conducive to performance when a firm is in mature stages of an industry. Furthermore, in dynamic environments proactive firms achieved better performance while in a hostile context competitively aggressive firms were able to achieve higher performance.

Additionally, George, Robley Wood, and Khan (2001) studied 70 banks in the US and observed that banks whose boards of directors have broader networks were more entrepreneurially oriented. Further, Salavou and Lioukas (2003) studied SMEs in Greece and found that EO was directly and significantly related to the rate of radical product innovation of the firm. They established an empirical link between innovativeness as a propensity to innovate and radical product innovation as the outcome of this propensity.

Wiklund and Shepherd (2003) extended the notion of EO into a resource-based view. They argued that EO enhances the way the market and technological knowledge of the

firm, as two key resources, enhances performance. They reported that EO as a representative of how a firm acts entrepreneurially moderates the positive link between the knowledge stock of the firm and its performance. Richard et al. (2004) added to this debate by showing that the link between racial and gender diversity in the firm and its performance is non-linear, which is also influenced by the EO. Specifically they found that innovativeness positively, and risk taking negatively, moderated non-linear relationship patterns for both racial and gender diversity. Bhuian, Menguc, and Bell (2005) showed that EO positively moderates the relationship between market orientation and firm performance. Li et al. (2008) also reported similar findings from a study of Chinese SMEs.

These studies show how EO has evolved from being simply a representative of a firm's entrepreneurial behaviors and an antecedent of its superior performance to becoming a key construct interacting with managerial attributes, and strategic, and organizational factors that jointly define how a firm behaves in the marketplace. A review of the literature shows that the focus of attention has shifted from the simple associations between three original dimensions of EO and firm performance to more complicated and fine-grained causal links. For instance, Wiklund and Shepherd (2005) argued that the traditional direct main effect mindset in the relationship between EO and performance creates an incomplete and misleading picture of the role of EO. They suggested two (EO-environment) and three (EO-environment-resources) configurationally different views as alternatives to account for the impacts of EO on firm performance. In a similar fashion, Dess and Lumpkin (2005) studied large firms in the US and found that firms whose CEOs and organizational culture encourage innovative moves show a high degree of EO and this EO is significantly related to their superior performance. Covin, Green, and Slevin (2006) adopted a contingency approach and examined the impacts of three strategic

process variables—strategic decision making participativeness, strategy formation mode, and strategic learning from failure—on the relationship between entrepreneurial orientation and firm sales growth rate. They found that the direct relationship between EO and sales growth rate was more pronounced for firms who employ autocratic decision making and that show an emergent strategy formation process.

Further, Poon, Ainuddin, and Junit (2006) showed that EO played an important mediating role in the relationship between managers' self-efficacy and firm performance while it did not play such a role in the link between the internal locus of control and the firm performance. In a similar study, De Clercq and Belausteguigoitia Rius (2007) studied Mexican firms and observed that in entrepreneurially oriented firms employees show a higher degree of commitment than in firms with a lower level of EO. Madsen (2007) studied 168 Norwegian SMEs from 2000 to 2003 and showed that a change in EO (higher or lower) over time might be of importance for a firm's performance (page 201).

Hughes, Hughes, and Morgan (2007) found a contingency link between EO and a firm's learning modes. They studied young high-tech firms in the UK and observed that EO triggered explorative learning (acquiring new knowledge) and thus firms could not manage both exploitative learning (use of existing knowledge) and EO. The study of Keh, Nguyen, and Ng (2007) showed that entrepreneurial orientation played an important role in the acquisition and utilization of marketing information in Singaporean SMEs. Wang (2008) found that learning orientation defined as commitment to learning (i.e. acquiring more and new knowledge) mediated the relationship between EO and firm performance of the ventures in the UK. Similarly, Li, Huang, and Tsai (2009) observed that knowledge creation partially mediated the positive relationship between EO and firm performance, suggesting that firms with EO engage in more creation of knowledge and this process influences their performance.

This contingency suggests that EO as a strategic philosophy should be aligned with appropriate strategy types to enhance performance, which is consistent with the findings of Covin et al. (2006). Green, Covin, and Slevin (2008) further expanded this notion by showing that EO is not correlated with strategic reactivity, but in the firms with a mechanistic (i.e. less flexible) structure and technocratic decision-making style the link between EO and strategic reactivity is likely to create a sustained competitive advantage.

Extending this line of inquiry on the link between EO, strategy, and performance, Moreno and Casillas (2008) proposed another contingency view in which the relationship between EO and sale growth as an indicator of firm performance is mediated by three types of competitive strategy (prospector, new product technologies, and new market needs) and moderated by two factors: one organizational (existence of idle or slack resources) and the other environmental hostility and dynamism. Their research could be regarded as an important empirical study using the three-configuration view of Wiklund and Shepherd (2005) to show how EO directly and indirectly influences the sale growth of the firm. The findings from 434 Spanish firms suggested that the relationship between EO and growth is positive yet complex.

Having explained this evolution, it is evident that the role of EO and its position within the strategy and entrepreneurship literature have gained remarkable popularity amongst scholars. Drawing on this fact, Rauch et al. (2009) performed a meta-analysis of the research on the link between EO and firm performance. Their study indicates that both direct and indirect links between EO and performance are significant, which grants use of different moderation and mediation factors. They accordingly reported that the use of moderators outweighs mediational analysis and key moderator variables include firm age (older ones with more established habits being less positively affected by EO),

environmental dynamism (rewarding a higher EO), national culture (performance- and future-oriented cultures positively moderating EO), strategy pursued (low-cost strategy firms being less positively affected by EO than differentiation strategy firms), and organizational structure (formalization).

Accordingly, further knowledge accumulation in EO requires more attention to new moderators and also mediational analysis. Addressing this call, Stam and Elfring (2008) examined the role of social capital in the link between EO and the performance of 90 ventures in the open system software industry. They found evidence suggesting that the combination of high network centrality and extensive bridging ties strengthened the link between EO and venture performance. Similarly, De Clercq, Dimov, and Thongpapanl (2010) studied Canadian SMEs and found that “the EO-performance relationship is stronger when the organization’s social context comes closer to an ‘ideal’ configuration of procedural justice, trust, and organizational commitment that is most conducive to knowledge exchange within the organization” (page 87).

To conclude this review, it is important to note that recently a surge of interest in the association between EO and firm performance through knowledge-based constructs has formed in the literature. This surge can be explained by an increasing interest in how the integration of different views such as a knowledge-based view and an entrepreneurial view would account for a more powerful explanatory model of firm performance (Wiklund, et al., 2011). Amongst these studies is, for example, the study of Alegre and Chiva (2013) on Italian and Spanish ceramic tile producers which suggests that the joint impact of organizational learning capability and innovation performance should be enhanced by managers in order to boost the positive EO-performance link. Wales et al. (2013) also found that “entrepreneurial orientation (EO) moderates the absorptive capacity-performance relationship, enhancing financial gains at lower levels of absorptive

capacity and mitigating the decline in financial performance at higher levels of absorptive capacity. Further, with higher EO, higher absorptive capacity can be achieved before financial returns diminish” (page 622).

As the discussion above demonstrates, numerous factors have been related to EO and its association with firm performance. Nevertheless, there are still avenues for both future development of the concept of EO and its interplay with other existing and emerging constructs. In this respect, upper echelons perspective could be insightful into the role of executives in the adoption of EO. Before discussing this perspective, since this study draws on the multidimensional view of entrepreneurial orientation, the next section briefly explains this view.

2.4.4 Unidimensional Versus Multidimensional View of Entrepreneurial

Orientation

Given the evolutionary process of research into entrepreneurial orientation, some scholars have considered entrepreneurial orientation as a unidimensional construct and assumed that its three main components (innovativeness, risk taking, and proactiveness) could be integrated in order to assess the firm’s entrepreneurial orientation (e.g. Alegre and Chiva, 2013; Brettel and Rottenberger, 2013). A few authors have advocated the multidimensional view and suggested that although related, those dimensions could be treated separately (e.g. Baron, et al., 2013; Kollmann and Stöckmann, 2012; Kreiser, et al., 2013).

Recently a trend has been gaining momentum suggesting that the three key aspects (innovativeness, risk taking, and proactiveness) are not highly correlated and thus cannot always act jointly to determine whether a firm acts entrepreneurially or not (Miller, 2011). Therefore, their respective impact on the firm’s performance could be assessed separately rather than jointly. The contention of this strand is that a multidimensional and

disaggregated assessment of EO leads to a more complete and parsimonious view of how a firm acts entrepreneurially and how each dimension of this behavior influences the performance of the firm. George (2011) and George and Marino (2011) further enriched this debate by arguing that research on EO can advance by considering it as a reflective three-dimensional construct represented by three different subconstructs that can vary or co-vary independently. The reason for supporting a three-dimensional view as described by Miller (1983) instead of the five-dimensional refinement of Lumpkin and Dess (1996) is the popularity of the former view. Wales, Gupta, and Mousa (2013) systematically reviewed the EO literature and found a rise in the multidimensional conceptualization of EO. Their review suggested that innovativeness, risk-taking, and proactiveness are still the main dimensions investigated.

It has been argued that empirical research on the multidimensional view is promising (Miller, 2011; Slevin and Terjesen, 2011) as each dimension might manifest unique contributions to firm performance (Wales, et al., 2013). In this respect, Hughes and Morgan (2007) studied young high-tech ventures in the UK and found that only proactiveness and innovativeness have a positive influence on business performance while risk taking has a negative relationship. Competitive aggressiveness and autonomy appeared to hold no business performance value. In a more recent study on a sample of 1,668 SMEs in nine countries across 13 different industries, Kreizer et al. (2013) found that innovativeness and proactiveness have a positive U-shaped relationship with SME performance while risk taking exhibits a negative U-shaped relationship with SME performance.

2.4.5 Towards Strategic Leadership Research on EO

It has been argued that entrepreneurial activities are carried out by executives as the most powerful people in the firm (Davidsson, 2003). However, research on the link between executives' attributes and EO is relatively nascent (Baron, et al., 2013) and few have examined the antecedents of entrepreneurial orientation through the lens of executives. For instance, Auh and Menguc (2005) showed that TMT functional diversity and coordination were related to EO under environmental dynamism. Auh and Menguc reported that "functional diversity negatively affects entrepreneurial orientation only under conditions of high environmental turbulence but inter-functional coordination reverses this problem and creates a positive relationship between functional diversity and EO" (page 346).

From another point of view, Escribá-Esteve et al. (2009) examined how the TMT demographics impact on their willingness to adopt EO and how this could account for subsequent differential firm performances. They found that TMT size and level of education were not related to EO; nevertheless, the average age of TMTs was negatively, and experience was positively, associated with the adoption of EO, and this orientation (they referred to it as the firm's strategic orientation) was positively related to the performance of the firm.

In another study on the CEOs, Richard, Wu, and Chadwick (2009) observed that "CEO industry tenure positively moderates, and CEO position tenure negatively moderates, the EO-to-performance relationship" (page 1078). Simsek et al. (2010) found that CEOs with higher core self-evaluation more favored entrepreneurial orientation. More recently, Baron et al. (2013) showed that founders' metacognitive knowledge was significantly related to their adoption of EO dimensions, namely: innovativeness, proactiveness, and risk taking.

The above studies on the link between the attributes of individual executives or composition of top management teams and entrepreneurial orientation implies the potential of upper echelons as a view which could explain why some firms favor entrepreneurial activities. In the case of this study, since metacognition is important for performing uncertain and novel tasks, like entrepreneurial ones, entrepreneurial orientation could be seen more clearly through the metacognitive lens.

Having reviewed the literature pertinent to entrepreneurial orientation, the next section reviews the concept of behavioral integration and its extant literature.

2.5 Behavioral Integration

Given the lack of clarity in the findings and the criticism of the organizational demography approach (Lawrence, 1997; Priem, et al., 1999), some researchers have applied an alternative approach to examining the association between TMT diversity and firm performance (Nielsen, 2010). This stream of research integrates the upper echelons perspective with insights from the group process theory (Shaw, 1981) to examine how the nature of interaction among team members, known as “team process” (Ling, et al., 2008), influences the way team characteristics influence both team- and firm-level outcomes (Lubatkin, et al., 2006). The criticism of the causal link between TMT diversity and organizational outcomes has led to a broader application of group psychology theories which are well practiced at analyzing the interactions among team members (Nielsen, 2010; Smith, et al., 1994). It has been argued that TMT processes might explain the variance that was left unexplained by TMT diversity alone (Carmeli and Schaubroeck, 2006; Lawrence, 1997) and those studies which assumed that TMT attributes sufficiently captured, or were congruent with, a team’s various processes (Simsek, et al., 2005).

Team processes describe team members’ interactions guided toward task accomplishment, thus they could describe how team inputs (e.g. diversity) are converted

into both team- and firm-level outcomes (Mathieu, et al., 2008). Team processes and dynamics at the top management level differ from other levels of management within the organization (Carmeli and Shteigman, 2010; Hambrick, 1994) since TMT members, as a firm's decision-makers, deal with the firm's main activities (Carmeli and Halevi, 2009; Carmeli, et al., 2011).

Scholars have utilized a variety of team processes such as informal communication, communication frequency (e.g. Smith, et al., 1994), debate (Simons, et al., 1999), interdependence (Michel and Hambrick, 1992), TMT socio-behavioral integration (e.g. Chen, et al., 2010; O'Reilly, Caldwell, and Barnett, 1989), and information exchange frequency (e.g. Ling and Kellermanns, 2010). Based on these team processes, different models concerning TMT diversity, process, and organizational outcomes have been developed and empirically tested (Nielsen, 2010).

Amongst team processes, TMT behavioral integration has been argued to be an important one (Magni, et al., 2009) and one of the main refinements and basic moderators of the upper echelons model (Hambrick, 2007). The concept of TMT behavioral integration was developed by Hambrick (1994). It captures three important interrelated elements of the TMT process, including "a team's (1) level of collaborative behavior, (2) quantity and quality of information exchanged, and (3) emphasis on joint decision-making" (Hambrick, 1994; Simsek, et al., 2005:69). It has been argued that the metaconstruct of behavioral integration presents the best attempt to comprehend the TMT process (Barrick, et al., 2007). It comprises one social dimension (collaborative behavior) and two task dimensions (information exchange and joint decision-making) (Lubatkin, et al., 2006). These three mutually interrelated processes, together, capture a TMT's level of unity and teamwork better than do other process constructs such as cohesion, social integration, and communication quality (Hambrick, 1994; Ling, et al., 2008). Hambrick

(1994) argued that social integration focuses mainly on the affective aspects of the team and cohesion primarily pertains to the attraction of team members to each other (Shaw and Barrett-Power, 1998). In contrast, the concept of behavioral integration more fully captures the main aspects of team tasks, social as well as behavioral tendencies (Magni, et al., 2009; Simsek, et al., 2005). It is a relatively comprehensive construct for realizing the TMT process (Wei and Wu, 2013).

Introduced as a construct to provide a better understanding of TMT and its impact, scholars have begun to investigate the implications of TMT behavioral integration. Mooney and Sonnenfeld (2001) showed that behavioral integration is negatively associated with affective and cognitive conflict. The study of Li and Hambrick (2005) on 71 joint venture management groups showed that behavioral disintegration—the obverse of behavioral integration—led to poor performance. Lubatkin et al. (2006) found the positive effects of TMT behavioral integration on the ambidextrous performance of SMEs. Similarly, Carmeli and Schaubroeck (2006) showed that more behaviorally integrated TMTs make better-quality strategic decisions than less behaviorally integrated ones. Favorable effects of behavioral integration on human resource performance and economic achievements were found by Carmeli (2008). Further, Carmeli and Halevi (2009) proposed that TMT behavioral integration leads to behavioral complexity in a team which in turn facilitates strategic decisions balancing exploration and exploitation. Magni et al. (2009) investigated the influence of TMT behavioral integration on individual improvisation in complex project domains and reported its positive effects. Chen et al. (2010) showed that an integrated TMT would compete better in a hypercompetitive environment through aggressive actions.

Similarly, Lin and Shih (2008) found that TMT integration enhanced action aggressiveness which in turn advanced firm performance. Carmeli et al. (2011) studied a

sample of 82 TMTs and showed that their behavioral integration enhanced their potency and firm performance. More recently, Raes, Bruch, and De Jong (2013) illustrated the positive impacts of TMT behavioral integration on firms' productive energy. They demonstrated that a behaviorally integrated team enhanced an organization's productive energy which in turn was associated with employees' improved job satisfaction and decreased turnover intentions.

In light of the above studies reporting the beneficial effects of TMT behavioral integration, some scholars have focused on its antecedent. For instance, Simsek et al. (2005) developed a reliable measure of behavioral integration based on interviews with 35 senior executives and the items which were adapted from previous studies such as Mooney (2000). This measure has been frequently used in the later studies. They also examined empirically the CEO-, team-, and firm-level factors in the formation of team behavioral integration. They argued that predictors at each level described some variance in team behavioral integration. For instance, they showed that CEO tenure had a positive effect on TMT behavioral integration. Carmeli and Shteigman (2010) indicated that perceived TMT external prestige was positively associated with collective team identification and accordingly their behavioral integration. Carmeli et al. (2011) showed that CEO empowering leadership enhanced team behavioral integration. They suggested the importance of CEOs who display empowering leadership in developing high-quality interactions among their fellow top managers.

In light of the theoretical and empirical research on consequences as well as antecedents of TMT behavioral integration, its mediating and moderating role has also been examined. For instance, Ling et al. (2008) examined the mediating role of TMT behavioral integration in the relationship between transformational CEOs and corporate entrepreneurship. They found that such team behavior was not directly relevant to

corporate entrepreneurship. Boone and Hendriks (2009) found that TMT collaborative behavior and information exchange (the concepts closest to the aspects of behavioral integration) moderated positively the association between TMT functional-background diversity and performance, but such behavior did not interact with TMT locus-of-control diversity. Similarly, Zahra and Wiklund (2010) studied the TMTs of 109 new ventures and showed that TMT functional-background diversity contributed more to the firm's product innovation when the team was integrated. More recently, Ling and Kellermanns (2010) found that family firm-specific sources of TMT diversity (the generation in charge of the family firm, the number of family employees, and the number of employed generations) had more positive effects on firm performance when the information exchange among TMT members was more frequent.

Given this stream of research, it has been argued that the moderation effects of TMT behavioral integration on the relationship between TMT diversity and firm performances need more investigation (e.g. Boone and Hendriks, 2009; Carmeli, 2008; Ling, et al., 2008). Consequently, this research proposes the moderating role of TMT behavioral integration and suggests that as the level of TMT collaborative behavior and mutual interaction increases, more of the positional benefits of metacognitive diversity could be delivered. The implications of TMT behavioral integration could be seen clearly through the lens of SMEs (Raes, et al., 2013) whose relatively simple organizational systems and governance mechanisms make the role of top managers' interactions and collaboration more evident than in large organizations (Cao, et al., 2010; Carmeli and Shteigman, 2010; Lubatkin, et al., 2006). SMEs have fewer intervening levels of management which may dilute the influences of the TMT's behavior (Ling, et al., 2008; Raes, et al., 2013). They are less restricted than large firms by external influences (Ling, Zhao, and Baron, 2007), thus TMT interaction and its impacts can be viewed clearly through their lens.

Firm performance has been integrated as the dependent variable into the study model. The next section overviews the concept of firm performance. This section is then followed by a brief introduction to SMEs.

2.6 Performance of the Firm

2.6.1 Why Study Firm Performance

Performance of the firm, or alternatively firm performance, has been the most common concept in the empirical research into business and management literature (Bititci, et al., 2012; Hamann, et al., 2013; Lacerda, Ensslin, and Ensslin, 2011; Miller, Washburn, and Glick, 2012; Richard, et al., 2009). This significance can be attributed to two facts about the notion of performance. First, performance denotes success and the success of a firm is a central concept in all aspects of business literature (Bititci, et al., 2012). Therefore, by addressing firm performance scholars can identify successful and unsuccessful firms (Miller, et al., 2012). Secondly, performance is a dependent variable and therefore exploring the reasons for and mechanisms involved in variations of the performance of a firm have been a key means of advancing management and organization science (March and Sutton, 1997). For instance, in the entrepreneurship literature, Murphy, Trailer, and Hill (1996) argue that “without adequate means of measuring performance, theory development is impeded, and it becomes difficult to develop useful prescriptions for entrepreneurs” (page 15). Similarly, in the strategic management field, Chakravarthy (1986) argued that understanding performance is fundamental to strategic research and research on strategy is primarily concerned with how and why different strategies lead to different performance outcomes. Analogously, marketing scholars have also paid considerable attention to the performance of the firm as a means of understanding the role of different marketing activities (Adidam, Banerjee, and Shukla,

2012; Chari, et al., 2012; Joshi and Sharma, 2004; Olson, Slater, and Hult, 2005; Vorhies, Morgan, and Autry, 2009).

With regard to the second point, literature has also indicated that performance can be an independent variable in which high or low performance causes variations in a number of dependent variables such as quality of investments, and reputation or longevity of the firms (March and Sutton, 1997). However, as scholars (Chakravarthy, 1986; Hansen and Wernerfelt, 1989; March and Sutton, 1997; Miller, et al., 2012; Murphy, et al., 1996; Richard, et al., 2009) have frequently argued, research in management and organization science has, to a great extent, considered performance as a dependent variable. In particular, performance has been among the most frequent outcome variables in research on upper echelons perspective (Nielsen, 2010) where there is a one-to-one alignment between team attributes and organizational outcomes (Mathieu, et al., 2008).

Accordingly, this study places firm performance as a dependent variable. This view seeks to examine what factors cause variations in firm performance and what implications these relationships have for the theory and practice of management (Miller, et al., 2012). Put simply, the view of performance as a dependent variable enables researchers to distinguish “good strategy” or “proper behavior” from bad strategy and improper behavior (March and Sutton, 1997).

Drawing on this explanation, this section addresses the concept of firm performance and reviews its key aspects. It should, however, be noted that, following the convention in the business literature (Rumelt, Schendel, and Teece, 1991), the terms “firm,” “enterprise,” and “organization” are used interchangeably in this research. Accordingly, the notions of “firm performance,” “enterprise performance,” and “organizational performance” are synonymous with and refer to the performance of a business entity

performing in a market economy. In light of the above, the next section overviews the definitions of firm performance.

2.6.2 Defining Firm Performance

Although the notion of firm performance is pervasive and its use abounds in the literature (Hamann, et al., 2013; Miller, et al., 2012), it seems that scholars have taken the definition of firm performance for granted without offering a complete description of what performance means. This issue has been previously highlighted by a number of scholars (e.g. Miller, et al., 2012; Shenhav, Alon, and Shrum, 1994) and argued to be a source of concern in understanding and measuring firm performance (Hamann, et al., 2013). Acknowledging this fact, Richard, et al., (2009:719) argued that “performance is so common in management research that its definition is rarely explicitly justified.”

The assumption that dominates the literature on firm performance and can be used to define it is that performance is about organizational outcome and high performance is synonymous with goodness or excellence (Shenhav, et al., 1994). Yet a universally accepted category of outcomes has remained underdeveloped and existing descriptions are obscured causing difficulties in studying both antecedents and consequences of firm performance and in predicting it (Bititci, et al., 2012; Hamann, et al., 2013; Hax, 2003; Henri, 2004; Lacerda, et al., 2011; Murphy, et al., 1996; Richard, et al., 2009). For instance, Richard et al. (2009:722) argued that performance “encompasses three specific areas of firm outcomes: (1) financial performance (profits, return on assets, return on investment, etc.); (2) market performance (sales, market share, etc.); and (3) shareholder return (total shareholder return, economic value added, etc.).” Therefore, definitions of performance ought to address how well a given firm obtains different outcomes in these three areas. A review of literature on this field reveals that scholars have failed to fully

capture the essence of firm performance according to these criteria (Hamann, et al., 2013; Henri, 2004; Kirby, 2005; Richard, et al., 2009).

To further substantiate this deficiency, Miller et al. (2012) found that less than 10 percent of studies published in the leading journals, between 2001 and 2005, have offered a definition for firm performance. They further summarized a few commonly used definitions such as: “maximizing profits,” or more accurately “present value” (Jensen and Meckling, 1976:307), “high returns over longer periods of time” (Wernerfelt, 1984:172), “rate of return on assets” (Rumelt, 1991:167), “fulfillment of the economic goals of the firm” (Venkatraman and Ramanujam, 1986:803), and “the value that an organization creates using its productive assets in comparison with the value that owners of these assets expect to obtain” (Barney, 2001:26). A more recent definition was also presented by Moullin (2003). According to Moullin, performance is “the value the organization delivers for customers and other stakeholders” (page 3). Finally, Combs, Crook, and Shook (2005) defined performance as the economic outcomes resulting from the interplay among an organization’s attributes, actions, and environment (page 261).

As these definitions indicate, although firm performance means different things to different researchers and also different theoretical perspectives view performance differently, the whole notion of organizational value creation, either financial (i.e. return on investment/asset, etc.) or non-financial, is at the heart of the existing definition of firm performance. In light of this, an explanation for the diversity of definitions has been put forth by March and Sutton (1997). According to March and Sutton, diversity in the definition of firm performance can be attributed to the diversity in the scope of the operations of the firm and the theoretical views that explain them. They further argued that organizations are generally defined as instruments of purpose or goals, and because they have different goals their performance can be defined in different ways. For instance,

“Business firms are compared in terms of profits, sales, market share, productivity, debt ratios, and stock prices. Hospitals use cost recovery, mortality and morbidity rates, board certification of physicians, and occupancy rates. Universities use research productivity and prestige of faculties, test scores of students, rankings by popular magazines, and win/loss records of football teams” (page 698).

For the purpose of this study, a multi-outcome description of firm performance is adopted in which performance is assessed through both financial and non-financial measures. According to this view, performance can be defined as how well a firm achieves both financial and non-financial goals relative to its competitors (Tang and Liou, 2010). It has been argued that this composite view provides a more complete picture of what performance means and why it matters in the study of the firm (Dimitratos, et al., 2009). Furthermore, this view has recently been adopted by scholars (De Clercq, et al., 2010) studying the performance of small businesses. Chapter four will further discuss how this definition is used in measuring performance of the firm.

Having said the above, a question that has been dominating performance literature is why some firms outperform others, or, in other words, why there are variations in performance amongst firms in an industry (Eccles, 1991; Fitzgerald and Storbeck, 2003; Hambrick and Quigley, 2013; Kirby, 2005; Richard, et al., 2009; Rumelt, 1991).

2.6.3 How are Performance Variations Explained?

Variation in the performance of a firm is the most important dependent variable in the business literature (March and Sutton, 1997) and consequently has been studied from two major perspectives. The first perspective is known as the “outside-in view” and suggests that performance is determined by the industrial (i.e. environmental) conditions under which a firm operates (Porter, 1980, 1981, 1983, and 1985). According to this view, all firms compete for factor inputs (resources, capital, etc.), customers, and for the revenue to

cover costs and survive (Rumelt, et al., 1991). These environmental factors determine how firms perform relative to each other (Porter, 1985). This perspective is rooted in industrial economics and organizational ecology in which industries instead of firms are the main focus of attention (Hannan and Freeman, 1977). According to this view, industrial or market competition directs firms towards different uses of resources or market behaviors that eventually lead to unequal performance outcomes (Rumelt, 1991). Therefore, collective circumstances account for performance variations amongst firms (Porter, 1985).

The second perspective offers a contrary view which is “inside-out logic.” This is primarily based on the behavioral and sociological fields and accordingly suggests that organizational factors such as strategy, structure, and employees’ knowledge, skills, and abilities determine the performance of the firm (Floyd and Wooldridge, 1990; Hansen and Wernerfelt, 1989; Lewin and Minton, 1986; Salge and Vera, 2011; Yeung, et al., 2006). According to this view, variations in performance can be best explained by exploring how and why some firms use their resources and develop strategies in more competitive ways leading to better performance outcomes (Hansen and Wernerfelt, 1989). In other words, performance variations arise primarily from the unique endowments and actions of individual firms rather than collective circumstances (Rumelt, 1991).

As noted previously in this chapter, the upper echelons research falls under this perspective by arguing that executives are key endowments of firms. Subsequently, their actions derived from their personal attributes (e.g. metacognitive abilities) can explain variations in performance amongst different firms. In order to better understand how these two views explain drivers of firm performance, a closer look at the roots of firm performance is presented.

2.6.4 Performance Versus Effectiveness and Efficiency

Despite the existing dispute about the definition of firm performance (Miller, et al., 2012), performance literature holds that performance is rooted in the more abstract concepts of organizational efficiency and effectiveness (Hamann, et al., 2013; Richard, et al., 2009). In this regard, efficiency is concerned with the internal functioning of the firm and accordingly is best described by the ratio of the amount of output to the amount of input (Davis and Pett, 2002). Put simply, an efficient firm produces more output with less input. Hence, for a business firm performing in a market economy efficiency can be assessed by the productivity of the firm (Shenhav, et al., 1994). The efficiency has also been argued to show how well an organization uses its resources in the short term (March and Sutton, 1997). Therefore, efficiency is generally regarded as the indicator of short-term performance and profitability (Davis and Pett, 2002).

Organizational effectiveness, on the other hand, is concerned with the long-term behavior of the firm (Davis and Pett, 2002). It thus goes beyond the internal functioning of the firm by capturing how well an organization is related to its environment and becomes able to buffer environmental disturbances (Beal, 2000; Connolly, Conlon, and Deutsch, 1980; Davis and Pett, 2002; Friedlander and Pickle, 1968; Georgopoulos and Tannenbaum, 1957; Henri, 2004; Ostroff and Schmitt, 1993).

Therefore, effectiveness is broader than efficiency and entails factors such as stakeholders, reputation, and customer relationships in addition to the traditional financial and operational valuation (Richard, et al., 2009). Consequently, it has been argued that organizational effectiveness is synonymous with organizational “overall success” or “worth” (Georgopoulos and Tannenbaum, 1957) and can be a representative of business excellence (Rosenzweig, 2007). Even some authors (e.g. March and Sutton, 1997;

Ramanujam and Venkatraman, 1988) have equated effectiveness with the overall performance of a firm.

Implicit in this literature is the notion that effectiveness is more important than efficiency. Shenhav et al. (1994) also found that effectiveness and performance have been more frequently used than productivity and efficiency to show organizational success or goodness. Therefore, it can be argued that performance literature holds this assumption that an effective firm is assumed to be efficient as well but efficient firms are not necessarily always effective. Corroborating this point and highlighting the importance of effectiveness, Hitt (1988) asserted that “theory regarding management and organizations cannot be advanced far without using appropriate measures of organizational effectiveness” (page 29). Therefore, scholars assume that the best-performing organizations are both efficient (short-term performance) and effective (long-term performance) (Ostroff and Schmitt, 1993) and this can be examined by studying factors that explain how a firm becomes and stays effective (Kirby, 2005).

Having explained the difference between efficiency and effectiveness and the fact that effectiveness can also represent efficiency, four perspectives have informed the ways in which organizational effectiveness can be assessed. The first approach is known as the “goal attainment” view and denotes that effectiveness is assessed through the achievement of goals and particularly financial goals (Georgopoulos and Tannenbaum, 1957). Due to complexities surrounding the setting of, and planning to achieve, organizational goals this view was deemed unsatisfactory, which in return led to the system view (Rojas, 2000). According to the system view, effectiveness is assessed by a system of variables (i.e. resources) and their processes which are used to address the achievement of different goals (Rojas, 2000). The system approach focuses on external factors (organization as an open system) and suggests that effectiveness is achieved

through flexibility and external support (Davis and Pett, 2002; Ostroff and Schmitt, 1993). Therefore, an effective organization is able to obtain scarce and valuable resources from the environment by performing transactions better than its competitors (Yuchtman and Seashore, 1967). It has also been argued that the system view is complex and problematic for understanding why and how a firm becomes effective (Henri, 2004). In particular, according to Zammuto (1984), “If systems theory is to be taken seriously in that everything is connected to everything else, then theoretically everyone is a constituent of all organizations. This broad claim may be true in principle, but it is useless in practice” (page 610).

This criticism led to the third view known as the “powerful constituencies” or “multiple constituencies” view of effectiveness. According to this view, a firm has different constituencies whose influences vary according to their role, and an effective organization is able to meet the preferences of different constituencies through the distribution of the outcomes of its performance (Zammuto, 1984). This model was also deemed ineffective and unpractical because it leads to divergent performance criteria and perplexing issues such as whose preferences should be met first and why (Shenhav, et al., 1994). Therefore, the last view, known as the “competing value” model (Quinn and Rohrbaugh, 1981), was proposed to address this problem and combine the previous three models in a more practical fashion. According to this view, there is no “best criterion” for effectiveness; rather a contingency view of different values in different times must be taken into account. Based on this view, effectiveness criteria shift over time as different values gain supremacy over others (Quinn and Cameron, 1982).

These differences in the underlying factors of firm performance have led some researchers to argue that performance measures can be infinite and it is almost impossible to develop a universal view of effectiveness and similarly performance (Weiner and

Mahoney, 1981). The core of this rationale is that understanding a firm's performance through its effectiveness "involves extraordinary problems arising from the uniqueness of the concept in different organizations and the idiosyncrasies of the measurement operation" (Shenhav, et al., 1994:557). In a more detailed criticism of the firm performance (effectiveness) literature, March and Sutton (1997) acknowledged this view and added that performance literature through the lens of effectiveness is limited by three major problems. First, the performance of a firm is unstable over time because firms compete in markets and their effective response to market changes must be addressed in different timescales. Second, causal relationships involved in and surrounding effectiveness as the indicator of performance add additional complications to the understanding and measuring of firm performance. Finally, obtaining and using data to assess different aspects of effectiveness to infer firm performance is a difficult and challenging task with different biases and limitations.

As a result of these criticisms, different scholars have adopted different measures to operationalize the effectiveness of a firm for examining its performance. This diverse use of methods has created complications impeding the advancement of theory and research (Hamann, et al., 2013; Miller, et al., 2012; Richard, et al., 2009). In the next section a review of different operationalization methods is presented.

2.6.5 Operationalizing Performance

Further to the previous discussion on effectiveness and efficiency, numerous authors (e.g. Hamann, et al., 2013; Miller, et al., 2012) have argued that performance should be assessed using both financial and non-financial (i.e. operational) measures. One of the key approaches used by scholars in this regard is the balanced scorecard (Kaplan and Norton, 1996). This method goes beyond the scope of this study but it can be summed up as a mixed marketing and financial method that uses a combination of financial

performance, internal business processes, customer perspectives, and innovation and learning to enable firms to build a comprehensive performance measurement system (Richard, et al., 2009). Although this method has been widely accepted, numerous researchers have used and continue to use different combinations of accounting returns, growth, and stock market performance to assess the overall performance of a firm such as liquidity, profitability, growth (market share and sales growth), and stock market performance. There are a myriad of measures for these three areas of performance. Recent studies by Hamann et al. (2013) and Richard et al. (2009) offer a detailed description of different metrics in these three domains. However, amongst widely used financial measures has been return on interest (ROI) (Jacobson, 1987), Tobin's Q (i.e. the ratio of the market value of a firm's assets to their replacement cost) (Acquaah, 2003), return on assets (ROA), return on equity (ROE), return on total assets, and sales growth (Richard, et al., 2009). Some studies (De Clercq, et al., 2010; Lechner and Gudmundsson, 2012) have also added operational efficiency (production efficiency) to these measures.

Finally, due to the importance of using multiple measures to capture the performance of a firm, scholars have argued that firm performance is a multidimensional construct and performance as a dependent variable can be reflected in different ways (Hamann, et al., 2013; Miller, et al., 2012; Richard, et al., 2009). Following this logic, this study adopts a multidimensional view of firm performance that is based on financial and operational aspects of the overall effectiveness of the firm (De Clercq, et al., 2010). Chapter four will further explain this issue and illustrate the adopted measure. Since this study is situated within the small firms' literature, the next section reviews key issues in the performance of small firms.

2.6.6 Performance of Small Firms

The literature on the performance of small firms tends to vary in scope from that of the large firms for two reasons. First, small firms differ from large firms in terms of resources and structure. This was best described by Welsh and White's (1981) argument that "a small business is not a little big business." Literature suggests that small businesses are more flexible because of their smaller size and this flexibility enables them to meet different performance criteria (Antony, Kumar, and Madu, 2005). Second, small firms are mostly privately owned businesses that are based on the aspirations and goals of their owners not the objectives set by boards and shareholders (Curran and Blackburn, 2001; Jones and Tilley, 2003). Chow, Haddad, and Williamson (1997), for instance, found that a balanced scorecard cannot be appropriately adopted by small businesses as it is designed for large firms and does not serve the needs of small firms. Furthermore, these firms are not obliged to report financial goals and achievements to exhibit their market performance (Tan, et al., 2009). This indicates a lack of objective metrics for examining the performance of small firms. In the wake of these circumstances, performance has been assessed using a subjective assessment of a firm's financial and operational, or a combination of financial and operational performance by its managers (Dess and Robinson Jr., 1984).

For these reasons, the performance of small firms has been viewed as the combination of their operational and financial performance in relation to their competitors as perceived by their managers (Dimitratos, et al., 2009). Therefore, small business literature is dominated by subjective measures of firm performance using multiple areas of effectiveness such as profitability, growth, and productivity (Bamiatzi and Kirchmaier, 2012; Brockman, Jones, and Becherer, 2012; Lechner and Gudmundsson, 2012).

2.7 Small and Medium-sized Enterprises

Small to medium-sized enterprises (SMEs) are typically different from large firms in various ways (Terziovski, 2010). For instance, they have limited access to resources such as financial capital (Singh, Gaur, and Schmid, 2010; Wolff and Pett, 2006). They do not often have their own brands or unique products, adequate marketing and R&D finances, and market reputation (Singh, et al., 2010). SMEs have been argued to face greater risks than their large counterparts (Camisón and Villar-López, 2010).

Despite these shortcomings, their simple and fluid nature and structure (Ling, et al., 2008; Terziovski, 2010) allow them to be more flexible to environmental events and move faster than large firms (Baker and Sinkula, 2009). In this respect, Chen and Hambrick (1995) showed that in initiating competitive challenges small firms are faster than large firms. More notably, their flexibility allows them to behave more entrepreneurially (Real, et al., 2012) which is an important factor in competing and performing effectively (Simsek, et al., 2010). In terms of employee recruitment, these firms are more able to attract and hire talented employees (Real, et al., 2012).

In terms of managerial structure and power, control in SMEs is more centralized and concentrated at the top of the organization (Davis, et al., 2010). In the absence of hierarchical administrative systems (Lubatkin, et al., 2006), and intervening levels of management (Ling, et al., 2008), SMEs' top managers are directly involved in both firm strategy and operation (Cao, et al., 2010; Lubatkin, et al., 2006). They are less restricted by extraneous influences, thus the role of their top teams is more manifest than that of large firms (Ling, et al., 2008; Lubatkin, et al., 2006). These firms' top managers, due to the looser coupling or organic structure of their firms, are expected to have greater autonomy and managerial discretion than managers of larger firms (Baron, et al., 2011).

Therefore, these firms yield a more direct setting to study the effects of TMT diversity on firm-level outcomes (Escribá-Esteve, et al., 2009).

Accordingly, this study focuses on SMEs as a relevant and promising context for studying the TMT diversity-firm performance relationship. Given that SMEs play an important role in national economies, world trade (Wolff and Pett, 2006), and technological development (Rosenbusch, Brinckmann, and Bausch, 2011), this study will also provide important implications for SMEs' owners/managers as well as policymakers in the small business sector.

In terms of definition, there is no general definition of SMEs and typically employment data are applied as a criterion to define these firms (Rosenbusch, et al., 2011). This criterion, however, differs across countries (Rosenbusch, et al., 2011; Singh, et al., 2010). For instance, while the Commission of the European Union defines SMEs as firms with less than 250 employees, the US government considers SMEs as firms with 500 or fewer employees (Rosenbusch, et al., 2011; Singh, et al., 2010). Since this study was carried out in Australia, it follows the Australian government definition of SMEs. Based on the Australia Bureau of Statistics (ABS, 2010-2011), SMEs are firms with fewer than 200 employees. These firms have been shown to form the biggest portion of employing businesses in Australia and play an important role in its economy (ABS, 2010-2011).

This study draws a sample of SMEs from five industries (i.e. manufacturing, wholesale trade, retail trade, construction, and professional, scientific and technical services) operating in different states (WA: Western Australia; NT: Northern Territory; QLD: Queensland; SA: Southern Australia; NSW: New South Wales). As the ABS reported, these five industries not only play an important role in Australia's economy but they also consist of a sufficient number of SMEs. The contributions the SMEs have made

in each selected industry and method of selection will be detailed in the methodology chapter (Chapter four).

2.8 Chapter Summary

In this chapter, first an overview of the upper echelons theory was presented. Then, the existing research on the TMT diversity-firm performance relationship was summarized and it was argued that there are still some gaps in this relationship to be addressed. Using direct measures of managerial cognition, and incorporating relevant mediating and moderating variables have been the main suggestions of the literature to narrow the gaps. This study incorporates metacognitive knowledge and metacognitive experience as two important inputs of managers' metacognitive ability. Entrepreneurial orientation and TMT behavioral integration are integrated as mediating and moderating variables respectively. Accordingly, the extant literature on the concepts of metacognition, entrepreneurial orientation, and TMT behavioral integration was investigated and reviewed. These reviews provide a foundation to develop research hypotheses in the next chapter. Finally, in the closing sections the concept of firm performance was reviewed and a brief introduction to SMEs was presented.

-CHAPTER THREE-

CONCEPTUAL FRAMEWORK AND HYPOTHESES

3.1 Introduction

This chapter is organized into two main sections. The first section presents the conceptual framework and the second section develops hypotheses related to the relationships specified in the conceptual model.

3.2 Conceptual Framework

This section explains the conceptual framework which depicts the relationships among top management team (TMT) metacognitive knowledge and experience diversity, entrepreneurial orientation, TMT behavioral integration, and firm performance.

The cognitive attributes of managers have long been argued to play an important role in the operation and performance of a business enterprise (Narayanan, et al., 2011). In particular, two bodies of literature have paid focused attention to this concept. First, research into strategic management has placed managers' cognitive attributes at the heart of strategic decisions and actions (Kaplan, 2011; Nadkarni and Barr, 2008). In this regard, the upper echelons perspective aspires to draw attention towards the cognitive attributes of top managers as a team. The second body of literature is entrepreneurship in which it has been argued that managers' cognitive attributes are important in understanding and performing the entrepreneurial activities (Foo, 2011; Grégoire, et al., 2011). More recently, metacognitive knowledge and experience, as two main components of metacognitive ability, have been shown to be important in both entrepreneurs' and managers' decisions and actions (Baron, et al., 2013; Haynie, et al., 2012; Mitchell, et al., 2011).

Metacognitive knowledge, as explained in Chapter one Section 1.1, refers to “one’s conscious and cognitive understanding of people, tasks, and strategy” (Flavell, 1987; Haynie, et al., 2010:22) whereas metacognitive experience refers to “one’s conscious experiences that are cognitive and affective in nature” (Flavell, 1987; Mitchell, et al., 2011:686). Such knowledge and experience enable individuals to solve complex problems and regulate effectively their behavior to cope with environmental changes (Nambisan and Baron, 2012). They could enhance information processing, recognition of multiple ways to analyze a problem, decision-making, and subsequently performing the tasks (Baron, et al., 2013; Haynie and Shepherd, 2009; Haynie, et al., 2012; Mitchell, et al., 2011).

Individuals vary in their metacognitive abilities (Flavell, 1979, 1987; Haynie, et al., 2012). Given that each individual manager brings his/her own metacognitive ability to contribute to the firm’s decisions and actions, it is expected that there would be different levels of this ability in a team. Understanding this diversity is important in both strategic management and entrepreneurship contexts as a firm’s decisions and actions involve all managers at the top level (Knockaert, et al., 2011; Quain, et al., 2013; West, 2007). The result of such differences could impact the way a firm’s problems are identified and accordingly taken care of (West, 2007). Therefore, this study focuses on such differences and investigates the role that TMT metacognitive knowledge and experience diversity play in SMEs’ performance. Focusing on SMEs affords a more direct setting to test the study model (Escribá-Esteve, et al., 2009) and accordingly provides findings which contribute to both the theory and practice of small firms.

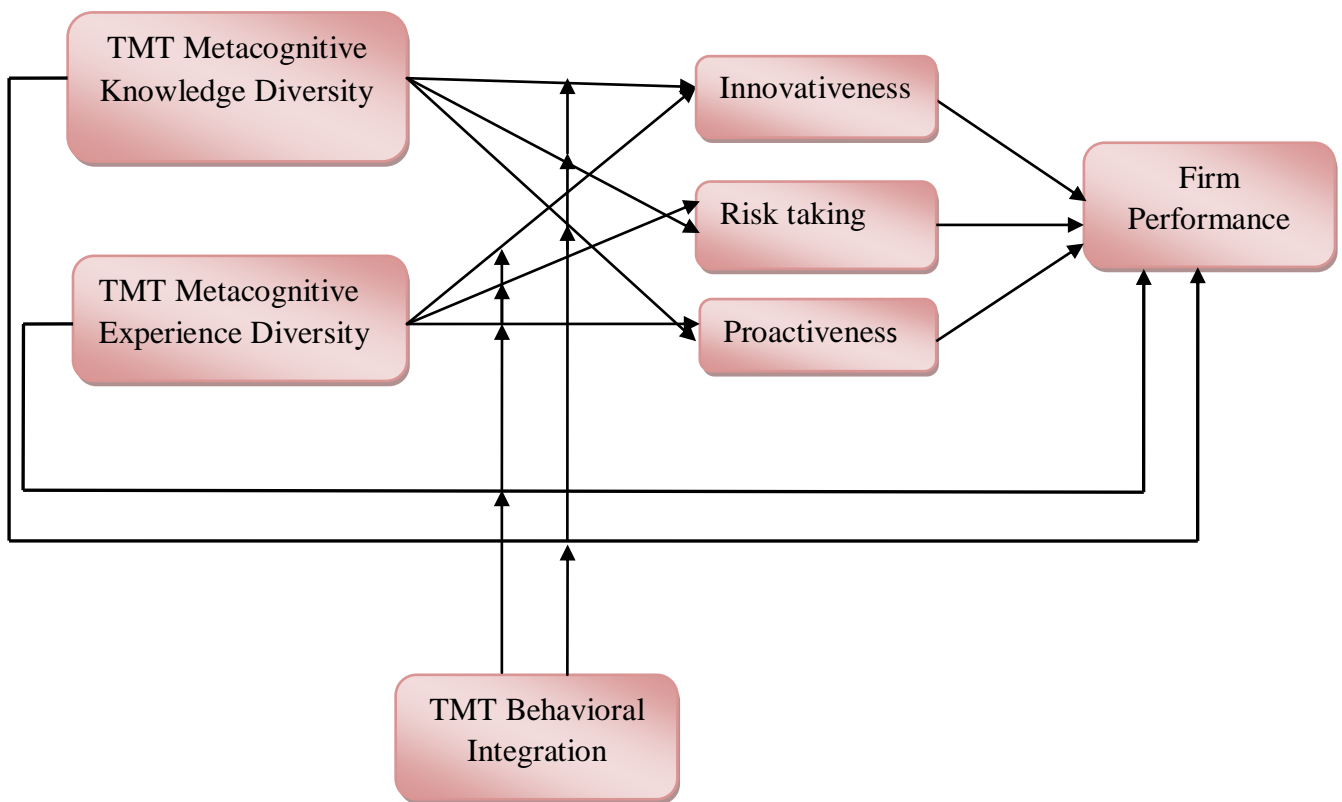
This study further includes entrepreneurial orientation components (innovativeness, risk taking, and proactiveness) as mediators. Metacognitive knowledge and experience are specifically important in understanding and interpreting entrepreneurial tasks (Haynie,

et al., 2010). Entrepreneurial orientation, therefore, could be a reflection of top managers' metacognitive abilities. More notably, the dynamic and uncertain nature of entrepreneurial tasks requires managers to have access to different ideas and perspectives (Talke, et al., 2011), which could stem from their diverse metacognitive abilities. Given that entrepreneurial orientation has performance implications (Miller and Le Breton-Miller, 2011), it could be considered as an important conduit through which TMT metacognitive diversity contributes to the firm's performance.

For the effects of TMT metacognitive diversity to be better materialized, team members need to share their differences and value them by joint decision-making, or in other words, be behaviorally integrated (Boone and Hendriks, 2009; Buyl, et al., 2011a). Accordingly, this study proposes the moderating role of TMT behavioral integration. In doing so, it addresses the recent calls to investigate the moderation effects of TMT behavioral integration on the relationship between TMT diversity and firm behavior and performance (e.g. Buyl, et al., 2011a; Ling and Kellermanns, 2010).

Firm performance, the dependent variable of the study, is measured as the average of nine financial, marketing, and operational indicators. A combination of financial and non-financial measures allows this research to provide a more comprehensive assessment of firm performance (Li, et al., 2009).

The conceptual model presented in Figure 4 below illustrates the relationships among TMT metacognitive knowledge and experience diversity, entrepreneurial orientation components (innovativeness, risk taking, and proactiveness), TMT behavioral integration, and firm performance. The dependent variable is firm performance. Entrepreneurial orientation and TMT behavioral integration are the mediating and moderating variables respectively.



All the relationships specified in the conceptual model (direct and indirect) will be analyzed and the results will be presented and discussed in Chapters five and six.

This conceptual framework illustrates this study's attempt to bring together the upper echelons perspective and entrepreneurship literature to argue the importance of teams and their behavior in a firm's entrepreneurial performance. Given the importance of entrepreneurial behavior and activities for a firm's survival and success, this study provides new insights by focusing on the metacognition and behavior of the people who are the main directors of a firm's entrepreneurial activities and performance (Eisenhardt, 2013).

From a practical perspective, entrepreneurial orientation is an important factor in a firm's ability to compete and perform effectively (Simsek, et al., 2010). Understanding it

from a metacognitive perspective, which could be developed through training, and team behavioral integration, which could be managed, brings about important practical implications for a firm's survival and success.

A summary of research questions and hypotheses is provided in Table 4. It should be mentioned that four main theoretical questions were developed in Chapter one, Section 1.6.; however, to better illustrate the hypotheses and corresponding questions, questions 3 and 4 are structured to six sub-questions here.

Table 4: The Research Questions and Hypotheses

Research Questions	Hypotheses
Q1: To what extent is the association between TMT metacognitive knowledge diversity and SMEs' performance influenced by the team's behavioral integration?	H1
Q2: To what extent is the association between TMT metacognitive experience diversity and SMEs' performance influenced by the team's behavioral integration?	H2
Q3: To what extent does the interaction between TMT metacognitive knowledge diversity and behavioral integration impact the team's entrepreneurial orientation as a determinant of SMEs' performance? Q3a: To what extent does behavioral integration moderate the relationship between TMT metacognitive knowledge diversity and SMEs' innovativeness? Q3b: To what extent does behavioral integration moderate the relationship between TMT metacognitive knowledge diversity and SMEs' risk taking? Q3c: To what extent does behavioral integration moderate the relationship between TMT metacognitive knowledge diversity and SMEs' proactiveness? Q3d: How does innovativeness influence SMEs' performance? Q3e: How does risk taking influence SMEs' performance? Q3f: How does proactiveness influence SMEs' performance?	H3 H5 H7 H9 H10 H11
Q4: To what extent does the interaction between TMT metacognitive experience diversity and behavioral integration impact the team's entrepreneurial orientation as a determinant of SMEs' performance? Q4a: To what extent does behavioral integration moderate the relationship between TMT metacognitive experience diversity and SMEs' innovativeness? Q4b: To what extent does behavioral integration moderate the relationship between	H4

TMT metacognitive experience diversity and SMEs' risk taking?	H6
Q4c: To what extent does behavioral integration moderate the relationship between TMT metacognitive experience diversity and SMEs' proactiveness?	H8
Q4d: How does innovativeness influence SMEs' performance?	H9
Q4e: How does risk taking influence SMEs' performance?	H10
Q4f: How does proactiveness influence SMEs' performance?	H11

Further to the above table, the next section presents the hypotheses.

3.3 Hypotheses Development

Eleven hypotheses are presented below specifying the relationships among TMT metacognitive knowledge and metacognitive experience diversity, entrepreneurial orientation, TMT behavioral integration, and firm performance.

3.3.1 TMT Metacognitive Diversity, Behavioral Integration, and Firm Performance

Diversity in the cognitive attributes of TMT provides the team with different information and perspectives and opens a range of options, decisions, and solutions (e.g. Barkema and Shvyrkov, 2007; Olson, et al., 2007). A wide range of options and alternatives, in turn, increases the team's ability to generate creative solutions (Bantel and Jackson, 1989; Talke, et al., 2011) and make better decisions (e.g. Barkema and Shvyrkov, 2007; Olson, et al., 2007). One potential explanation for such positive effects is that different perspectives and knowledge arising from the team cognitive diversity can be a source of constructive debate and disagreement among team members, known as "task conflict" (Amason, 1996; Clark and Maggitti, 2012). Such debate and disagreements help team members to better recognize the alternatives and can facilitate a higher quality of decision-making (Olson, et al., 2007; Talke, et al., 2010).

While specific task-related conflicts can enhance team effectiveness, sometimes diversity may engender conflict which could have detrimental influences, such as challenging consensus and agreement (Sciascia, Mazzola, and Chirico, 2013), and accordingly a delay in team decision-making (Hambrick, et al., 1996; Wei and Lau, 2012; Wei and Wu, 2013). Therefore, team diversity (in psychological or demographic attributes) does not necessarily result in team effectiveness or ineffectiveness; rather, its potential benefits and costs depend, for example, on the team condition or internal processes, one of which is behavioral integration (Boone and Hendriks, 2009; Hambrick, 2007; Ling and Kellermanns, 2010). TMT behavioral integration refers to three interrelated elements of the TMT process: information exchange, collaborative behavior, and joint decision-making (Hambrick, 1994; Zahra and Wiklund, 2010). This reflects the extent to which top managers work as a “real” team (Raes, et al., 2013).

Metacognitive knowledge and experience have been shown to be beneficial to a wide range of individuals’ activities (Baron, 2007) including improved knowledge and skill acquisition, learning, problem solving, and decision-making (Dierdorff and Ellington, 2012; Ford, et al., 1998; Mitchell, et al., 2011; Nambisan and Baron, 2012; Schmidt and Ford, 2003). Given that the impacts of “team cognition” are basically different from the individuals’ cognition (West, 2007), what would be the implications of the team’s metacognitive knowledge and experience?

As individual managers they make decisions and perform tasks as part of a team, so their collective cognitions would determine the effectiveness of their decisions and actions. If a team is composed of managers with a low level of metacognitive ability, the team is less likely to effectively learn, solve the problems, and recognize different solutions to carry out the task successfully (Dierdorff and Ellington, 2012; Haynie, et al.,

2012). Thus, the team would not be effective in decision-making and performance (Blume and Covin, 2011; Mitchell, et al., 2011).

On the other hand, a team of managers with a high level of metacognition probably have more problem-solving and decision-making abilities and would be more effective in their tasks. However, this may not always be the case at the team level as “too much of a good thing” could interfere with effective task performance (Baron, et al., 2011).

Conversely, diversity brings different levels of metacognitive knowledge and experience to the team. Metacognitive knowledge could help individuals understand and assess their own actions, based on their knowledge of themselves and their environment (Haynie and Shepherd, 2009), whereas metacognitive experience is useful for informing, selecting, and generating decision frameworks for tasks (Haynie and Shepherd, 2009; Mitchell, et al., 2011).

Moving from individuals to a team of top managers, those understanding, evaluation, and decision frameworks would be extended to the firm level. Therefore, TMT metacognitive knowledge diversity could bring to the team different understandings and assessments of the firm’s courses of action and strategies (Baron, et al., 2013), while TMT metacognitive experience diversity provides the team with alternative decision frameworks. Together, differences in metacognitive knowledge and experience can initiate the recognition of alternate solutions, as well as decision frameworks to carry out the tasks.

To better utilize and act upon various recognitions and assessments, the team members need to share, collaborate, and engage in joint decision-making, or in other words, be behaviorally integrated. A behaviorally integrated TMT can be expected to see the value in each person’s different types of knowledge and experience (Buyl, Boone, and Hendriks, 2013; Carmeli, 2008; Raes, et al., 2013) and allow team members to fully

leverage their knowledge and experience to perform the tasks (Wei and Lau, 2012). At the same time, they would effectively embrace the divergent knowledge and experiences of the team members (Boone and Hendriks, 2009). The team would seek to lessen the potential negative side of their diversity (Wei and Lau, 2012) which might give rise to unhealthy conflict (Carmeli, 2008; Lubatkin, et al., 2006). Working as a “real” team allows the team to have positive, constructive beliefs about the value of the different knowledge and perspectives held within the team (Carmeli, et al., 2011). This situation also applies to a team of managers with different metacognitive knowledge and experience. In this case, a behaviorally integrated team is more likely to value each others’ metacognitive ability which in turn is reflected in the team’s understanding, assessments, and decisions. This allows team members to fully leverage their metacognitive ability to make decisions, resulting in more effective actions.

This is particularly so for SMEs who often depend primarily on their top team’s ability to perform (Escribá-Esteve, et al., 2009; Lubatkin, et al., 2006). Unlike large firms, SMEs are not restricted by extraneous influences such as people from boards of outside directors and capital markets, and thus their TMT decisions and actions impact their performance in a more direct way (Ling, et al., 2008; Lubatkin, et al., 2006). More notably, SMEs’ top managers are often involved at both the firm’s operational and strategic level (Cao, et al., 2010), so their ability as a team to accomplish the tasks plays an important role in enhancing performance.

In light of the above discussion, a behaviorally integrated TMT is more likely to extract benefits from their various assessments and understating of the firm’s actions and strategies, stemming from their different metacognitive knowledge. Similarly, they are more able to take advantage of multiple task-related decision frameworks that originate from their different metacognitive experience. Thus:

Hypothesis 1. TMT metacognitive knowledge diversity will positively enhance the performance of SMEs when the team is behaviorally integrated.

Hypothesis 2. TMT metacognitive experience diversity will positively enhance the performance of SMEs when the team is behaviorally integrated.

3.3.2 TMT Metacognitive Diversity, Behavioral Integration, and Entrepreneurial Orientation

As discussed in Chapter two, some scholars have considered entrepreneurial orientation as a unidimensional construct and argued that its three main components (innovativeness, risk taking, and proactiveness) could be combined together in order to evaluate the overall level of a firm's entrepreneurial orientation (e.g. Alegre and Chiva, 2013; Brettel and Rottenberger, 2013). A few authors have taken the multidimensional view and suggested that although related, those dimensions could be treated independently (e.g. Baron, et al., 2013; Kollmann and Stöckmann, 2012; Kreiser, et al., 2013). In line with the multidimensional view and the fact that attention to the entrepreneurial orientation components may be more informative (Baron, et al., 2013; Kollmann and Stöckmann, 2012; Miller, 2011), this study draws on the multidimensional view and hypothesizes that innovativeness, risk taking, and proactiveness are positively influenced by TMT metacognitive knowledge and experience diversity when the team is behaviorally integrated. The next sections detail these hypotheses.

3.3.2.1 TMT Metacognitive Diversity, Behavioral Integration, and Innovativeness

Innovativeness indicates a firm's strong pledge to introduce new product offerings (Kreiser, 2011). It reflects a firm's willingness to move and embrace new ideas (Baker and Sinkula, 2009), and support new products and radical product changes (Wales, Parida, and Patel, 2013). Diversity, in general, has been considered as an important driver

of organizational innovation (Qian, et al., 2013). Research on the impact of TMT diversity on innovativeness has mostly reported a positive association (Wei and Lau, 2012). This is because diversity brings about different and new perspectives and accordingly stimulates the creation of more novel and exploratory ideas (Alexiev, et al., 2010) and enhances the adoption of different techniques, resulting in product and administrative innovations (Wei and Lau, 2012).

TMT metacognitive knowledge and experience diversity could provide the team with different understandings and assessments of the firm's courses of action and strategies, and multiple decision frameworks to perform the tasks. Such differences, to some extent, stem from top managers' individual focuses on meeting the goals and expectations required by their firms (Nambisan and Baron, 2012). Given that being inclined toward ideals and aspirations rather than tasks and responsibilities could be advantageous for finding innovative solutions to business problems (Tumasjan and Braun, 2012), different levels of focus on the task may provide the team with an opportunity to find innovative and creative ideas and solutions. Specifically, it has been suggested that metacognitive knowledge and experience are important for the recognition and interpretation of innovative opportunities (Baron, et al., 2013; Grégoire, et al., 2011; Nambisan and Baron, 2012).

Given a team composed of members with diverse metacognitive knowledge and experience, there would be different recognitions and interpretations of innovative opportunities. Being exposed to such different recognitions does not necessarily result in innovativeness. To effectively exchange those recognitions and act upon them, a team needs to be behaviorally integrated (Lubatkin, et al., 2006). Team members with a spirit of sharing, collaboration, and joint decision-making are more likely to embrace their differences (Carmeli, 2008) and benefit more from their alertness to identify opportunities

and pursue product innovation (Li and Zhang, 2002; Zahra and Wiklund, 2010). Embracing different interpretations allows the team to create a broader view of innovating projects.

Despite the fact that small firms' managers, due to their limited resources, interpret the issues more negatively and accordingly innovate less products than their big counterparts (Plambeck, 2012), this study argues that a behaviorally integrated team with different assessments of innovative projects and multiple decision frameworks focusing on innovative goals has a deeper understanding and broader view to pursue innovating projects. A team who puts emphasis on teamness and collaboration affords the team more opportunity to utilize different recognitions and understandings of market opportunities in the practice of new product offerings. They will have more innovation-related debate and discussion (Siegel and Hambrick, 1996) and accordingly are more likely to have innovative and creative insights (Barkema and Shvyrkov, 2007; Talke, et al., 2010). Therefore, it is expected that:

Hypothesis 3. TMT metacognitive knowledge diversity will positively enhance the innovativeness of SMEs when the team is behaviorally integrated.

Hypothesis 4. TMT metacognitive experience diversity will positively enhance the innovativeness of SMEs when the team is behaviorally integrated.

3.3.2.2 TMT Metacognitive Diversity, Behavioral Integration, and Risk Taking

Risk taking captures a firm's tendency towards bold and high-risk projects (Baron, et al., 2013; Wales, et al., 2013b), and accordingly reflects its acceptance of uncertainty and risky activities (Grande, Madsen, and Borch, 2011). It demands that managers have a tolerance to risk as well as the potential for mistakes (Garrett, Covin, and Slevin, 2009; Wang, 2008). As risk taking may produce uncertain outcomes, managers should be

willing to deal with ambiguity in strategic situations (Kreiser, et al., 2010). They need to simplify their information processing to lessen the ambiguity and stress associated with risky decisions (Simon, et al., 2000).

In this case, it has been argued that metacognitive knowledge and experience are important for effectively adjusting to changing environmental conditions (Haynie and Shepherd, 2009; Nambisan and Baron, 2012). In particular, metacognitive knowledge has been shown to be beneficial as it gives accurate assessments for undertaking risky projects (Baron, et al., 2013). Similarly, it has been argued that metacognitive experience enables managers to make sense of the current situation based on their previous experience and accordingly approach the new situation successfully (Mitchell, et al., 2011). Together they serve to inform managers in interpreting entrepreneurial tasks (Haynie, et al., 2010) such as making risky decisions.

Diverse metacognitive abilities provide the team with different understandings of the environment and impact their ability to adapt to the uncertainty. Different understandings of the potential of risk could be useful if team members share their ideas and develop a collaborative undertaking of joint decision-making. This approach to teamwork may give rise to more practical discussion among team members regarding their different understandings and perceptions of the situation (Carmeli and Schaubroeck, 2006). This affords the team a more complete picture of the risk in order to accept or avoid it. The team would be expected to be more confident in their ability to deal with a situation (Carmeli, et al., 2011). TMT behavioral integration indeed enhances members' alertness to the decision alternatives and subsequent consequences (Magni, et al., 2009). This is particularly the case for SMEs whose managers are closely involved in managing their firms both financially and non-financially (Legohérel, et al., 2004).

Once again, although due to the limited resources SMEs face more uncertainty (Armario, Ruiz, and Armario, 2008) and subsequently their managers are more concerned regarding risky decisions (Plambeck, 2012), if the team is behaviorally integrated, their different metacognitive knowledge and experience allow them to make more attentive evaluations and accordingly be more confident about taking the risk. Thus:

Hypothesis 5. TMT metacognitive knowledge diversity will positively enhance the risk taking of SMEs when the team is behaviorally integrated.

Hypothesis 6. TMT metacognitive experience diversity will positively enhance the risk taking of SMEs when the team is behaviorally integrated.

3.3.2.3 TMT Metacognitive Diversity, Behavioral Integration, and Proactiveness

Proactiveness refers to a firm's efforts to discover and seize opportunities (Lumpkin, Brigham, and Moss, 2010) and its tendency to initiate new products, services, and technologies ahead of its competitors (Wales, et al., 2013b). It implies a forward-looking perspective to predict opportunities (Grande, et al., 2011) and act in anticipation of emerging demand (Lumpkin, et al., 2010; Kreiser, 2011). It therefore requires the managerial ability to pursue market opportunities before the firm's competitors (Baker and Sinkula, 2009).

It has been suggested that metacognitive knowledge and experience are important in adapting to novel and new situations (Haynie and Shepherd, 2009; Nambisan and Baron, 2012). Initiating competitive actions is those novel situations where metacognitive knowledge and experience could have important implications (Baron, et al., 2013; Nambisan and Baron, 2012). As noted earlier, different metacognitive knowledge and experience would bring different assessments of the investment in seizing market opportunities and initiating competitive actions. Different assessments could serve the

team a broader view of the issues; however, at the same time, this may engender slowness in their decision-making (Hambrick, et al., 1996). In terms of time, this may impede the team from taking action on opportunities faster than their competitors. Team behavioral integration in this case could be very beneficial as it lessens the time required for the team to understand the environmental changes (Ling, et al., 2008; Magni, et al., 2009). It allows them to obtain relevant information in a timely manner (Magni, et al., 2009). The more behaviorally integrated the team, the greater the potential benefit in the reduction of time for the team to understand environmental changes.

Given that being proactive requires managers to have a sharing culture (Tang, et al., 2010; Zhao, et al., 2011), a behaviorally integrated team is more likely to be proactive in recognizing and seizing market opportunities. Such a team is more willing to share their various assessments of investments in the face of uncertainty and embrace them in a timely manner. They will have more constructive belief and confidence about their team's ability (Carmeli, et al., 2011), which is greatly needed to undertake highly competitive actions (Baron, et al., 2013; Simsek, et al., 2010). Thus, they are more likely to facilitate their firms' proactiveness (Lin and Shih, 2008).

Taken together, a behaviorally integrated team will conclude on different recognitions of opportunities and assessments of investment strategies in a timely manner. Therefore, it is expected that:

Hypothesis 7. TMT metacognitive knowledge diversity will positively enhance the proactiveness of SMEs when the team is behaviorally integrated.

Hypothesis 8. TMT metacognitive experience diversity will positively enhance the proactiveness of SMEs when the team is behaviorally integrated.

3.3.3 Entrepreneurial Orientation Dimensions and Firm Performance

Entrepreneurial orientation has been widely acknowledged as an important construct to explain firm performance (e.g. Green, Covin, and Slevin, 2008; Li, et al., 2009). It has been argued that entrepreneurially oriented firms, or in other words, firms who are innovative, risk taking, and proactive, generally outperform firms who are not (Anderson and Eshima, 2013; Anderson, Covin, and Slevin, 2009). The level of a firm's entrepreneurial orientation is related to its ability to effectively compete and perform (Simsek, et al., 2010). This is particularly true for SMEs whose survival depends on their ability to pursue entrepreneurial activities (Real, et al., 2012). Given this, the next section details the potential positive effects of each individual component of entrepreneurial orientation on the performance of SMEs.

3.3.3.1 Innovativeness and Performance

As noted earlier, innovativeness reflects a firm's inclination towards new ideas (Lumpkin, et al., 2010), new product offerings (Kreiser, 2011), technological leadership, and dramatic product changes (Wales, et al., 2013b). Such tendencies and willingness increase the probability that firms take advantage of market opportunities (Richard, Wu, and Chadwick, 2009). Innovativeness calls attention to responding to potential customer needs through research, product development, and technical as well as industry knowledge (Li, et al., 2008). Hence, it could inspire the launch of new products (Moreno and Casillas, 2008), and improve services (Lumpkin, et al., 2010), and accordingly enable a firm to capture the market share, increase return on investment (Çakar and Ertürk, 2010), and promote growth rate (Casillas and Moreno, 2010).

A proclivity toward innovation could enhance employee satisfaction (Rosenbusch, et al., 2011). It could make employees more committed and devoted to the firm (De Clercq

and Belausteguigoitia Rius, 2007). It has been argued that such commitment and effort are beneficial for SMEs (Ling, et al., 2008). Furthermore, to perform better, SMEs need to obtain information about customers and competitors to develop competitive marketing strategies (Keh, et al., 2007). Since innovativeness puts an emphasis on responding to customer needs through research and product development (Li, et al., 2008), it enables SMEs to develop specialized and innovative offerings and subsequently refrain from price competition, create new demand, and consequently promote growth (Moreno and Casillas, 2008; Rosenbusch, et al., 2011).

Given such favorable effects, innovativeness typically requires a large amount of investment (Lumpkin, et al., 2010; Miller and Le Breton-Miller, 2011). SMEs, as scantily resourced firms, may seem more restricted for engaging in innovative activities than their large counterparts (Plambeck, 2012), but their agility and flexibility (Avlonitis and Salavou, 2007) could enable them to reconfigure their resource base (Rosenbusch, et al., 2011). In fact, it has been argued that adopting entrepreneurial activities and attitudes, in general, and an innovative proclivity, in particular, may be a useful way to allocate resources and more importantly an effective response to beat liabilities associated with their smallness (Grande, et al., 2011; Rosenbusch, et al., 2011). This could help SMEs to allocate their resources where they can create more value (Rosenbusch, et al., 2011). Given that the success of SMEs depends mainly on their ability to develop new products and services (Zahra, et al., 2007), this study posits that SMEs would benefit from their willingness and efforts to develop innovative offerings. Therefore:

Hypothesis 9. Innovativeness will positively impact the performance of SMEs.

3.3.3.2 Risk Taking and Performance

Risk taking captures a firm's propensity to commit resources to projects whose outcomes are uncertain (Kreiser, 2011; Wiklund and Shepherd, 2005). An inclination toward risky activities means a greater likelihood of gains as well as losses (Grande, et al., 2011). Such a propensity could enable firms to seize market opportunities (Li, et al., 2009), particularly profitable ones which may offer high returns in the face of uncertainty (Richard, et al., 2009).

Risk taking could strengthen a firm's willingness to assimilate information (Kreiser, 2011), and create an atmosphere of tolerance of mistakes and rewards for new ideas within a firm (Wang, 2008). It could enhance the positive impacts of a firm's bundle of knowledge-based resources on its performance (Wiklund and Shepherd, 2003). More notably, risk taking has been shown to be positively associated with market pioneering which could be beneficial to the firm in several ways (Garrett, et al., 2009).

Given the above, although SMEs due to their scarce resources may assess the issues more negatively (Plambeck, 2012), in line with the above discussion and Wiklund and Shepherd (2005), this study proposes that risk taking as an aspect of entrepreneurial orientation could help SMEs to overcome the restrictions imposed by their scarce resources and an environment where new opportunities do not often emerge. As such, SMEs can reap benefits from pursuing risky initiatives. Thus:

Hypothesis 10. Risk taking will positively impact the performance of SMEs.

3.3.3.3 Proactiveness and Performance

Today's business environment is driven by increasingly rapid change (Lyon, Lumpkin, and Dess, 2000), and short product and market life cycles (Hamel, 2000). Future profits based on current production may not be certain, thus firms need to continuously explore new opportunities (Grande, et al., 2011). Under such circumstances,

proactive firms are expected to identify more resources and opportunities (Tang, et al., 2010), capitalize on them, and subsequently respond to environmental changes earlier than their competitors (Wiklund and Shepherd, 2003).

As noted earlier, proactiveness reflects a firm's tendency to predict opportunities, and launch new products, services, and technologies ahead of its competitors (Grande, et al., 2011; Wales, et al., 2013b). It implies an opportunity-looking perspective to anticipate prospective demand before competitors (Kollmann and Stöckmann, 2012; Kreiser, 2011). Thus, it enhances a firm's motivation to collect information regarding resources and opportunities (Tang, et al., 2010). It facilitates information utilization (Keh, et al., 2007), and enables firms to perceive the external environment and its characteristics more precisely (Tang, et al., 2010), leverage their knowledge-based resources before their competitors (Wales, et al., 2013b), and take action faster (Lumpkin, et al., 2010). Such quickness allows firms to be first movers and rewarded by superior competitive positions in the marketplace (Li, et al., 2009). Taken together, it has been argued that proactiveness benefits firms (Lumpkin, et al., 2010), for example by promoting growth rate (Casillas and Moreno, 2010). This study posits that such beneficial effects also apply to SMEs. Proactive SMEs could benefit from their ability to perceive and recognize the opportunities and resources existing within an industry (Tang, et al., 2010) and effectively respond to environmental conditions (Escribá-Esteve, et al., 2009). Therefore, it is expected that:

Hypothesis 11. Proactiveness will positively impact the performance of SMEs.

3.4 Summary

In this chapter the conceptual framework as well as hypotheses were developed and presented based on a review and analysis of the relevant literature. The key themes on

TMT metacognitive diversity in terms of knowledge and experience, entrepreneurial orientation, behavioral integration, and firm performance were briefly reviewed and key areas were linked. It was posited that TMT metacognitive knowledge and experience diversity would positively enhance the performance of SMEs when team members exhibit behavioral integration. Under the same condition, it has been argued that entrepreneurial orientation mediates the relationship between TMT metacognitive diversity and firm performance. The proposed hypotheses were tested by empirical analysis. The next chapter explains the study's approach to analyzing the data.

-CHAPTER 4-

RESEARCH METHODOLOGY

4.1 Introduction

This chapter explains the research methodology and is organized into two main sections. The first section details the quantitative approach of the study and explains its elements including: variables and measurement, sampling procedure, data collection strategies, reliability and validity issues, and analytical techniques. This section is then followed by explanations of the qualitative approach of the study. Before delving into these sections, a brief overview of the research design is presented below.

4.2 Research Design Overview

Since the aim of this study is to establish the causal relationships between TMT metacognitive knowledge and experience diversity (independent variables), entrepreneurial orientation (mediating variable), behavioral integration (moderating variable), and firm performance (dependent variable), the quantitative approach would be appropriate to test the proposed relationships. Previous research has widely used a survey approach to collect information on top management teams (e.g. Buyl, et al., 2011a; Qian, et al., 2013). Survey has also been a key method for studying small business owners as well as entrepreneurs (Dennis, 2003). Accordingly, this study employed the mail survey approach to collect data on top management teams of SMEs. In addition, in order to gain further insights regarding top managers' behavior and its impact, issues measured by the survey instrument, seven semi-structured interviews were undertaken to supplement the survey data (Carmeli, et al., 2012). As pointed out by Bryman, Becker, and Sempik (2008), a combination of survey and interview data would provide a more comprehensive picture.

In light of this overview, the study variables and measures are explained as follows.

4.3 Variables and Measurement

4.3.1 Independent Variables: TMT Metacognitive Knowledge and Experience

Diversity

To measure metacognitive knowledge, Haynie and Shepherd's (2009) scale was applied. Metacognitive knowledge was captured by top managers' (including CEOs) responses to 11 items (based on a seven-point Likert-type scale ranging from strongly disagree to strongly agree). Haynie and Shepherd's scale has an established reliability index of 0.726. A recent study based on the same scale reported a reliability of 0.834 (Haynie, et al., 2012).

The measure of metacognitive experience was also adopted from Haynie and Shepherd (2009). There were eight items, assessed on a seven-point Likert-type scale ranging from strongly disagree to strongly agree, to capture metacognitive experience. The reliability index of metacognitive experience is 0.718. The study of Mitchell et al. (2011) on small and medium-sized firms' executives evidenced a reliability of 0.74. Similarly, Haynie et al. (2012) reported a reliability of 0.77.

The diversity of metacognitive knowledge and experience within a team was measured through a specific formula. There are different ways to measure and conceptualize diversity, depending on the type of variable (Harrison and Klein, 2007). For instance, with respect to continuous variables and ratio scale, the coefficient of variation has been broadly used (Joshi and Roh, 2009; Simsek, et al., 2005). In terms of categorical variables and nominal data, Blau's (1977) index has received the most attention from researchers (Nielsen, 2009).

Despite the wide use of these measures, recently Biemann and Kearney (2010) argued that these typical measures are systematically biased in that they do not consider

variations in group size and accordingly miscalculate the level of diversity, particularly in smaller groups. They further provided the bias-corrected versions of diversity measures and suggested applying them to eliminate potential biases. Given that small firms do not have as many top executives as large firms do (Certo, et al., 2006), this study applied the bias-corrected formulas to calculate diversity. Table 5 illustrates the bias-corrected operationalization of group diversity types developed by Biemann and Kearney (2010).

Table 5: Bias-Corrected Operationalization of Group Diversity Types

Diversity Type	Index	Common Formula	Bias-corrected Formula
Variety	Blau's index	$\text{Blau} = 1 - \sum_{i=1}^k p_i^2$	$\text{Blau}_N = 1 - \sum \frac{N_i(N_i-1)}{N(N-1)}$
Separation	Teachman's index	$\text{TI} = - \sum [p_i * \ln(p_i)]$	$\text{TI}_N = \text{TI} * \left(\frac{N}{N-1}\right)$
	Standard deviation	$\text{SD} = \sqrt{\frac{\sum (X_i - \bar{X})^2}{N}}$	$\text{SD}_N = \sqrt{\frac{\sum (X_i - \bar{X})^2}{q}}$
	Mean Euclidean distance	$\text{MED} = \frac{\sum_{i=1}^N \sqrt{\frac{\sum_{j=1}^N (X_i - X_j)^2}{N}}}{N}$	$\text{MED}_N = \frac{\sum_{i=1}^N \frac{\sum_{j=1}^N \sqrt{(X_i - X_j)^2}}{N-1}}{N}$
Disparity	Gini coefficient	$\text{Gini} = \frac{\sum_{i=1}^N \sum_{j=1}^N |X_i - X_j|}{2N^2 \bar{X}}$	$\text{Gini}_N = \frac{\sum_{i=1}^N \sum_{j=1}^N |X_i - X_j|}{2NX(N-1)}$
	Coefficient of variation	$V = \frac{\text{SD}}{\bar{X}}$	$V_N = \frac{\text{SD}_N}{\bar{X}}$

In light of the above table, to measure TMT metacognitive knowledge and metacognitive experience diversity the bias-corrected coefficient of variation was

calculated for each of the 11 items of metacognitive knowledge and the eight items of metacognitive experience for each team.

4.3.2 Dependent Variable: Firm Performance

The dependent variable of this study is the performance of SMEs. Given that small and medium-sized firms are often very reluctant (Escribá-Esteve, et al., 2009), and more importantly not legally obliged, to provide and publish financial data (Simsek and Heavey, 2011), subjective measures have been widely recognized as valid and reliable measures of their performance (Davis, et al., 2010; Simsek and Heavey, 2011). Accordingly, this study measured performance as the average of nine financial, marketing, and operational indicators derived from the study of Li and Atuahene-Gima (2001). It has been argued that a combination of financial and non-financial measures provides a more comprehensive assessment of firm performance (Li, et al., 2009). TMT members (including CEOs) were asked to rate their firm's performance on a five-point scale (much worse to much better) relative to their main competitors over the last three years. This has a reliability index of $\alpha = 0.88$ (Li and Atuahene-Gima, 2001). The recent study of De Clercq et al. (2010) reported a reliability of 0.92.

After collecting responses they were aggregated at the team level. Before aggregation, it is necessary to assess the consistency of responses within a team (Carmeli, et al., 2012). Based on the approach used in previous research (e.g. Carmeli, et al., 2011, 2012; Souitaris and Maestro, 2010), this study employed an analysis of variance to examine the consistency of team members' responses. The intraclass correlations ICC (1) and ICC (2) were calculated to examine the extent of agreement of group members (Carmeli and Shteigman, 2010). Then, agreement index (Rwg) was calculated. The result of the above tests validates applying the mean of the individual responses within each team as the team-level evaluation of firm performance (Boone and Hendriks, 2009). In the absence of

an objective measure, this approach could be more informative (Simsek and Heavey, 2011).

4.3.3 Mediator Variable: Entrepreneurial Orientation

To measure three salient dimensions of entrepreneurial orientation—innovativeness, risk taking, and proactiveness—this study used a nine-item, semantic differential scale developed by Covin and Slevin (1989). These nine items consist of three items developed to evaluate the innovation dimension, three items for measuring proactiveness, and three items to measure risk taking. Each item has a seven-point semantic differential scale with a neutral midpoint (Stam and Elfring, 2008). It has a reliability index of 0.87. Tang et al. (2010) reported the reliability of proactiveness ($\alpha = 0.65$), innovativeness ($\alpha = 0.78$) and risk taking ($\alpha = 0.78$).

This study measured entrepreneurial orientation by employing the responses of TMT members including CEOs (Simsek, et al., 2010). This technique is not only a valid approach to measure a firm's entrepreneurial orientation (Wales, Monsen, and McKelvie, 2011) but also it minimizes the common-method bias and subsequently generates more reliable data (Escribá-Esteve, et al., 2009). It is also useful for achieving additional insights into the level of agreement between a firm's top managers on their firm's entrepreneurial orientation (Miller, 2011). Like firm performance, the responses were aggregated into a team-level response.

4.3.4 Moderator Variable: TMT Behavioral Integration

To measure TMT behavioral integration, the nine items developed by Simsek et al. (2005) were employed. These items were designed to capture the TMT's level of collaboration, joint decision-making, and information exchange. Each item was assessed on a five-point Likert-type scale (strongly disagree to strongly agree). The scale has a

reliability index of 0.85 and the recent studies of Raes et al. (2013) and Carmeli et al. (2011) reported reliabilities of 0.91 and 0.93 respectively. Team members' responses were aggregated into a team-level response. Although Simsek et al. (2005) suggested that team behavioral integration could be assessed by CEOs, surveying the team members (including the CEO) provides a more reliable measure of team behavioral integration (Raes, et al., 2013).

4.3.5 Control Variables

As recommended by researchers (e.g. Miller, 2011), this study took special care to include relevant and important control variables. Several controls at the firm level, industry level, environmental level, team level, and CEO level were used to account for their effects in the model specification (De Clercq, et al., 2010).

It has long been argued that firm age and size influence firm performance (e.g. De Clercq, et al., 2010; Su, Xie, and Li, 2011). In order to deal with interpretational confounds (Green, et al., 2008), firm age and size were controlled. Firm age was measured as the numbers of years since the firm was established, information provided by Dun & Bradstreet. In terms of firm size, prior research proposed several approaches to measure this, such as the number of employees, sales, volume, or total assets. As SMEs are generally reluctant to present financial measures related to their size, their number of employees has been an appropriate measure of their size (e.g. Buyl, et al., 2011a). Thus, the firm size was measured as the firm's number of employees obtained from Dun & Bradstreet.

It has been argued that family ownership influences entrepreneurial orientation (e.g. Simsek, et al., 2010). Accordingly, family ownership was controlled and assessed by asking the CEOs to indicate whether or not their firms were family owned (Simsek, et al., 2010).

Industry context as the confounding variable in strategic management research was controlled in this study (Dess, Ireland, and Hitt, 1990). Based on the first two digits of the ANZSIC (Australian and New Zealand Standard Industry Classification) codes provided by Dun & Bradstreet, the firms were categorized into five industries—manufacturing, construction, wholesale as well as retail trades, and professional, scientific and technical services—and then were dummy coded (e.g. Lubatkin, et al., 2006; Ling, et al., 2008).

With respect to environmental influences, this study controlled environmental uncertainty as it has been linked to firm performance (e.g. Ling and Kellermanns, 2010; Lubatkin, et al., 2006). Accordingly, environmental uncertainty was assessed by top management team members (including CEOs) and measured using a four-item, five-point Likert-type scale (strongly disagree to strongly agree) adopted from the study of Waldman et al. (2001). This has a reliability index of 0.63 and the recent studies of Ling and Kellermanns (2010) and Ling et al. (2008) reported a reliability of 0.75.

At the team level, some relevant demographic diversities, including age, gender, educational level as well as background, dominant and intrapersonal function, and industry experience diversity, were controlled. In the TMT literature, they have long been used as the proxies of TMT cognitive diversity (Nielsen, 2010) and have been associated with firm performance (e.g. Buyl, et al., 2011a; Cannella, et al., 2008; Talke, et al., 2010). First, this demographic information was collected through the questionnaire. Then the specific formulas were used to calculate their diversity within a team. To measure age, managers were requested to indicate their age. Then the bias-corrected coefficient of variation was calculated.

To assess gender, managers were asked to indicate their gender. Following prior research (e.g. Cannella, et al., 2008; Nielsen and Nielsen, 2011), educational background was classified into five categories based on the highest degree managers achieved: 1)

economics and business administration, (2) law, (3) technical education (engineering), (4) science, and 5) others. Educational level was measured by asking respondents to indicate the highest educational level they had completed (Ling, et al., 2008). To measure the diversity of the above categorical variables, the bias-corrected Blau index was calculated.

Consistent with previous work on the TMTs of SMEs (e.g. Ling, et al., 2008), managers were asked to identify their functional specialty based on these categories: (1) operation, (2) marketing and sales, (3) information system, (4) finance, (5) accounting, (6) general management, (7) research and development, (8) personnel, (9) general counsel/secretary, and (10) others. To measure dominant as well as intrapersonal functional diversity, TMT members were further asked to indicate their years of work experience in each of the functional areas (Bunderson and Sutcliffe, 2002).

In line with previous research (e.g. Nielsen and Nielsen, 2011), TMT industry experience diversity was calculated as the proportion of TMT members with previous work experience in an industry different from the one in which the firm performs. To gain further insight, this study also measured TMTs' average industry experience. To measure team tenure, managers were requested to indicate the number of years they had been working with the team (Kearney, et al., 2009; Simsek, et al., 2005). Then it was measured as the average of the total tenure of all members (Simsek, et al., 2005).

At the CEO level, following previous research (e.g. Simsek, 2007), CEOs' firm tenure was controlled and measured by asking CEOs to indicate the number of years they had been CEOs in their current firms. It has been argued that CEOs' firm tenure is more encompassing than other tenure variables (Cao, et al., 2010).

All the variables described above and their measurements are listed in Table 6 below. The complete survey questionnaire is presented in Appendix 2.

Table 6: Study Variables and Measures

Variable Type	Variable	Source	Reliability in the Recent Studies
Independent Variable	TMT Metacognitive Knowledge Diversity TMT Metacognitive Experience Diversity	Haynie and Shepherd(2009) $\alpha=0.726$ $\alpha=0.718$	Haynie et al. (2012) $\alpha=0.834$ Mitchell et al. (2011) $\alpha=0.74$; Haynie et al. (2012) $\alpha= 0.77$
Dependent Variable	Firm Performance	Li and Atuahene-Gima(2001) $\alpha=0.88$	De Clercq et al. (2010) $\alpha= 0.92$
Mediator Variable	Entrepreneurial Orientation: Innovativeness Proactiveness Risk taking	Covin and Slevin (1989) $\alpha= 0.87$	Tang et al. (2010) $\alpha= 0.78$ $\alpha= 0.65$ $\alpha= 0.78$
Moderator Variable	TMT Behavioral Integration	Simsek et al. (2005) $\alpha=0.85$	Raes et al. (2013) $\alpha=0.91$ Carmeli et al. (2011) $\alpha=0.93$
Control Variable	Firm size , age , & family ownership Industry Effect Environmental uncertainty TMT tenure and demographic diversity CEOs' firm tenure	Waldman et al. (2001) $\alpha=0.63$	Ling and Kellermanns(2010) $\alpha=0.75$ Ling et al. (2008) $\alpha=0.75$

4.4 Unit of Analysis and Aggregations

The research population of this study is Australia's SMEs. A sample of SMEs operating in different industries was randomly selected. The data were collected from TMT members (including CEOs) and then aggregated at the firm level.

4.5 Sampling Procedure

Small and medium-sized firms play an important role in Australia's economy (Australian Bureau of Statistics, 2010-2011). As noted earlier in Chapter two, the Australian Bureau of Statistics (ABS) defines SMEs as firms with fewer than 200 people. Based on this definition, a sample from the main Australian sectors such as manufacturing, construction, wholesale as well as retail trades, and professional, scientific, and technical services was taken to provide the generalizability of the study's findings. As the ABS reported, these five industries have not only contributed significantly to the Australian economy but also they consist of a significant number of SMEs. Before furthering the discussion of the sampling procedure, an overview of Australia's SMEs is presented in the following section.

4.5.1 An Overview of Small and Medium-sized Firms in Australia

According to the ABS (2010-2011), businesses in Australia are classified as:

- Employing businesses including:
 - Large firms employing 200 or more people
 - Small and Medium-sized firms employing fewer than 200 people
- Non-employing businesses

The data released in 2010-2011 show that small firms form a big proportion of businesses in Australia. As mentioned previously, this study draws a sample of SMEs from five different industries. Table 7 below demonstrates the contribution that SMEs

have made in each selected industry. All the information is provided by the ABS (2010-2011).

Table 7 : Industry Value Added (\$m) by Industry Division (2010-2011)

	Industry Division				
	Manufacturing	Construction	Whole Sale Trade	Retail Trade	Professional , Scientific , and Technical Services
Business Size					
Small and Medium-sized	48,866	69,895	38,170	39,505	63,936
Large	52,567	18,621	21,939	28,722	26,372
Total	101,433	88,516	60,109	68227	90,308

4.5.2 Sourcing of Sample

Although all the above information was provided by the ABS, they did not possess the list of SMEs, their individual postal addresses, and phone numbers. Thus, the list of SMEs and their individual contacts were collected from Dun & Bradstreet. Dun & Bradstreet is the world's leading and longest-established business information company. In Australia it has been operating since 1887 with more than 2.8 million businesses' data sets (taken from Dun & Bradstreet's website). This database has been widely used by researchers, particularly in the context of SMEs (e.g. Ling and Kellermanns, 2010; Ling, et al., 2008). This study drew a sample of 1,500 SMEs from this database. This initial population is consistent with previous TMT research (e.g. Ling and Kellermanns, 2010; Ling, et al., 2008; Lubatkin, et al., 2006). The process of drawing the sample was automated by Dun & Bradstreet's database tool through building a count of the ANZSIC division versus employee banding. Then, using the random function in the database tool,

the program sampled the number of records as selected within each count (Dun & Bradstreet Australia).

4.6 Data Collection

The questionnaires, along with the informed consent letters and postage-paid return envelopes, were addressed directly to the managing director or director of the firms (data provided by Dun & Bradstreet). The informed consent letter explained the aim of the study, encouraged participation, and stated that participants would receive an executive summary of the results on request. In light of a lack of information on small firms' TMTs and consistent with previous research (e.g. Buyl, et al., 2011a; Carmeli, et al., 2012; Simsek and Heavey, 2011), this study identified CEOs as the people who are most knowledgeable about their fellow top managers. Accordingly, CEOs were provided with the definition of the TMT as "those organizational members who make or are involved with decisions affecting the company's strategy, in other words, the very top-level members" (Cao, et al., 2010:1280). They were then asked to distribute the questionnaires to their team members. In doing so, accuracy in defining the TMT and the information they provide was guaranteed (Boone and Hendriks, 2009; Buyl, et al., 2011a; Clark and Maggitti, 2012; Pitcher and Smith, 2001).

In order to ensure confidentiality and anonymity, postage-paid return envelopes were provided for team members (Simsek and Heavey, 2011; Simsek, et al., 2010; Ling and Kellermanns, 2010), thus the responses were sent back directly without CEO oversight (Simsek and Heavey, 2011). To prevent any possible mismatch, firms were first coded and then, according to the codes, envelopes were numbered for each firm (Simsek, et al., 2005). Different questionnaires were designed for top managers and CEOs, thus it was straightforward to distinguish between the responses from CEOs and top managers for each firm.

Two weeks after the first mailing, the firms were contacted by follow-up telephone calls to ensure that the questionnaire had been received and request again their support in completing the questionnaire (Alexiev, et al., 2010; Casillas and Moreno, 2010). One month after the initial mailing, a second round of survey questionnaires was sent out again as a reminder.

4.6.1 Questionnaire Design

In order to design the questionnaire appropriately, the questions were structured into the following six sections:

Section 1: The respondents were asked to indicate 11 items of metacognitive knowledge and eight items of metacognitive experience.

Section 2: The respondents were asked to indicate the extent to which they agreed with the provided items on behavioral integration.

Section 3: The respondents were asked about their firms' entrepreneurial orientation in terms of the provided items.

Section 4: The respondents were asked to indicate four items about the uncertainty of their environmental context.

Section 5: The respondents were asked to rate their firms' performance relative to that of their competitors.

Section 6: The respondents were asked about their demographics such as age, gender, educational level, experience, and tenure.

It is important to note that some questions were assigned to be answered by the CEO. CEOs were asked about the firm ownership structure, the number of their team members which then included the CEO as well (Carmeli, et al., 2012), and their tenure. In order to assure anonymity, the questionnaire did not ask for either respondents' or firms' names (Baker and Sinkula, 2009).

4.7 Pilot Study

Before using the questionnaire for the main survey, it is important to pilot-test it in order to identify any problems and administer the survey more effectively (Gill and Johnson, 2002). A pilot study is conducted to test the questionnaire's overall design, ambiguity, the wording and formatting of the questions, as well as its reliability (McNeill and Chapman, 2005; Schwab, 2005). In the case of this study, consistent with Simsek and Heavey (2011), the questionnaire was first pilot-tested by asking three managers as well as five researchers familiar with the literature to review the questionnaire and provide feedback on its wording, format, and the order of the questions, or to make any other comments.

To pilot-survey and test its reliability, the modified questionnaire was sent to 30 SMEs' TMTs. This pilot sample size was adequate (Tharenou, Donohue, and Cooper, 2007) and consistent with a previous research's pilot study (Chen, et al., 2010). It should be noted that the procedures in the pilot study were the same as those of the main survey (Dillman, 2007). The participants in the pilot study were then excluded from the main survey to avoid bias in the findings (Dillman, 2007; Su, et al., 2011).

The next section explains the issues of reliability and validity of measures.

4.8 Validity and Reliability of Measures

Although all measures were adopted from previous research which reported evidence of reliability, as study conditions change, the validity and reliability of measures should be assessed to ensure their applicability in the new context and their ability to collect qualified data (Slater and Atuahene-Gima, 2004). Validated and reliable measures provide more confident findings to verify hypotheses (Wolff and Pett, 2006). To assess face as well as content validity, as mentioned earlier, the questionnaire was reviewed by

some academicians as well as managers in small firms (Hughes and Morgan, 2007). In addition to the expert judgment test, a series of factor analysis techniques were applied to assess the overall measurement model. To test the measures' reliability, although there are different ways to check, the Cronbach's alpha has been the most common technique for evaluating the reliability of self-report items (Li, et al., 2009; VanderStoep and Johnston, 2009). Accordingly, the Cronbach's alpha coefficient was calculated for all measurements. The procedures applied to examine validity and reliability and the scores are explained in detail in Chapter five.

4.9 Data Analysis

This section outlines the data analysis technique applied to test the model and proposed hypotheses. This study used structural equation modeling (SEM) within the AMOS software package to test the mediating model. SEM has been acknowledged as a significant method to test the mediating models (e.g. Ling, et al., 2008). As pointed out by Kollmann and Stöckmann (2012:11), "SEM allows estimation of multiple associations and simultaneously incorporates observed and latent constructs and accounts for the bias effects of random measurement error in the latent constructs." Accordingly, in line with previous studies (e.g. Carmeli, et al., 2011; Raes, et al., 2013), this study employed a two-step procedure outlined by Anderson and Gerbing (1988) in which the first step is to assess the measurement model employing confirmatory factor analysis (Carmeli, et al., 2011). The second step is to analyze and compare a sequence of nested structural models to get information regarding the model that best accounts for the covariance observed among the exogenous and endogenous constructs (Kollmann and Stöckmann, 2012). To test the moderating model, multigroup moderation analysis in AMOS was conducted. Chapter five further elaborates these methods and provides more details on their conduction.

4.10 Internal and External Validity of Quantitative Research Design

Given all the steps taken to collect and analyze the data, it is important to ensure the internal and external validity of the research design. This section discusses these issues and explains the steps this study took to reduce and control the flaws in its research methods. Both internal and external validity are considered as main criteria for gauging the quality of quantitative research (Bryman, et al., 2008). To test the internal validity, all procedures should be checked against flaws or errors (Payne and Payne, 2004) which are also known as threats to internal validity (Bergh, et al., 2004; Singh, 2007). Bergh et al. (2004) classified the threats to internal validity along with their definitions and operationalization as shown in Table 8 below.

Table 8: Threats to Internal Validity (Bergh, et al., 2004)

Threat	Definition	Operationalization
History	When events occur between measurement periods	Control variables, features in research design
Maturation	When effect may be due to variation in age or experience	Control variables, random sampling
testing	Familiarity with test	Control for gain/loss associated with testing
Instrumentation	When data source, metrics or coders change	Examination of data sources over study period
Regression	When subjects are selected on the basis of extreme scores	Three or more observation points, random sampling
Selection	Subjects are selected because they possess a trait related to study variables	Comparisons between respondents and non-respondents
Mortality	Differential loss of study subjects	Comparisons between retained and lost subjects
Ambiguity about casual inference	When temporal precedence among relationships is unclear	Inspection of temporal precedence of data periods
Selection-maturation	Selection of subjects on the basis of life cycle, size	Evaluation of sampling criteria, sample dimensions
Selection-history	Selection of subjects on the basis of an event of interest	Evaluation of sampling criteria, sample dimensions
Selection-mortality	Selection of subjects on the basis of retention or loss	Evaluation of sampling criteria, sample dimensions
Selection-testing	Selection of subjects on basis of test results	Evaluation of sampling criteria, sample dimensions
Selection-Instrumentation	Selection of subjects on basis of data source	Evaluation of sampling criteria, sample dimensions

Given the above table, to deal with the selection flaws and be consistent with Bergh et al.'s (2004) suggestions, this study randomly selected a sample from different industries. Sampling firms from different industries would maximize the variation of variables and further enhance the findings' generalizability (Carmeli, 2008; Simsek and Heavey, 2011).

Two ad hoc analyses were performed to detect non-response and late-response biases. In addition to selecting carefully the participants and applying valid measures of the constructs (Slater and Atuahene-Gima, 2004), several control variables were defined to put a considerable degree of control on the relationship testing. This ensures that the results are not indirectly related to those factors (Russ-Eft and Hoover, 2005).

Furthermore, causal direction, the single source, and similar method biases have been three main concerns over the survey approach (Schwab, 2005). In the case of causal clarity, it should be noted that it is less likely that firm performance causes a difference in top management team members' metacognitive knowledge and experience. In fact, individuals have basically different metacognitive knowledge and experience (Haynie, et al., 2012), which are developed during their childhood, and are fully grown in early adulthood (Haynie and Shepherd, 2009; Schraw, 1998).

In order to lessen potential common source bias, this study collected data from multiple respondents (i.e. top managers) for each variable (Cao, et al., 2010). A multiple-informant method is more reliable and more likely to yield profound understanding than a single-respondent technique (Carmeli, et al., 2011, 2012). It has also been argued that this method lessens the potential bias (e.g. Wei and Lau, 2012). Nevertheless, since such bias is a potential problem in behavioral research (Olson, et al., 2007; Podsakoff, et al., 2003), consistent with previous studies (e.g. Alexiev, et al., 2010; Heyden, et al., 2013) Harman's one-factor test was performed.

In addition, this study undertook some interviews besides the mail survey. It has been suggested that combining quantitative and qualitative methods is useful in evaluating the accuracy of the data collected by each method (McNeill and Chapman, 2005).

External validity refers to the generalizability of the research findings and is concerned mainly with sampling (Balnaves and Caputi, 2001; Slater and Atuahene-Gima, 2004). In order to enhance the external validity, Russ-Eft and Hoover (2005) suggested that a representative probability sample and avoiding obtrusive measures are more likely to increase the generalizability of findings. In the case of this study, simple random sampling was chosen over other sampling methods and well-established measures were employed to facilitate the comparison of results across studies (Slater and Atuahene-Gima, 2004) and improve the level of generalizability of the findings.

4.11 Qualitative Part: Interview

As noted earlier, in order to gain further insights into the issues covered by the survey, this study conducted semi-structured interviews with TMT members from two SMEs (a total of seven top managers). In line with the questionnaire, the interview protocol focuses on the top management team members of SMEs from the same population who received the survey questionnaire. The interview questions were based on the conceptual framework underlying the research question (Tharenou, et al., 2007) (Appendix 4 – Interview protocol). The completed interview questions were pilot-tested by two participants. “Prompts” and “probes” were used to navigate interviews and motivate the participants to provide more insight in their answers (Gemmell, Boland, and Kolb, 2012; McNeill and Chapman, 2005).

Pilot-testing the interview questions helps to ensure the structure and wording of the questions and whether or not the questions would appropriately capture what they are

designed for (Gillham, 2005; Seidman, 2006). The wording of interview questions is important as they may mislead respondents towards a particular answer and omission of significant information or disclosure of details (McNeill and Chapman, 2005; VanderStoep and Johnson, 2009). In addition to the wording and structure of the questions, a pilot test helps to reveal the estimated running time, difficult subject areas (Brewerton and Millward, 2001), and any other problems which may take place during the main interview (Creswell and Clark, 2007; Yin, 2009).

Accordingly, the interview protocol was pilot-tested, asking one PhD student who was previously working as a senior manager and one MBA student who is currently working in a small manufacturing firm. They were approached via the MGSM (Macquarie Graduate School of Management) Alumni network. The aim of the research was explained to the participants and consent was obtained for the interview. The next chapter explains the results of the pilot study.

In the main study, the top management team members of two SMEs were interviewed. Participants were given an information consent form and an interview protocol. A total of seven interviews were conducted (i.e. firm A three managers, firm B four managers). The time and place of the interview were selected by the participants. Each interview took approximately 30 to 45 minutes. As suggested by Brewerton and Millward (2001), to preserve the reliability, validity, and applicability of interview data, this study took some steps to conduct the interviews appropriately. These were:

- Being prepared to conduct the interview
- Avoiding being talkative, opinionated, and argumentative
- Being attentive
- Avoiding directing/leading as well as limiting questions
- Avoiding jargon and professional language

Furthermore, to enhance the disclosure and veracity of information, as recommended by VanderStoep and Johnson (2009), this study, for instance, tried to give adequate time to the participants to think and respond to the questions. More notably, as the interview protocol covered different topics, the interviewer commented whenever needed to help the interview develop efficiently from topic to topic (VanderStoep and Johnson, 2009).

Having completed the interview schedule, the interviews were transcribed to be used in Nvivo 9.0 for content analysis.

4.12 Summary

In this chapter, the research methodology was explained. Both quantitative and qualitative approaches were elaborated. The elements of the quantitative method were explained including: variables and their measurements, the sampling technique, data collection process, and data analysis method. Both internal and external validity issues of the quantitative approach were discussed. To supplement the quantitative data, qualitative interviews were conducted based on semi-structured questions. The validity issues of this method were also discussed. The results of both methods are presented in the next chapter.

-CHAPTER 5-

DATA ANALYSIS RESULTS

5.1 Introduction

This chapter presents the results of the data analysis. It is organized into 18 main sections. The first section presents the results of the pilot study. The second section provides the descriptive statistics of the participating firms. This section is then followed by examining the conditions for conducting the structural equation modeling (SEM), the aggregation of data, calculating the diversity, assessing the reliability and validity of the measurement model, and analyzing the data and verifying the hypotheses. The findings from the interviews are presented in the final section.

5.2 Results of the Pilot Study

As discussed earlier in Chapter four, it is important to pilot-test both the survey questionnaire and interview protocol to check whether they are confusing or misdirect respondents to specific answers. The survey questionnaire was given to three managers as well as five researchers familiar with the literature to review and provide feedback on its content, format, and clarity (Carmeli and Shteigman, 2010). The feedback on the questionnaire was positive overall and there were no major difficulties for participants in answering the questions. However, there were a few suggestions regarding the arrangement and presentation of the questions. For instance, it was recommended that it would be better to begin the questionnaire with important questions which need more attention and end with the easiest ones. It was further suggested to simplify the instructions given at the beginning of each section of the questionnaire. Accordingly, some minor corrections were made to further modify the questionnaire. There was no concern regarding the ambiguity of questions.

The modified questionnaire was then sent to 30 SME TMTs to pretest the clarity and validity of the survey instrument. The results of the pilot study confirmed the reliability of the measures and consequently the validity of the questionnaire. Firms who participated in the pilot study were excluded from the main study.

Similar to the survey questionnaire, two interviews were conducted to pilot-test the interview questions. The questions seemed clear to the participants and no problem was encountered during the interviews. It should be mentioned that the pilot interviews provided useful insights into the management of time as well as the direction for the main interviews.

The next section describes the firms that participated in the study.

5.3 Sample Description

A total of 1,500 SMEs were sent the survey questionnaire, 168 of whom sent it back. As explained earlier in Chapter four, to prevent any possible mismatch firms were first coded and then, according to the codes, envelopes were numbered for each firm (e.g. Simsek, et al., 2005). Different questionnaires were designed for top managers and CEOs.

This study included firms if their entire team completed the questionnaire. Given this criterion and excluding the incomplete and unclear surveys, the study was left with a total of 140 firms. Usable responses were received from 140 firms' CEOs and 321 TMT members. Thus, the overall firm-level response rate was almost 9% which is comparable to other TMT research using a mail survey (e.g. Olson, et al., 2007; Alexiev, et al., 2010). The upper echelons research has been mainly based on small samples (Nielsen, 2010; van Knippenberg, et al., 2011). Nonetheless, for those studies which investigate complex interaction relationships like this study, case selection bias is not likely to raise a threat (Simons, et al., 1999; Buyl, et al., 2011a, 2013). Furthermore, as pointed out by Lin and

Shih (2008:862), “data from both multiple informants and sufficiently different TMTs increase applicable insights and statistical power for structural equation modeling (SEM) analyses.”

As shown in the next sections, the empirical analysis revealed no statistically significant differences between early and late respondents or non-responding and participating firms.

Based on the first two digits of the ANZSIC (Australian and New Zealand Standard Industry Classification) class codes the participating firms operated in five industries: manufacturing (15%), construction (19.3%), wholesale trades (17.9%), retail trades (17.1%), and professional, scientific, and technical services (30.7%). The average size of the participating firms was 56.12 employees ($SD = 21.757$). The average age of the firms was 15.07 years ($SD = 5.705$). Around 32.1% of the firms were family owned. The sampled firms' TMTs averaged 3.36 members.

Table 9 below summarizes the main characteristics of the participating firms.

Table 9: Attributes of the Participating Firms

Firm Characteristics	Min	Max	Mean \pm S.D.	Frequency
Firm age	5 years	40 years	15.07 \pm 5.705 years	-
Firm size (Number of full-time employee)	38 employees	120 employees	56.12 \pm 21.757 employees	-
TMT size	3 executives	6 executives	3.36 \pm 0.555 executives	-
Family ownership	-	-	-	95 (67.86%) not-family owned, 45 (32.14%) family-owned

Note: family-ownership was a categorical variable. Therefore, frequency analysis was used.

Data were screened to detect missing and outlying cases. These tests are necessary conditions for further structural equation modeling analysis (Byrne, 2010).

5.4 Screening Data: Outliers, Missing

The squared Mahalanobis distance (D^2) in AMOS 20 was used to detect outliers (Byrne, 2010:106). This technique is specifically appropriate for multi-item surveys since it can detect the pattern of responses across a series of items (Meade and Craig, 2012). According to this method, an outlying case would show a D^2 value that stands distinctively apart from all the other D^2 values (Byrne, 2010:106). The assessment of data showed no evidence of serious multivariate outliers. Hence, the issue of multivariate outliers is not a threat to the analysis.

The descriptive analysis was employed to find missing cases (in total 80 missing cases were found). In order to deal with missing data the full information maximum likelihood (FIML) approach, as the most appropriate technique in AMOS, was employed (Byrne, 2010). It was then completed by expectation-maximization (EM) in SPSS to examine whether missing data were missing at random (MAR) or missing completely at random (MCAR) (McLachlan and Krishnan, 1997; Schafer and Graham, 2002). It was found that missing cases were MAR and their bias was negligible. Therefore, they were replaced with the mean values – a normal practice (Terziowski, 2010; Hair, et al., 2010). This led to a complete data set with no missing data.

5.5 Test of Multivariate Normality

To test multivariate normality, univariate normality must first be assessed (Byrne, 2010). The values of standardized kurtosis and z-test critical ratio (CR) of all items in the model in AMOS were used to detect normality (Byrne, 2010). Given the cut-off value of 7.0 for the kurtosis, results showed that there was no item in the model substantially violating normality. Then the multivariate kurtosis value and its associated z-statistic were used to assess multivariate normality. The cut-off value of 5.0 was used as the

guideline (Byrne, 2010). The results (Kurtosis = 26.244, CR = 4.778) indicate that the assumption of multivariate normality is met, warranting the use of maximum likelihood estimation.

5.6 Test of Multicollinearity

There are a few ways to detect multicollinearity. For instance, to detect inter-construct correlations a value of more than 0.85 shows multicollinearity (Hair, et al., 2010). In the case of structural equation modeling (SEM), Byrne (2010) suggests using standardized estimate values of all correlations in the model by a confirmatory factor analysis (CFA) to find and locate multicollinearities. An estimate value of more than 1.0 leads to an inadmissible model and values above 0.85 indicate multicollinearity. Both of these methods (correlation matrix) and CFA were performed and no evidence of multicollinearity was found. The inter-constructs matrix is illustrated in the Appendix 6. Additionally, convergent and divergent validities and model fit indices were also used to further examine the issue of multicollinearity in the research model (Byrne, 2010). The results of these tests as additional evidence of the absence of multicollinearity in this study are explained in respective sections.

5.7 Test of Homoscedasticity

To assess homoscedasticity, a heteroscedasticity (i.e. absence of homoscedasticity) test was executed (Hair, et al., 2006). In general, heteroscedasticity is caused by multivariate non-normality, outliers, and measurement errors (Kline, 2011). As previously discussed, these issues are not likely to threaten the validity of data in this study. However, using Kline's (2011:65) approach, a scatter plot of the standardized residuals against the standardized predicted scores for the same data for the dependent variable in the hypothesized model was developed in SPSS. This test resulted in no evidence of

heteroscedasticity (uneven distribution around zero). This suggests that the assumption of homoscedasticity is supported in this research.

5.8 Non-Response and Late-Response Biases

Two ad hoc analyses were performed to detect non-response and late-response biases. These two tests are based on the assumption that late and non-response situations are logically the same and the potential bias created by both can be detected by one technique (Werner, Praxedes, and Kim, 2007). This technique is known as “wave analysis” (Rogelberg and Luong, 1998). Following previous research (Cao, et al., 2010; Simsek and Heavey, 2011), first the order of the firms’ responses to the survey was recorded and coded into non-responding, early-responding, and late- responding firms. Then, to detect non-response bias, two variables including firm size and firm age between responding and non-responding firms were chosen. The correlation between non-responding and responding firms was examined (Table 10). No significant correlation was observed, indicating that non-response bias is not a potential threat to the validity of the survey results.

Table 10: Results of the Non-response Bias Test

Variable	Correlation	
	R	Sig
Firm size	0.032	0.411
Firm age	0.029	0.733

To detect late-response bias, early-responding firms were coded as ‘wave one’ and late-responding firms as ‘wave two’. Then, consistent with Simsek and Heavey (2011), a two-sample Kolmogorov-Smirnov (K-S) test was performed to examine the differences between early and late respondents in terms of firm age, firm size, and firm performance. Results as shown in Table 11 reveal no statistically significant difference between these

two samples (asymptotic significance >0.05). This suggests that late-response bias is not caused by sampling. Therefore, it is not a threat to the validity of the results.

Table 11: Results of the two-sample K-S test for Late-response Bias

Kolmogorov-Smirnov test		
Variable	Z	Asymptotic. Sig. (2-tailed)
Firm size	0.351	0.91
Firm age	0.444	0.95
Firm performance	0.456	0.89

5.9 Dimensionality Assessment

To detect the dimensionality of the research constructs a principal axis factoring test as an exploratory factor analysis was performed (Hair, et al., 2010). The results suggest the emergence of eight factors with adequate loading for most of the observed items (above 0.7). A few items marked in Table 12 had to be dropped due to low factor loading. The final results indicate that metacognitive knowledge is a unidimensional construct represented by ten items (one item was dropped). Metacognitive experience is a unidimensional construct represented by seven items (one item was dropped). Behavioral integration is a unidimensional construct represented by nine items. Environmental uncertainty and firm performance are unidimensional constructs represented by three (one item was dropped) and nine items respectively.

Innovativeness is represented by three items adequately loaded; proactiveness and risk taking are also represented individually by three items. These three constructs indicate that entrepreneurial orientation can be treated as a second-order construct composed of three subconstructs, each represented by three items. This issue was further assessed in the fitness of measurement model in structural equation modeling and will be explained in a relevant section.

Table 12: Factor Pattern Matrix

	Pattern Matrix ^a								
	α	1	2	3	Factor 4	5	6	7	8
Meta K1		.864							
Meta K2		.889							
Meta K3		.922							
Meta K4*		.521							
Meta K5		.866							
Meat K6		.717							
Meta K7	.87	.844							
Meta K8		.799							
Meta K9		.803							
Meta K10		.833							
Meta K11		.771							
Meta E1			.728						
Meta E2			.766						
Meta E3			.856						
Meta E4	.81		.922						
Meta E5			.893						
Meta E6			.867						
Meta E7*			.537						
Meta E8			.888						
BI 1				.701					
BI 2				.770					
BI 3				.844					
BI 4	.83			.907					
BI 5				.888					
BI 6				.931					
BI 7				.961					
BI 8				.926					
BI 9				.899					
Inn 1					.865				
Inn 2	.80				.878				
Inn 3					.951				
Pro 1						.820			
Pro 2	.75					.868			
Pro 3						.839			
Risk1							.778		
Risk 2	.86						.795		
Risk 3							.718		

Uncertainty 1*		.421
Uncertainty 2		.707
Uncertainty 3	.82	.855
Uncertainty 4		.732
Performance 1		.730
Performance 2		.817
Performance 3		.821
Performance 4	.88	.833
Performance 5		.870
Performance 6		.831
Performance 7		.740
Performance 8		.777
Performance 9		.848

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 9 iterations.

**: items dropped due to low factor loading*

5.10 Aggregation

Individual managers' responses on entrepreneurial orientation components, behavioral integration, environmental uncertainty, and firm performance were aggregated at team level. Before aggregation, it is necessary to check the responses to ensure that that aggregation is justified (Clark and Maggitti, 2012). Based on previous studies, first a one-way analysis of variance was conducted to check the consistency of team members' responses (e.g. Carmeli, et al., 2011, 2012). Then, the intra-class correlation coefficients, ICC (1) and ICC (2), and within-group interrater agreement (Rwg) (James, Demaree, and Wolf, 1984) were calculated (Clark and Maggitti, 2012; Wei and Wu, 2013).

5.10.1 One Way Analysis of Variance

Following the tradition in previous studies (e.g. Carmeli, et al., 2011, 2012; Ling, et al., 2008; Lubatkin, et al., 2006), a one-way analysis of variance (ANOVA) was performed using the team as the independent variable prior to data aggregation to

examine the consistency of team members' responses (Carmeli, et al., 2011). This test determines the variability in the ratings between teams and within teams. A significant F-test ($P\text{-value} < 0.05$) showed that there is greater variability in the ratings between teams than within teams (Carmeli, et al., 2011; Ling, et al., 2008), allowing for the aggregation of the individual team members' scores. The results of the ANOVA are presented in Table 13 below.

Table 13: One-way ANOVA

One-way ANOVA		
Item	F	Sig.
Meta K1	2.164	.000
Meta K2	2.784	.000
Meta K3	2.964	.000
Meta K5	2.010	.000
Meta K6	2.036	.000
Meta K7	2.995	.000
Meta K8	1.621	.000
Meta K9	1.687	.000
Meta K10	2.599	.000
Meta K11	1.950	.000
Meta E1	2.205	.000
Meta E2	2.011	.000
Meta E3	1.882	.000
Meta E4	1.540	.001
Meta E5	1.770	.000
Meta E6	1.722	.000
Meta E8	2.044	.000
BI 1	1.777	.000
BI 2	1.935	.000
BI 3	1.947	.000
BI 4	1.938	.000
BI 5	1.861	.000
BI 6	1.309	.030
BI 7	1.921	.000
BI 8	1.760	.000
BI 9	1.628	.000
Inn 1	1.563	.000
Inn 2	1.552	.001

Inn 3	1.282	.042
Pro 1	1.354	.017
Pro 2	1.724	.001
Pro 3	1.337	.022
Risk 1	1.813	.012
Risk 2	1.413	.008
Risk 3	1.428	.006
Uncertainty 2	1.952	.003
Uncertainty 3	1.681	.000
Uncertainty 4	1.761	.000
Performance 1	1.426	.007
Performance 2	1.784	.000
Performance 3	1.132	.000
Performance 4	1.734	.000
Performance 5	1.774	.000
Performance 6	1.797	.000
Performance 7	1.725	.000
Performance 8	1.749	.000
Performance 9	1.977	.013

As the above table shows, all items indicate a statistically significant ANOVA. This establishes the primary legitimacy of the aggregation process.

5.10.2 Intraclass Correlations

Based on the results of the ANOVA and consistent with previous research (e.g. Lubatkin, et al., 2006; Carmeli, et al., 2011; Clark and Maggitti, 2012), two intra-class correlations (ICCs) were employed. The reason for using both of these indices is that they answer different research questions. The first ICC test, known as ICC (1), informs a researcher whether members' ratings are affected by group membership, whereas the second ICC test, known as ICC (2), indicates how reliably the mean rating distinguishes between groups (LeBreton and Senter, 2008).

According to LeBreton and Senter (2008), a value of ICC (1) above 0.1 indicates an acceptable interrater consistency, and a value of above 0.25 is deemed very good.

However, for ICC (2) a reliability cut-off (a value of greater than 0.7) is recommended. To calculate these values the macro syntax for SPSS developed by LeBreton and Senter (2008) was run in IBM SPSS 20.0.

This syntax was used for a data set in which data for team-level variables needed to be aggregated. Variables of interest include entrepreneurial orientation components, behavioral integration, environmental uncertainty, and firm performance. The values of both ICC (1) and ICC (2) are shown in Table 14.

Table 14: ICC (1) & ICC (2)

Variable	ICC (1)	ICC (2)
Entrepreneurial Orientation		
Innovativeness	.45	.89
Risk taking	.44	.93
Proactiveness	.47	.92
Behavioral Integration	.44	.95
Environmental Uncertainty	.51	.94
Firm Performance	.55	.91

5.10.3 Inter-rater Agreement

The concept of within-group interrater agreement or intragroup reliability (Rwg) was introduced by James et al. (1984) as a way to assess the reliability of agreement among the judgments made by a group of raters (here the executives within a top management team) on a single variable (James, et al., 1984).

To calculate Rwg for each construct the macro syntax developed by LeBreton and Senter (2008) was used in IBM SPSS 20.0. Consistent with previous studies (e.g. Wei and Wu, 2013; Clark and Maggitti, 2012; Carmeli, et al., 2011), an average coefficient reliability of greater than .70 is considered to be an indicator of good agreement within a group. The results of this test are presented in Table 15 below which further legitimizes the aggregation process.

Table 15: Inter-rater Agreement

Variables	Average Rwg
Entrepreneurial Orientation	
Innovativeness	.73
Risk taking	.77
Proactiveness	.82
Behavioral Integration	.88
Environmental Uncertainty	.85
Firm Performance	.83

5.10.4 Forming Aggregated Data Set

Based on the reported results of ICC (1), ICC (2), and Rwg, the initial criteria for interrater reliability (IRR) and interrater agreement (IRA) have been met. A new data set consisting of team-level aggregated entrepreneurial orientation components, behavioral integration, environmental uncertainty, and firm performance was formed using the data aggregation feature in IBM SPSS 20.0.

5.11 Calculating Diversity

As explained in Chapter four, different formulas were used to calculate diversity in team members' metacognitive knowledge and experiences as well as demographics.

Diversity in team members' metacognitive knowledge and metacognitive experience was calculated using the coefficient of variation method. Based on the study of Miller et al. (1998), as a guideline, the coefficients of variation (CoVs) were calculated for each item: "each coefficient indicates the extent to which top managers within a team disagree over the importance of a given subject" (Miller, 1998:47). Thus, the bias-corrected coefficient of variation (Biemann and Kearney, 2010) was calculated for each of the ten items of metacognitive knowledge and the seven items of metacognitive experience for each team. The results were added to the aggregated data set.

Following previous research (e.g. Nielsen and Nielsen, 2013; Wei and Lau, 2012; Qian, et al., 2013; Kearney, et al., 2009) which used Blau's index (Blau, 1977) to calculate gender, educational level, and educational background diversity, this study used the bias-corrected version of Blau's index suggested by Biemann and Kearney (2010) as shown below:

$$\text{Blau}_N = 1 - \sum \frac{N_i(N_i-1)}{N(N-1)}$$

“where N_i is the absolute frequency of group members in the i th category and N is the total number of group members” (Biemann and Kearney, 2010:584).

To measure age diversity, consistent with previous research (e.g. Nielsen and Nielsen, 2013; Rivas, 2012; Wei and Lau, 2012), the coefficient of variation was used. To get an unbiased estimation of diversity as suggested by Biemann and Kearney (2010), this study used the bias-corrected formula as below:

$$V_N = \frac{SD_N}{\bar{X}}$$

where \bar{x} is the group mean and SD_N is the corrected standard deviation (Biemann and Kearney, 2010).

TMT industry experience diversity was measured as the proportion of team members with previous work experience in an industry different from the one in which their firms operate (Nielsen and Nielsen, 2011, 2013). To measure TMT intrapersonal functional diversity, following Bunderson and Sutcliffe (2002), an intrapersonal functional diversity score for each team member was computed and then the following formula was used:

$$\sum_{i=1}^n (1 - \sum_{j=1}^n P_{ij}^2) / n.$$

where P_{ij} is the proportion of executive i 's total years spent in function j , and n is the number of TMT members (Bunderson and Sutcliffe, 2002; Cannella, et al., 2008).

To measure TMT dominant functional diversity, following Bunderson and Sutcliffe (2002: 885), first the dominant function of each team member (“the functional area in which he or she had spent the greater part of his or her career”) was determined and then the diversity was computed using Blau’s index.

5.12 Performing Structural Equation Modeling

5.12.1 Description of the Final Data Set

The final data set that will be used in structural equation modeling and hypotheses testing is formed based on the calculations which were previously explained. Metacognitive knowledge and experience diversity have been calculated along with other demographic diversities. Data on entrepreneurial orientation components, behavioral integration, environmental uncertainty, and firm performance have been aggregated. The data set also contains the firm-level variables assigned to each top management team, including firm age, firm size, industrial classification, and firm ownership structure (family and non-family). CEOs’ firm tenure, team tenure and team average industry experience are also added to the data set.

5.12.2 Specifying Formative and Reflective Constructs

Based on the suggestions of Shook et al. (2004) and Williams, Vandenberg, and Edwards (2009), the nature of factors as being either reflective or formative was discussed prior to the use of question models. This is an important precautionary step as misspecification of factors may result in inaccurate models and incorrect analysis (Williams, et al., 2009). Accordingly, following the characteristics of measures which were explained in Chapter four, the structures below were assigned to the latent variables.

Table 16: The Latent Variable: Specifications and Explanation

Latent Variable	Specification	Explanation
Metacognitive knowledge	Reflective	It is an unobserved factor manifestation of observed items
Metacognitive experience	Reflective	It is an unobserved factor manifestation of observed items
Innovativeness	Reflective	It is an unobserved factor manifestation of observed items
Risk taking	Reflective	It is an unobserved factor manifestation of observed items
Proactiveness	Reflective	It is an unobserved factor manifestation of observed items
Behavioral integration	Reflective	It is an unobserved factor manifestation of observed items
Performance	Reflective	It is an unobserved factor manifestation of observed items
Environmental uncertainty	Reflective	It is an unobserved factor manifestation of observed items

5.12.3 Measurement Models

Following Anderson and Gerbing (1988), a two-phase structural modeling was performed. In the first phase a series of confirmatory factor analyses were performed to assess the fitness of the measurement models. First, the fitness of construct measurement models was examined using different fit indices including GFI (goodness-of-fit index), AGFI (adjusted goodness-of-fit index), IFI (incremental fit index), TLI (Tucker-Lewis index), and RMSEA (root mean square error of approximation) (Kline, 2011; Lubatkin, et al., 2006). Literature suggests that a value of .8 or higher for IFI, TLI, GFI, and AGFI, and a value of .08 or lower for RMSEA, is typically an indicator of adequate fit (Hu and Bentler, 1999; Hair, et al., 2006). As Table 17 shows, all construct measurement models

exhibit adequate fit. Therefore, full confirmatory measurement models relating all constructs were developed and tested in AMOS. Two alternative models were created. In the first model, three constructs representing entrepreneurial orientation (EO) were placed in the model separately. In the second model, EO was treated as a single construct represented by nine items. The first model showed better fit ($\chi^2 = 733.876$, GFI=.94, AGFI=0.9, IFI=0.96, TLI=0.96, and RMSEA=0.04). This provides evidence for the fitness of the hypothesized model (Table 18).

Table 17: Fit Indices of Construct Measurement Models

Latent variable	χ^2	DF	CMIN/DF	GFI	AGFI	IFI	TLI	CFI	RMSEA
Behavioral Integration	45.75*	27	.968	.963	.933	.999	.999	.981	.001
Metacognitive knowledge diversity	95.17***	35	1.52	.972	.953	.988	.987	.988	.034
Metacognitive experience diversity	44.48***	15	1.66	.987	.970	.985	.868	.888	.039
Innovativeness	6.8**	1	.595	.997	.982	1.0	1.0	.997	.001
Risk taking	5.88*	1	1.77	.991	.944	.966	.860	.995	.03
Proactiveness	7.77**	1	.358	.999	.995	1.0	1.0	.996	.001
Performance	40.24*	27	.963	.963	.938	1.0	1.0	.998	.001
Environmental Uncertainty	5.66*	1	1.67	.959	.888	.826	.832	.886	.03
*:significant at p< 0.05 **:significant at p< 0.01 ***: significant at p<0.001									

Table 18: Fit Indices of Alternative Models

	χ^2	DF	CMIN/DF	GFI	AGFI	IFI	TLI	CFI	RMSEA
Full Confirmatory Factor Model with three constructs representing EO	733.876***	450	1.63	0.94	0.9	0.96	0.96	0.92	0.04
Full Confirmatory Factor Model with EO as a first-order construct	908.743***	435	2.09	0.89	0.86	0.89	0.89	0.90	0.06

*:significant at p< 0.05

**:significant at p< 0.01

***: significant at p<0.001

5.12.4 Convergent and Discriminant Validity

The correlation table and standardized regression weights in the full confirmatory factor models calculated by the maximum-likelihood method in IBM AMOS 20.0 were used to calculate composite reliability (CR), average variance extracted (AVE), maximum shared squared variance (MSV), and average shared squared variance (ASV).

According to Hair et al. (2010), the criteria for convergent validity are: $CR > (AVE)$ and $AVE > 0.5$, and for discriminant validity they are $MSV < AVE$ and $ASV < AVE$. Computed values for these indices as presented in Table 19 below show these criteria have been met.

Table 19: Convergent and Discriminant Validity

Factor	CR	AVE	MSV	ASV
BI	0.893	0.654	0.444	0.403
MGKD	0.899	0.777	0.577	0.566
MGED	0.896	0.798	0.651	0.625
INN	0.838	0.620	0.533	0.488

PRO	0.845	0.714	0.548	0.533
RISK	0.888	0.688	0.614	0.568
PERFORMANCE	0.902	0.692	0.588	0.515
UNCERTAINTY	0.896	0.739	0.577	0.541

Following the convention in the literature (e.g. Lubatkin, et al., 2006), a factor correlation matrix was developed (Appendix 6) in which no inter-factor correlation is above 0.85 as additional evidence for supporting the absence of multicollinearity and presence of convergent and discriminant validity.

5.12.5 Test of Nested Models

According to Anderson and Gerbing (1988), five nested models were compared: a saturated model (Ms), a null model (Mn), a theoretical model (Mt), the “next most likely” constrained model (Mc) and the unconstrained alternative model (Mu). The saturated model (Ms) is equal to the measurement model of the research which was fitted with the data. The null model (Mn) is the model in which all associations between constructs (latent variables plus covariates) have been constrained to zero (i.e. there are no posited relations of the constructs to one another) (Anderson and Gerbing, 1988:418). A significant difference between the Ms and Mn warrants that “sufficient covariance exists between the latent variables to warrant testing the hypothesized model” (Lubatkin, et al., 2006:662).

First, comparison between the saturated model (Ms shown as Model 5) which is the theoretical model of the thesis and the null model (Mn shown as Model 1) shows a chi-square difference of 194.468 (928.344-733.876) and degree of freedom difference of 38 (488-450). Therefore, it can be said that with a p-value of $0.0001 < 0.001$ there is a statistically significant difference between these two. This difference permits comparison of other nested models. So, three additional nested models were developed and compared

to gain a richer understanding of the relationships between latent variables (Anderson and Gerbing, 1988).

Accordingly, Model 2 which consists of the control variables was contrasted with the null model. Model 3 is an alternative submodel of the proposed theoretical model. It consists of control variables and the proposed relationships between metacognitive knowledge diversity, innovativeness, risk taking, proactiveness, and performance. Finally, Model 4 includes control variables and all the hypothesized links between metacognitive experience diversity, innovativeness, risk taking, proactiveness, and performance. It should be noted that Models 3 and 4 were developed based on the scholars' suggestion that metacognitive knowledge and metacognitive experience could be correlated (Mitchell, et al., 2011).

In the Model 4 metacognition is treated as a two-factor model and controls are constrained. Whereas in Model 3, metacognition is conceptualized as a one-factor model loading all items on a single factor while controls are constrained. As Table 20 shows two-factor model exhibits relatively a better fit ($\chi^2/Df=1.72$ and $GFI=0.94$). Having developed these nested models, a series of sequential chi-square difference tests (SCDTs) was run (Anderson and Gerbing, 1988). The underlying assumption is that there is no significant difference between two nested structural models (Anderson and Gerbing, 1988). Rejecting this hypothesis (i.e. p-value of $\Delta \chi^2$ less than 0.05) shows that models differ and a model can be found to represent the best fit (Krause, Scannell, and Calantone, 2000).

The results show significant differences between alternative models and suggest that Model 5 has the best fit to the data. Thus, Model 5 as the hypothesized model is most likely the appropriate model fitting data and can be used in hypothesis testing.

Table 20: Fit Indices among Alternative Measurement Nested Models

<i>fit indices among alternative measurement nested models</i>											
Nested Model	χ^2	Df	χ^2/Df	GFI	AGFI	IFI	TLI	CFI	Comparison	$\Delta \chi^2$	ΔDf
Model5:	733.876***	450	1.63	0.94	0.9	0.96	0.96	0.92	5 versus 4		8
Model4:	790.025***	458	1.72	0.94	0.90	0.96	0.95	0.92	4 versus 3		12
Model3:	844.677***	470	1.79	0.93	0.90	0.96	0.95	0.92	3 versus 2		13
Model2: <i>Covariates only</i>	903.666***	483	1.87	0.93	0.89	0.95	0.92	0.90	2 versus 1		5
Model 1: <i>Mn : Null model</i>	928.344***	488	1.90	0.93	0.87	0.93	0.92	0.90	-	-	-

*:significant at p< 0.05
 **:significant at p< 0.01
 ***: significant at p<0.001

5.12.6 Test of Alternative Models

According to Shook et al. (2004) and Williams et al. (2009), potential alternative relationships between constructs must be ruled out. Therefore, two rival models were contrasted with the hypothetical model of the study. In the first rival model entrepreneurial orientation was treated as a first-order construct represented by nine items. In the second rival model, it was conceptualized that firm performance influences entrepreneurial orientation. This speculation is consistent with Simsek et al. (2010). These two alternative models were then compared with the research framework.

It should be noted that a chi-square difference test is not performed in this approach and only goodness-of-fit indices for rival models will be compared with the hypothesized model of the study (Shu, et al., 2012). The results are illustrated in Table 21.

Table 21: Comparison of Nested Rival Models

Nested Model	χ^2	Df	χ^2/Df	GFI	AGFI	IFI	TLI	CFI	RMSEA
Hypothesized Model	733.876***	450	1.63	0.94	0.9	0.96	0.96	0.92	0.04
Rival model 1	908.743***	435	2.09	0.89	0.86	0.89	0.89	0.90	0.06
Rival model 2	793.755***	461	1.72	0.92	0.9	0.93	0.91	0.88	0.07

As results show, Rival Model 1 and Rival Model 2 exhibit weaker fit to data than the hypothesized model with bigger chi-square values and smaller fit indices. Therefore, the proposed model is likely to be the most fitting model. Based on the results of this series of model assessments, in what follows the assessment of the hypothesized paths will be explained.

5.13 Test of Hypotheses

5.13.1 Results of Moderation Analysis

Burnette and Williams (2005:152) argue that in structural equation modeling moderation effects can be tested by “creating subgroups based on a moderator variable and use of multisample techniques”.

To create these multigroups the aggregated data on behavioral integration were used as the moderating variable. Then two groups were computed by dichotomizing it based on the mean of the imputed variable (Elbanna, Child, and Dayan, 2013). These two groups represent top management teams with low (i.e. group 1) and high (i.e. group 2) degrees of behavioral integration.

Then two groups were used in multigroup analysis in AMOS. Following Byrne (2010: 198) two chi-square difference tests were conducted for examining 1) Configural and metric invariance of factorial structure of constructs across groups before computing composite variables and 2) a variance test on structural model for investigating existence of variance across groups to test significance of moderation.

Fit indices of Configural invariance (freely estimated measurement model across groups [$\chi^2/Df=1.8$, GFI=0.923, AGFI= 0.874, IFI=0.985, TLI=0.980, RMSEA=0.053, P-close=0.365]) show sufficient fit and offer evidence for Configural invariance and point that two groups are equivalent.

In addition, Chi-square test for metric invariance (measurement model variance is fully constrained and contrasted with the freely estimated model) is significant: $[X^2(466)=804.888]-[X^2(501)=852.890]=\Delta X^2(35)=48.002$, $p=0.07>0.05$. Therefore, a multigroup analysis can be performed. Then composite variables were developed (Burnette and Williams 2005).

Finally, an additional chi-square difference test was performed on the model with composite variables to detect whether the difference between these models is statistically significant to interpret differences in path estimates. For doing so, the unconstrained model loaded in multigroup modeling was contrasted with a fully constrained model (Anderson and Gerbing, 1988). The difference, as shown in Table 22 below, suggests that there is a statistically significant difference between these two models (chi-square difference is 20.844, degrees of freedom difference is 11, and the difference is significant at $P\text{-value}=0.0350<0.05$).

Table 22: Chi-square Difference Test for Moderation

Models	Chi-square	DF
Unconstrained	15.336	8
Constrained	36.180	19
Difference	20.844	11
<i>The two-tailed P value CDT (20.844[11])= 0.0350<0.05</i>		

In the next step, path estimates were calculated and their significance and Z-score for the impact of moderational inference were calculated and compared (Burnette and Williams, 2005; Real, et al., 2012). Group 1 is represented by 63 TMTs and group 2 by 77 TMTs. A significant difference between the paths (Z-score of greater than 1.96 with p-value of less than 0.05) indicates a statistically significant difference in the estimates (i.e. unstandardized regression weights) between low and high behavioral integration and

therefore a statistically significant moderation effect. The results of this multigroup path analysis are illustrated in the Table 23 below. Further, following the suggestions of Real et al (2012), fully standardized estimates of paths in the multigroup analysis are also reported in the Table 24 below.

Table 23: Unstandardized Estimates of Multigroup Analysis for Moderated Paths

Paths			Low BI		High BI		Z-score
			Estimate	P	Estimate	P	
Innovativeness	<---	MGKD	0.21	0.01	0.26	0.01	2.188*
Risk taking	<---	MGKD	0.41	0.07	0.41	0.08	1.451
Proactiveness	<---	MGKD	0.26	0.04	0.28	0.037	2.751**
Innovativeness	<---	MGED	0.36	0.003	0.38	0.003	2.005*
Risk taking	<---	MGED	-0.33	0.001	-0.31	0.001	1.283
Proactiveness	<---	MGED	0.13	0.79	0.12	0.76	1.593
Performance	<---	MGKD	0.31	0.03	0.34	0.008	2.011*
Performance	<---	MGED	0.33	0.02	0.36	0.008	2.112*

*Note: *p<0.05, **p<0.01, ***p<0.001*
Z=t student (DF=(N(low-BI)+N(high-BI)-2))=138

Table 24: Fully Standardized Estimates of Multigroup Paths Analysis

Paths			Low BI	High BI
			Standardized Estimate	Standardized Estimate
Innovativeness	<---	MGKD	0.22*	0.26*
Risk taking	<---	MGKD	0.42	0.42
Proactiveness	<---	MGKD	0.28*	0.29*
Innovativeness	<---	MGED	0.37**	0.39**
Risk taking	<---	MGED	-0.33**	-0.29**
Proactiveness	<---	MGED	0.12	0.12
Performance	<---	MGKD	0.33*	0.35**
Performance	<---	MGED	0.32*	0.37**

*Note: *p<0.05, **p<0.01, ***p<0.001*

The results indicate that several paths differ across different groups, implying the moderation effects. For instance, it can be seen that the relationship between TMT metacognitive knowledge diversity and firm innovativeness is significant in both teams with a low degree of behavioral integration (B=0.21, P=0.01<0.05) and teams with a high

degree of behavioral integration ($B=0.26$, $P=0.01<0.05$), but the difference between these two paths is also significant ($Z=2.188$ with $P<0.05$). Therefore, behavioral integration moderates the relationship between top management team metacognitive knowledge diversity and the degree of firm innovativeness.

On a concluding remark, since dichotomization of Likert-type scales is subject to information loss (Cohen 1983), regression analysis using product terms can be carried out to further examine the moderation analysis (Hair et al. 2010). To do so, all composite variables were standardized, interaction terms between BI (behavioral integration) and metacognitive knowledge diversity (MGKD) and metacognitive experience diversity (MGED) were developed and a model with interaction paths was tested. The model exhibited adequate fit ($X^2= 6.38$, $Df=3$, $X^2/Df=2.12$, $GFI=0.97$, $AGFI=0.91$, $CFI=0.97$, $TLI=0.94$, $IFI=0.95$ and $RMSEA=0.08$). Results of maximum likelihood path analysis (Appendix 8, Table 34) are consistent with the Table 23 and offer additional evidence supporting the hypothesized moderation effects.

5.13.2 Results of Mediation Analysis

Several mediating effects are testable in the proposed model. These intervening mechanisms are pertinent to the mediating roles of innovativeness, risk taking, and proactiveness in the associations between TMT metacognitive knowledge diversity and performance and TMT metacognitive experience diversity and performance. Furthermore, since the impacts of TMT metacognitive knowledge and experience diversity on innovativeness, risk taking, and proactiveness are moderated by the degree of the team's behavioral integration, these mediation relationships are also moderated. To test these moderated mediations several steps were undertaken.

First, to test the direct and indirect effects, bootstrapping in AMOS was used (Arbuckle, 2011; Zhao, Lynch, and Chen, 2010) because bootstrapping is generally

regarded as a better technique for testing mediations in complex models (Mathieu and Taylor, 2006; Wood, et al., 2008). Secondly, the “two-tailed significance” in the “bias-corrected percentile method” in AMOS for bootstrapping was set to detect the significance of mediation. Thirdly, a number of bootstraps were set for 2,000 samples to achieve sufficient power (Arbuckle, 2011). Fourthly, to detect the type of mediation the algorithm developed by Zhao et al. (2010) (Figure 5) was adopted because it offers a more accurate assessment of the types of mediational effects (Williams, et al., 2009). Finally, in order to examine the differences between mediating effects in low and high behaviorally integrated top management teams, the results of bootstrapping were examined separately in multigroup structural modeling (Preacher, Rucker, and Hayes 2007; Arbuckle, 2011). This is because the moderated mediation will eventually take the form of multigroup analysis (Preacher, et al., 2007; Ng, Ang, and Chan, 2008). The results of this analysis are shown in Table 25 below.

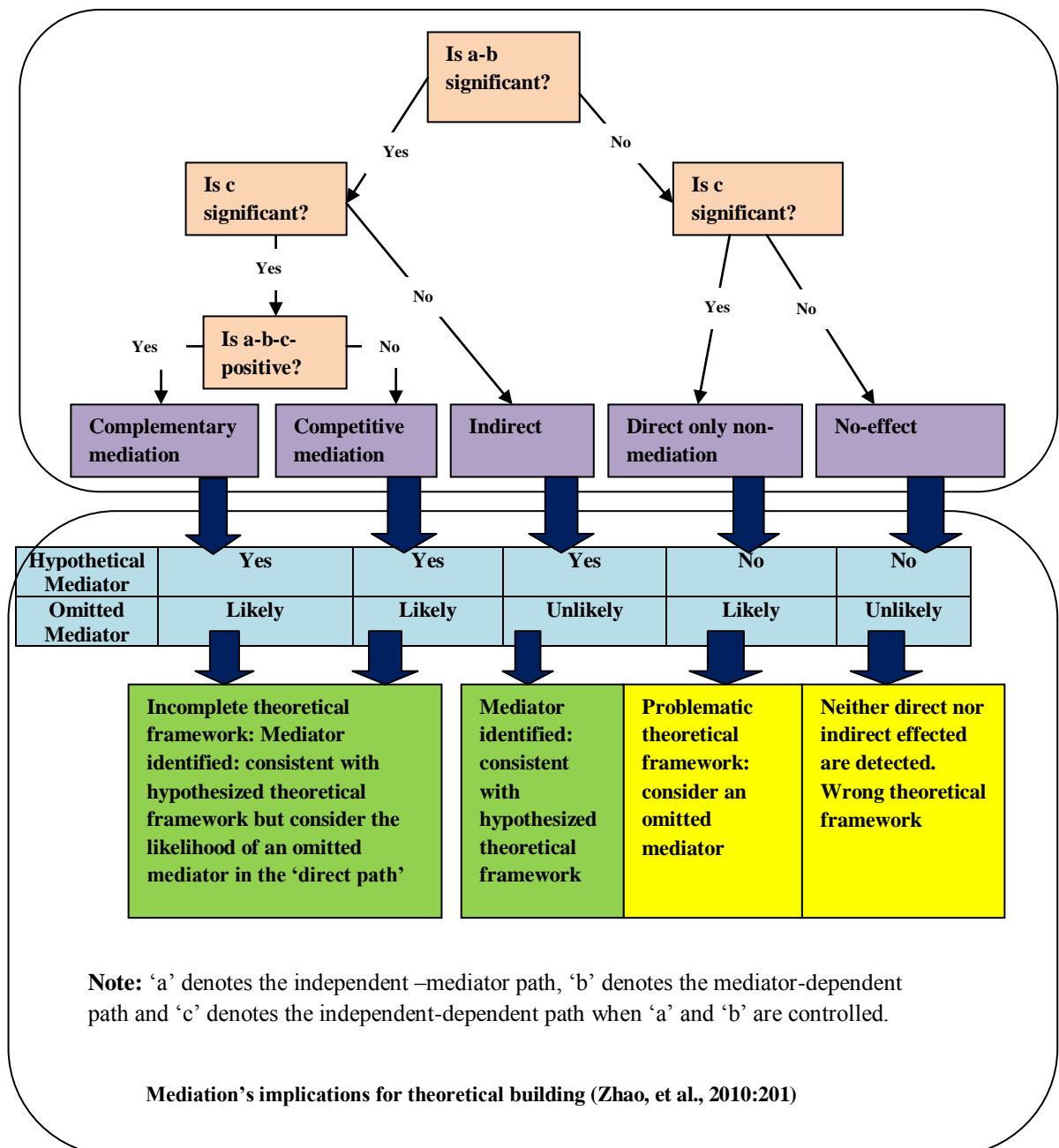


Figure 5: Algorithm for Specifying Types of Mediation (Zhao, et al., 2010:201)

Following the procedure explained above, the non-mediated paths between metacognitive knowledge diversity and metacognitive experience diversity and firm performance were estimated. The standardized estimates are shown in Figure 6 below.

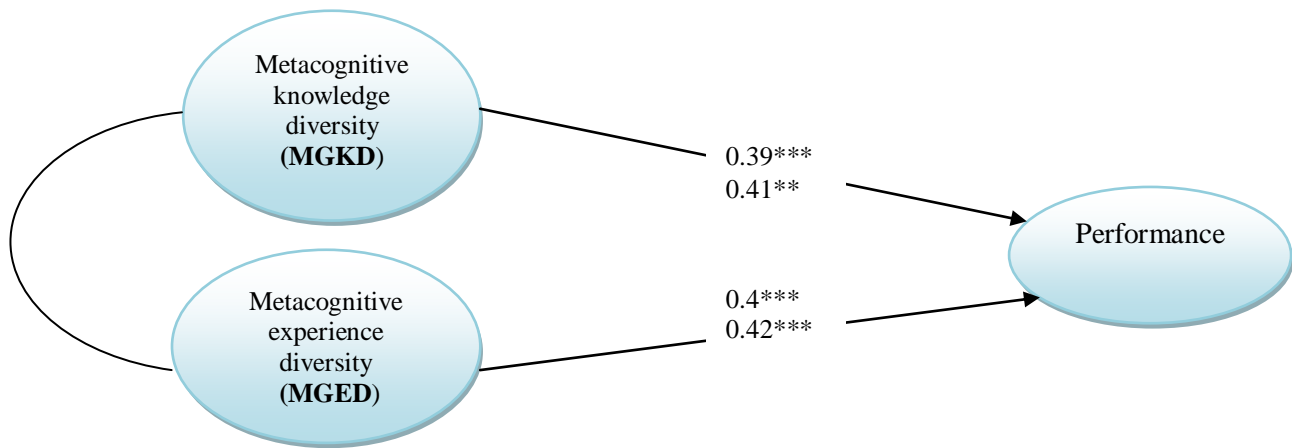


Figure 6: Standardized Estimates of Non-mediated Paths

Since these paths are significant, the significance of mediated paths was estimated.

Table 25: Results of Bootstrapping Multigroup Mediation

Mediations in Multi-group SEM (moderated mediation)					
Direct Path	Direct Beta Without Mediation	Mediation Effects	Direct Beta With Mediation	Indirect Beta	Type of observed Mediation
MGKD- Performance	0.39*** 0.41**	Innovativeness	0.31*** 0.33***	0.29** 0.31**	Partial Partial
		Proactiveness	0.23* 0.25*	0.19* 0.21*	Partial Partial
		Risk taking	0.17* 0.19*	0.15 n.s.	No mediation
				0.14 n.s.	No mediation
		I-P-R	0.25** 0.26***	0.23** 0.25**	Partial Partial
	0.4*** 0.42***	Innovativeness	0.28*** 0.30***	0.28** 0.33**	Partial Partial
		Proactiveness	0.19* 0.22*	0.16 n.s.	No mediation
				0.15 n.s.	No mediation
		Risk taking	-0.22* -0.23*	-0.22* -0.24*	Partial Partial
MGED- Performance		I-P-R	0.23** 0.24***	0.22** 0.25**	Partial Partial

Estimation method: Bootstrapping, iteration: 2000, two-tailed significance of bias-corrected percentile
 *: $P < 0.05$, **: $P < 0.01$, ***: $P < 0.001$, n.s.: not-significant (i.e. $p > 0.05$)

5.13.3 Results of Non-moderated Path Estimations

To test hypotheses a path analytic approach was undertaken to identify significant paths (Hair, et al., 2006). Since enough variance was observed between full and null models in the chi-square difference test a maximum likelihood for estimating path coefficients was utilized (Kline, 2011). Furthermore, because a number of paths between components of entrepreneurial orientation and firm performance are not moderated, a full sample, not multigroup samples, were loaded in AMOS. As the results in Table 26 below show, a number of non-significant paths (i.e. CR <1.96) have been specified. These results will be interpreted in the next section.

Table 26: Standardized and Unstandardized Estimates of Non-moderated Path Analysis

Paths			Unstandardized Estimate	S.E.	C.R.	Standardized Estimates
Inn	<---	MGKD	0.782	0.213	3.671	0.791***
Risk	<---	MGKD	-0.061	0.932	-0.064	-0.058
Pro	<---	MGKD	0.760	0.318	2.390	0.77*
Inn	<---	MGED	0.448	0.137	3.270	.0451***
Risk	<---	MGED	-0.586	0.242	-2.421	-0.577*
Pro	<---	MGED	-0.882	0.855	-1.032	-0.883
performance	<---	Inn	0.29	0.078	3.72	0.311***
performance	<---	Risk	-0.21	0.081	-2.47	-0.22*
performance	<---	Pro	0.32	0.14	2.29	0.341*
performance	<---	MGKD	0.178	0.08	2.225	0.181*
performance	<---	MGED	0.176	0.06	2.933	0.179**

Note: * p<0.05, **p<0.01, ***p<0.001

5.14 Interpretation of the Results of Hypothesis Testing

The hypotheses of this study were tested using both moderated and non-moderated path analytic methods. The results of multigroup path analysis suggest a positive significant relationship between TMT metacognitive knowledge diversity and firm performance in both firms with low (B=0.31, P<0.05) and high (B=0.34, P<0.05) levels

of behavioral integration. It is also evident that this difference is statistically significant ($Z=2.01$, $P<0.05$). Therefore hypothesis 1, “TMT metacognitive knowledge diversity will positively enhance the performance of SMEs when the team is behaviorally integrated,” is supported.

Similarly, a positive significant relationship was observed between TMT metacognitive experience diversity and firm performance in both firms with low ($B=0.33$, $P<0.05$) and high ($B=0.36$, $P<0.05$) levels of behavioral integration. This difference is proved to be statistically significant ($Z=2.11$, $P<0.05$). Therefore, hypothesis 2, “TMT metacognitive experience diversity will positively enhance the performance of SMEs when the team is behaviorally integrated,” is also supported.

Analogously, analysis revealed a positive significant relationship between TMT metacognitive knowledge diversity and innovativeness under both conditions of low ($B=0.21$, $P<0.05$) and high ($B=0.26$, $P<0.05$) behavioral integration. Furthermore, the increase in path significance caused by behavioral integration is statistically significant ($Z=2.188$, $P<0.05$), suggesting that hypothesis 3, “TMT metacognitive knowledge diversity will positively enhance the innovativeness of SMEs when the team is behaviorally integrated,” is supported as well.

The relationship between TMT metacognitive experience diversity and innovativeness was also found to be positively significant under both conditions of low ($B=0.36$, $P<0.05$) and high ($B=0.38$, $P<0.05$) behavioral integration. Furthermore, the moderating role of behavioral integration was also statistically significant ($Z=2.005$, $P<0.05$). Thus, hypothesis 4, “TMT metacognitive experience diversity will positively enhance the innovativeness of SMEs when the team is behaviorally integrated,” is supported.

Hypothesis 5, “TMT metacognitive knowledge diversity will positively enhance the risk taking of SMEs when the team is behaviorally integrated,” is rejected since

multigroup path analysis showed that the relationship between TMT metacognitive knowledge diversity and risk taking is not significant regardless of the degree of team behavioral integration ($B=0.41$, $P=0.07>0.05$ for low BI, $B=0.41$, $P=0.08>0.05$ for high BI).

The test of hypothesis 6 also resulted in findings contrary to the theoretical predictions. The results suggest that the relationship between TMT metacognitive experience diversity and risk taking is significant but negative in both teams with a low degree of behavioral integration ($B=-.33$, $P<0.05$) and in those with a high degree of behavioral integration ($B=-.31$, $P<0.05$). Additionally the difference in path significance is negligible and not statistically significant ($Z=1.283<1.95$). Therefore, hypothesis 6, “TMT metacognitive experience diversity will positively enhance the risk taking of SMEs when the team is behaviorally integrated,” is rejected.

Furthermore, analysis offered evidence to support hypothesis 7, “TMT metacognitive knowledge diversity will positively enhance the proactiveness of SMEs when the team is behaviorally integrated.” It was found that the association between TMT metacognitive knowledge diversity and proactiveness is positive and statistically significant for both TMTs with low ($B=0.26$, $P<0.05$) and high ($B=0.28$, $P<0.05$) degrees of behavioral integration and this difference in path significance is also statistically significant ($Z=2.75$, $P<0.01$). This indicates that behavioral integration intensifies the positive association between TMT metacognitive knowledge diversity and proactiveness as predicted.

Using the same line of reasoning, results indicate that hypothesis 8, “TMT metacognitive experience diversity will positively enhance the proactiveness of SMEs when the team is behaviorally integrated,” is rejected. Analysis show that the association between TMT metacognitive experience diversity and proactiveness is not statistically

significant for either TMTs with low ($B=0.13$, $P>0.05$) or high ($B=0.12$, $P>0.05$) degrees of behavioral integration.

The next three hypotheses speculated on the relationship between components of entrepreneurial orientation and firm performance in three non-moderated paths. The results suggest that hypothesis 9 ($B=0.29$, $CR=3.72$, $P<0.001$) and hypothesis 11 ($B=0.32$, $CR=2.29$, $P<0.05$) are supported. As expected, empirical evidence attests to the claim that firm innovativeness and proactiveness positively contribute to performance. With respect to hypothesis 10, however, analysis unveiled a negative yet statistically significant link between risk taking and performance ($B= -0.21$, $CR = -2.47$, $P<0.05$). Therefore, hypothesis 10, “Risk taking will positively impact on the performance of SMEs,” is rejected.

The study path model is illustrated in Figure 7 below.

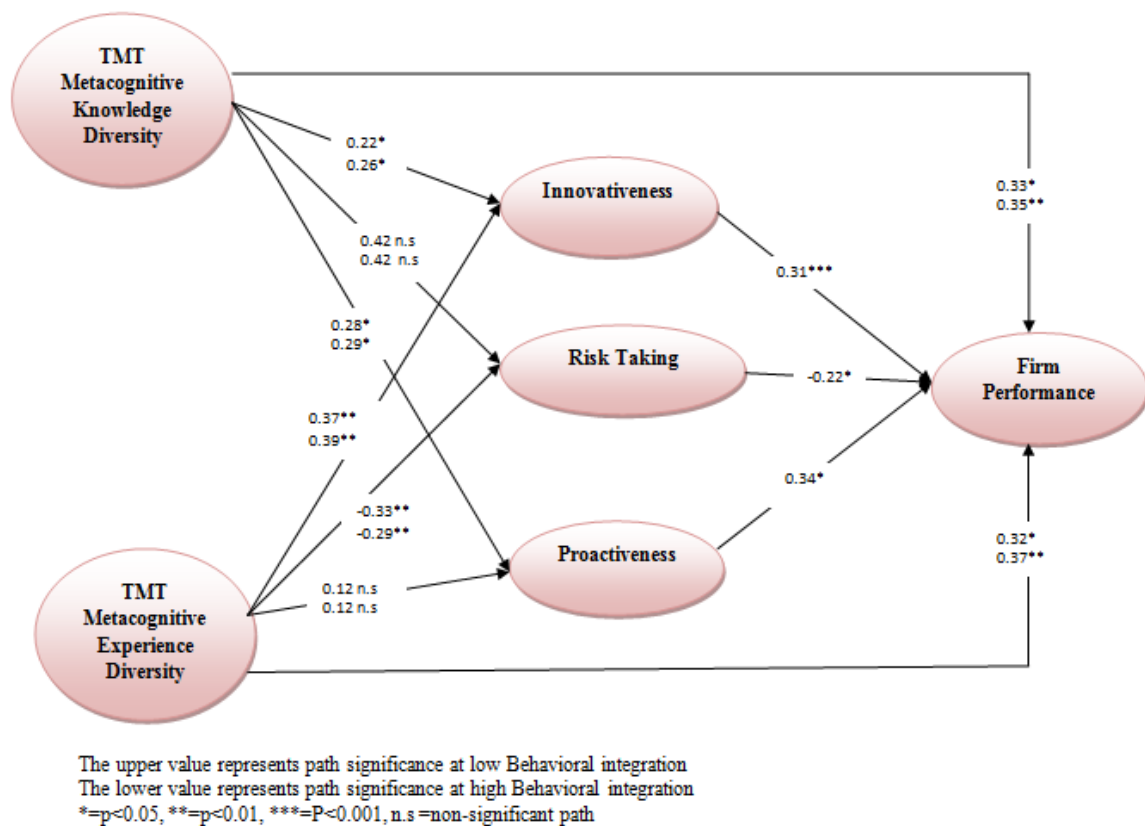


Figure 7: Standardized Path Estimates

A summary of the results of hypotheses testing is provided in Table 27 below.

Table 27: The Study Hypotheses and Results

Hypotheses	Results
H1: TMT metacognitive knowledge diversity will positively enhance the performance of SMEs when the team is behaviorally integrated.	Supported
H2: TMT metacognitive experience diversity will positively enhance the performance of SMEs when the team is behaviorally integrated.	Supported
H3: TMT metacognitive knowledge diversity will positively enhance the innovativeness of SMEs when the team is behaviorally integrated.	Supported
H4: TMT metacognitive experience diversity will positively enhance the innovativeness of SMEs when the team is behaviorally integrated.	Supported
H5: TMT metacognitive knowledge diversity will positively enhance the risk taking of SMEs when the team is behaviorally integrated.	Rejected
H6: TMT metacognitive experience diversity will positively enhance the risk taking of SMEs when the team is behaviorally integrated.	Rejected
H7: TMT metacognitive knowledge diversity will positively enhance the proactiveness of SMEs when the team is behaviorally integrated.	Supported
H8: TMT metacognitive experience diversity will positively enhance the proactiveness of SMEs when the team is behaviorally integrated.	Rejected
H9: Innovativeness will positively impact the performance of SMEs.	Supported
H10: Risk taking will positively impact the performance of SMEs.	Rejected
H11: Proactiveness will positively impact the performance of SMEs.	Supported

The above results have afforded several interesting theoretical discussions which will be addressed in the next chapter.

The next section presents the results of the analysis of control variables.

5.15 Results of the Analysis of Control Variables

To measure the variance caused by factors extraneous to research questions (Kollmann and Stöckmann 2012), this study took several controls at CEO, team, firm, environment, and industry level. To examine their impacts, they were treated as exogenous variables in AMOS (Arbuckle, 2011). Then they were linked to the variables

on which they might have an impact, as discussed in Chapter four. Finally, the unstandardized regression weights of these associations were assessed to examine the degree of their impact (Arbuckle, 2011; Atinc, Simmering, and Kroll, 2012). Results are illustrated in Table 28 below.

Table 28: Results of the Analysis of Control Variables

	Path	Unstandardized Estimate	S.E.	C.R.	P	Standardized Estimates
MGKD	<--- TMT gender diversity	-.007	.006	-1.116	n.s.	-.009
MGED	<--- TMT gender diversity	.008	.007	1.151	n.s.	.01
MGKD	<--- TMT age diversity	-.019	.016	-1.173	n.s.	-.021
MGED	<--- TMT age diversity	.170	.08	2.125	.034	.19*
MGKD	<--- TMT Educational-level diversity	.160	.06	2.667	.007	.17**
MGED	<--- TMT Educational-level diversity	.140	.06	2.333	.02	.15*
MGKD	<--- TMT Educational-Background Diversity	-.002	.005	-.351	n.s.	-.018
MGED	<--- TMT Educational-Background Diversity	-.008	.005	-1.6	n.s.	-.009
MGKD	<--- TMT industry experience diversity	.030	.014	2.14	.032	.04*
MGED	<--- TMT industry experience diversity	.040	.015	2.67	.007	.05**
innovativeness	<--- Family ownership	-.210	.075	-2.8	.005	-.19**
Risk taking	<--- Family ownership	-.208	.075	-2.73	.005	-.205*
proactiveness	<--- Family ownership	.026	.076	.337	n.s.	.026
performance	<--- Firm size	.003	.001	2.183	.029	.005*
performance	<--- Firm age	-.003	.005	-.512	n.s.	-.004
performance	<--- uncertainty	-.125	.057	-2.192	.028	-.121*
performance	<--- CEO tenure	.041	.026	1.563	n.s.	.042
performance	<--- TMT average industry experience	.061	0.029	2.103	.035	.063*

	Path	Unstandardized Estimate	S.E.	C.R.	P	Standardized Estimates
performance	<--- TMT intrapersonal functional diversity	.064	.020	3.222	.001	.066**
performance	<--- TMT dominant functional diversity	.022	.018	1.222	n.s.	.022
performance	<--- Team tenure	.016	.013	1.23	n.s.	.016
performance	<--- Industry 1	.042	.038	1.105	n.s.	.043
performance	<--- Industry 2	.073	.065	1.123	n.s.	.072
performance	<--- Industry 3	.019	.018	1.055	n.s.	.023
performance	<--- Industry 4	.031	.029	1.069	n.s.	.033
performance	<--- Industry 5	.051	.050	1.020	n.s.	.053

*Note: *p<0.05, **p<0.01, ***p<0.001, n.s.: not-significant*
Industry 1: manufacturing, Industry 2: construction, Industry 3: wholesale trades, Industry 4: retails trades, Industry 5: professional, scientific and technical services

As the table above shows, 26 control associations were examined. Analysis unveiled both significant and non-significant paths. The study was controlled for potential impacts of several aspects of team demographic diversity on team metacognitive knowledge and experience diversity. For instance, gender diversity does not have any influence on metacognitive knowledge (CR=-1.11, P>0.05) and experience (CR=1.15, p>0.05) diversity.

Age diversity proved to be related only to metacognitive experience diversity (CR=2.12, P<0.05) and not related to metacognitive knowledge diversity (CR=-.117, P>0.05). With respect to the team education, two types of diversity, namely educational-level and educational-background diversity, were controlled. Analysis revealed a positive relationship between both metacognitive knowledge (CR =2.66, P<0.01) and experience diversity (CR = 2.33, P<0.05) and TMT educational level diversity. However, non-significant relationships were observed for educational-background diversity (CR=-.351, P>0.05 for metacognitive knowledge diversity and CR=-1.6, P>0.05 for metacognitive experience diversity).

Furthermore, industry experience diversity was also found to have a positive relationship with both TMT metacognitive knowledge ($CR=2.14$, $P<0.05$) and experience ($CR=2.67$, $P<0.01$) diversity. Other team-level factors including team average industry experience, tenure, intrapersonal and dominant functional diversity were examined in relation to firm performance. Analysis suggests that team average industry experience is positively related to a firm's performance ($CR=2.103$, $P<0.05$). Similarly, intrapersonal functional diversity was also positively related to a firm's performance ($CR=3.222$, $P<0.01$). However, observations indicate that dominant functional diversity is not related to a firm's performance ($CR=1.222<1.95$, $P>0.05$).

Another control factor which was speculated to impact firm performance was CEOs' tenure. Analysis showed that this factor does not have a significant relationship with a firm's performance ($CR=1.563$, $P>0.05$).

Moving from team-level to firm-level factors, it was observed that family ownership negatively influences a firm's innovativeness ($CR = -2.8$, $P<0.01$) and risk taking ($CR = -2.73$, $P<0.05$) but does not have any impact on a firm's proactiveness ($CR = 0.337$, $P>0.05$). Firm size as another firm-level covariate was found to be positively related to a firm's performance ($CR = 2.183$, $P<0.05$) but observations suggest that firm's age does not have such an impact on firm performance ($CR = -0.512$, $P>0.05$). Finally, environmental uncertainty as an environmental level factor was found to be negatively related to a firm's performance ($CR=-2.192$, $P<0.05$).

All the control variables and their impacts will be discussed in the next chapter.

5.16 Common-Method Bias

To mitigate common-method bias, this study took a number of steps to lessen the effects of this bias on the results. First, this study relied on multiple rather than single

respondents. A multiple-respondent method is not only more reliable in strategy research (Carmeli, et al., 2012) but also it helps to reduce the potential common-method bias (Wei and Lau, 2012). Accordingly, this study collected data for each construct from multiple informants (i.e. top managers). Following Clark and Maggitti (2012) and Brettel and Rottenberger (2013), this study undertook some other steps to further reduce the common-method bias. First, this study used scales which were pre-validated by recent studies. Second, the questionnaire was pretested to make sure that questions would not be complicated and ambiguous. Third, in an attempt to reduce the possibility that respondents fall into a pattern related to the use of repetitive Likert scales, the questions were interspersed with different types (Clark and Maggitti, 2012:1179). Fourth, following the recommendations of Podsakoff et al. (2003), the anonymity of the survey was ensured to minimize apprehension and make respondents less likely to answer in a way they deemed socially desirable (Clark and Maggitti, 2012).

Finally, consistent with previous studies (e.g. Clark and Maggitti, 2012; Sciascia, et al., 2013; Alexiev, et al., 2010), Harman's single factor test was used to assess the common- method variance of the survey procedure (Podsakoff, et al., 2003). To do so, a principal axis factor analysis was calculated with no rotation, and instead of using eigenvalue, the number of extracted factors was limited to 1.0. If the emergent factor accounts for variance of more than 50 percent of the model it indicates the existence of common-method bias and implies the likelihood of highly biased variations in the causal directions (Podsakoff, et al., 2003). The results of single factor extraction showed 35 percent (34.871) variance carried out by a single factor that is less than 50 percent. Therefore, it can be concluded that common-method bias is not likely to threaten the validity of this study.

5.17 Overview of the Qualitative Procedure

As mentioned earlier in Chapter four, in line with earlier research (Carmeli, et al., 2012) the TMT members of two SMEs were interviewed to supplement the quantitative data. The pilot study was conducted and no difficulty with the interview questions was uncovered except that the interviews took a longer time than was expected to explain the concept of metacognitive ability to participants.

Interviews were recorded, and memos (notes) were also taken to enhance the interpretation of interviews (Stake, 2010). The interviews were then transcribed for coding and analysis. Following the convention for qualitative methodology (Miles and Huberman, 1984), a description of the data is given in the next section.

5.17.1 Description of the Qualitative Data

The analysis of qualitative data began by developing case profiles in Nvivo (Bazeley and Richards, 2000). In this process different folders are assigned to different interviews and they are allocated to respective firms. Accordingly, seven folders representing seven top managers across two firms were placed in two casebooks. Each case contained the profile of a top management team that represents the firm.

To describe these informants and their firms a number of descriptive tables were developed (Stake, 2010). Table 29 shows the general characteristics of the firms. The second table (Table 30) describes the interviewees, and the last table (Table 31) overviews the collected data based on the duration and mode of interviews. These three tables provide a basis for a thick or rich description as a requirement for the reliability and validity of qualitative research (Bryman and Cassell , 2006).

Table 29: Description of Firms in the Qualitative Analysis

Pseudonym	Area of activity	Age of the firm	Location	Size	Family Owned
A	Manufacturing Wine	20	NSW (Baerami)	60	No
B	Engineering Design and Engineering Consulting Services	8	NSW (Sydney)	93	No

Table 30: Description of Participants

Pseudonym	Age	Work Experience	Team Tenure	Education	Gender
Mr. A from firm A	43	20	10	Bachelor degree	Male
Mr. B from firm A	38	18	4.5	TAFE	Male
Mr. C from firm A	50	25	3	Bachelor degree	Male
Mr. A from firm B	35	9	2.5	Master degree	Male
Mr. B from firm B	41	19	4	Bachelor degree	Male
Mr. C from firm B	50	22	5	Master degree	Male
Mrs. D from firm B	37	13	3	Bachelor degree	Female

Table 31: Description of Interviews Conducted

Interviewee	Mode*	Duration	Pages of the Transcription
Mr. A from firm A	F	40Ms	2/5
Mr. B from firm A	T	31 Ms	1/5
Mr. C from firm A	F	30 Ms	1/5
Mr. A from firm B	T	33 Ms	1/5
Mr. B from firm B	T	34 Ms	1/5
Mr. C from firm B	F	42 Ms	3
Mrs. D from firm B	T	35 Ms	2
*F = face to face, T = telephone			

In total, 4 hours of recorded interviews were transcribed into 13.5 pages of text (Appendix 7).

5.17.2 Coding and Analysis

To analyze interviews the Weber protocol (Weber, 1990) was used. This protocol is regarded as the most commonly used coding procedure for content analysis in

organizational research (Duriau, Reger, and Pfarrer, 2007). Weber's protocol consists of the eight steps shown in Table 32.

Table 32: Weber Protocol for Coding Interviews

Step	Weber Protocol For Coding text Description
1	Definition of the recording units (e.g., word, phrase, sentence, paragraph)
2	Definition of the coding categories.
3	Test of coding on a sample of text.
4	Assessment of the accuracy and reliability of the sample coding.
5	Revision of the coding rules.
6	Return to Step 3 until sufficient reliability is achieved.
7	Coding of all the text.
8	Assess the achieved reliability or accuracy

Source: Weber (1990) cited in Duriau et al. (2007:19)

These steps were performed as follows. Phrases of interviews were defined as coding units. Then research variables were chosen as coding categories and their definitions were reviewed based on the purpose of the research and the review of literature in Chapter two. These coding categories were applied to a transcribed interview from the piloting phase and their relevance and accuracy were checked with the researcher and two experts. Overall, the feedback was satisfactory and no revision was needed to the coding variables and categories. Based on the positive result from the pilot interviews, the coding was applied to the entire transcribed interviews.

Nvivo 9.0 as a Computer-Assisted Qualitative Data Analysis Software (CAQDAS) was used to code transcripts for two reasons. First, according to Holstein and Gubrium (2003), it improves analytical rigor. Second, it enhances the transferability and transparency of qualitative analysis and therefore serves as a tool to achieve reliability and validity (Wolfe, Gephart, and Johnson, 1993).

Accordingly, texts were coded and supportive themes for the key constructs of study were explored. Table 33 shows these themes and corroborating quotes. Themes were formed based on the codes through a back-and-forth process in which codes derive from the literature and emergent themes are then compared with the literature to create new codes (Weber, 1990). The key themes advanced in this phase were: 1) Differences in top managers' metacognitive abilities and performance of the firm (T1), 2) Differences in top managers' metacognitive abilities and entrepreneurial activities of the firm (T2), 3) Collaboration and teamwork (T3), 4) Entrepreneurial activities and firm performance (T4). This process will then be supplemented with supportive quotes that corroborate themes.

Table 33: Coded Corroborating Themes

	The Study Main Themes	Illustrative Quotes
Firm A		
Mr. A (CEO)	Differences in top managers' metacognitive abilities and performance of the firm	<i>"Each of us has different experience and knowledge ...A combination of them makes us more aware of available options."</i>
	Differences in top managers' metacognitive abilities and entrepreneurial activities of the firm	<i>"I personally agree with different ideas as far as they do not make things complex and difficult to handle."</i>
	Collaboration and teamwork	<i>"For those activities, I mean innovation and risky projects, I think the team's knowledge and experience is not the final determinant as we need to look beyond the ideas into reality, and see how many resources we have got."</i>
		<i>"We are not a big team.....most of the time we have an idea of each other's work and try to help. We easily discuss different issues which help us to make decision particularly when everything seems complicated."</i>

	Entrepreneurial activities and firm performance	<i>"I do not believe we are an innovative firm....but in terms of risky projects, they sometimes pay off....but I cannot generalize that."</i>
Mr. B	Differences in top managers' metacognitive abilities and entrepreneurial activities of the firm	<i>"We have different knowledge and experience to draw on to make new decisions. After the years of working together, we know who is better to decide on risky projects."</i>
	Entrepreneurial activities and firm performance	<i>"I cannot call ourselves innovative; there are typical procedures to manufacture wine which we follow."</i>
	Collaboration and teamwork	<i>"Teamwork is not difficult for us as we are three and usually talk and discuss about our perspectives and help each other to manage the workload."</i>
Mr. C	Differences in top managers' metacognitive abilities and performance of the firm	<i>"The knowledge and experience you are talking about I think it is important...to me it helps to actively think about potential positive and negative effects of my own decisions, so for the team."</i>
	Entrepreneurial activities and firm performance	<i>"I cannot talk very much about those activities you are mentioning as we do not innovate anything.... the risky projects are not always beneficial"</i>
	Collaboration and teamwork	<i>"We are a good team though small. Working together has sometimes enabled us to agree more quickly on qualified decisions about our operation."</i>

Firm B		
Mr. A	Differences in top managers' metacognitive abilities and performance of the firm	<i>"Talking about myself I have that kind of ability to refer to my past knowledge to make new moves and I can tell most of the time it helps me not to go wrong....but in the case of the team I think it depends on how we react to and rely on each other's knowledge and ability. If we can do so it could be advantageous."</i>
	Entrepreneurial activities and firm performance	<i>"To survive it is important for us to be quick in developing new services or at least make the existing ones different from our competitors'... innovating and initiating, I think, have formed a big proportion of our profit."</i>
Mr. B	Differences in top managers' metacognitive abilities and performance of the firm	<i>"We are all different in terms of knowledge and thinking....differences could bring us together as a strong team ...but my concern is that how well we deal with each other's differences...that is the point."</i>
	Collaboration and teamwork	<i>"We are relatively an effective team. We have very scheduled meetings"</i>
Mr. C (CEO)	Entrepreneurial activities and firm performance	<i>"We have been innovative in the market...it is the main factor of our growth.....To be innovative we already need to deal with risky decisions."</i>
	Differences in top managers' metacognitive abilities and entrepreneurial activities of the firm	<i>"To offer new services it is important to have different perspectives. In some cases, as far as I remember, it's helped us to define the projects differently from the existing ones in the market."</i> <i>"New projects and services have different levels of risk...depends on their complexity and available resources to introduce them."</i>

	<p>Differences in top managers' metacognitive abilities and performance of the firm</p> <p>Collaboration and teamwork</p>	<p><i>"I personally often turn to my prior knowledge and experience to make sense of new situations.... if our team could voice their experiences and the way they understand and approach the tasks we could have a border view on our projects."</i></p> <p><i>"I have been trying to manage the meetings on a regular basis...we normally discuss the issues and ask for each other's idea particularly for new projects."</i></p>
Mrs. D	<p>Differences in top managers' metacognitive abilities and entrepreneurial activities of the firm</p> <p>Collaboration and teamwork</p>	<p><i>"Those abilities are difficult to understand....I cannot talk about others' abilities but can tell different thinking gives more alternatives to consider. It is important for creating new projects but for those very risky ones it depends on for example our available resources and their potential profit."</i></p> <p><i>"I personally approach others to seek their point of views. Others are also willing to do the same, So teamwork is really something effective in our team."</i></p>

Further to the above table, a content analysis was performed and the number of coded phrases in support of each theme was calculated (Krippendorff, 2004). This analysis was then plotted in Figure 8 to enhance interpretation.

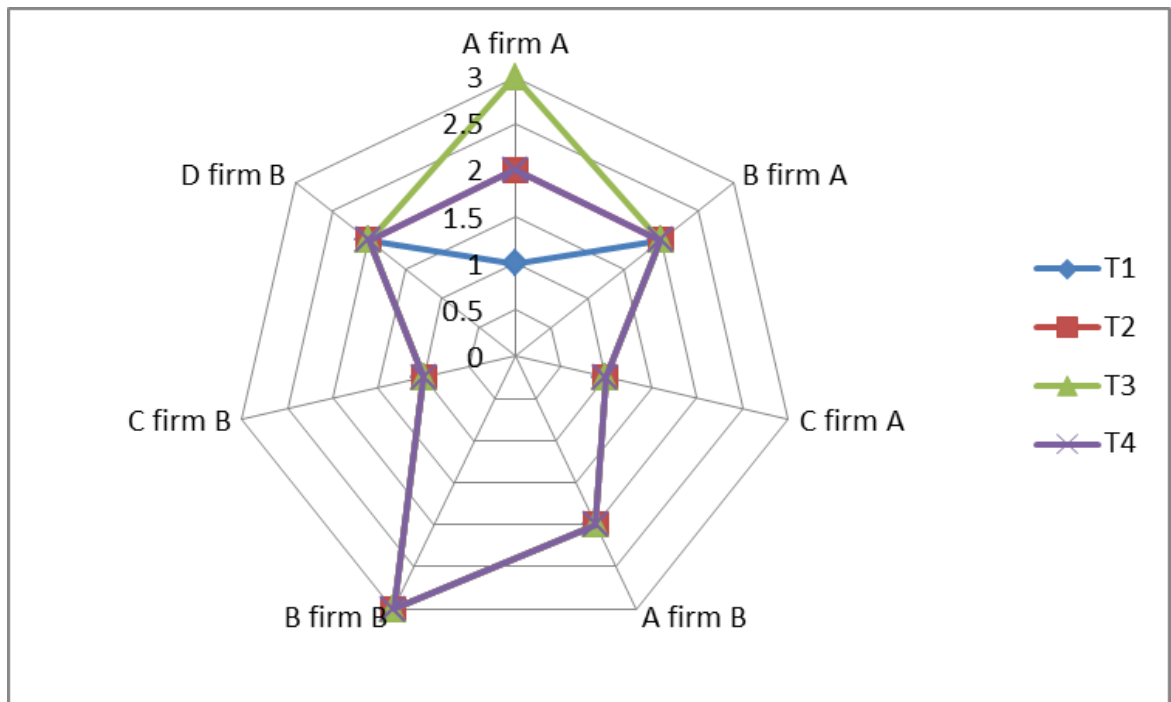


Figure 8: Contribution of Each Informant to Each Theme

As shown in this figure, Mr A from firm A has been related to theme 3 three times. Similarly, Mr B from firm B has pointed to issues related to theme 4 three times. Mr. C from firm A has been related to theme 4 once. Contributions from other interviewees can be interpreted in a similar fashion.

The next section develops the interpretation of these findings.

5.17.3 Interpretation of Qualitative Findings

Despite an enhanced understanding of some themes that the interviews provided, diversity in metacognitive abilities was not something that managers could accurately assess. They might have pictured their differences in other factors rather than metacognitive abilities and answered accordingly. Thus, their evaluation of the presence of such abilities in their team was not obvious. Accordingly, its impacts on firm performance seemed complex in managers' minds, more complex than is easily discussed

in theory. It was interesting that in the minds of the managers the direct cause/effect relationship was very weak and difficult to predict. Hence, the interviews were inconclusive in this respect and did not yield insights into the effects of team members' different metacognitive abilities on firms' entrepreneurial activities and performance. This might imply that gaining empirical data on managers' psychological factors is still, and will continue to be, challenging, particularly assessing factors in a team of managers which they see as complicated. To understand the implications of the differences among top managers with respect to psychological aspects, it is critical to consider the type of psychological construct and the way of gathering empirical data (e.g. interview, case study). These factors should be congruent in order to achieve potential evidence. Despite these limitations the interviews did provide information.

The first firm, referred to as "A," has produced wine since 1993. Each manager acknowledged their different abilities. As pointed out by Mr. A, "Each of us has different experience and knowledge ...A combination of them makes us more aware of available options." Their teamwork was considered effective, without any challenge or difficulty. As their team was not big ($N=3$), there was a stronger basis for interaction which automatically enhanced their ability to exchange information in order to make better decisions. In this respect, Mr. C said, "We are a good team though small. Working together has sometimes enabled us to agree more quickly on qualified decisions about our operation."

The firm has had a relatively stable financial performance and has experienced a few periods of decline in its profitability. Given that organizational history often informs the way a firm conducts its business and responds to environmental changes (Carmeli and Halevi, 2009), the secure financial performance and established procedures and routines have made this firm rely more on its existing operations. They appeared to prefer to

allocate their resources to routine business rather than investing them in exploratory innovation (Kollmann and Stöckmann, 2012). As a consequence, managers did not consider innovation to be important to their growth and survival. This is consistent with the notion that older firms are typically less motivated to change their organization's direction by means of innovation (Tang and Hull, 2012).

Risky projects have not always been beneficial, according to the managers. The important implication here is that managers made a distinction between innovation and risk taking, but not apparently for proactiveness. In managers' mindset, there are differences between innovation and risk taking, and as such, their impacts were not the same. This is in line with the multidimensional view of entrepreneurial orientation (e.g. Lumpkin and Dess, 1996; Baron, et al., 2013; Kreiser, et al., 2013) which states that innovativeness, risk taking, and proactiveness could be treated independently (Kollmann and Stöckmann, 2012). In this respect, Davidsson, Achtenhagen, and Naldi (2010) point out that it is important to make a distinction between different components of entrepreneurial orientation and their impacts.

In the case of risky projects, managers' perception of whether to take or avoid risky decisions in part depends on the resources at hand. As Mr. A stated, "I think the team's knowledge and experience is not the final determinant as we need to look beyond the ideas into reality and see how many resources we have got." This finding is consistent with the argument put forward by Plambeck (2012) that a firm's resources influence the outcomes of managerial cognitive processes. Plambeck (2012) suggested that to better understand a firm's entrepreneurial behavior and actions one needs to consider both managerial cognition and organizational factors such as size and resources.

The second firm, referred to as "B," has operated in engineering services since 2005. It is a young, growing firm which has been innovative, taking initiative in the market.

This firm's managers also acknowledged their differences which they see bring them more alternatives and make them a stronger team, with one of the interviewees, Mr. B, saying, "differences could bring us together as a strong team." In the case of entrepreneurial activities, Mr. C pointed to the fact that "To offer new services it is important to have different perspectives. In some cases, as far as I remember, it's helped us to define the projects differently from the existing ones in the market." Given this level of recognition and acknowledgment of the role of different abilities, drawing conclusions about the impacts of different metacognitive abilities on both entrepreneurial activities and performance may not be accurate.

Managers also acknowledged the importance of teamwork to utilize their differences. As pointed out by Mr. A, "in the case of the team I think it depends on how we react to and rely on each other's knowledge and ability. If we can do so it could be advantageous." Mr. B said, "my concern is how well we deal with each other's differences... That is the point." Having recognized the importance of teamwork, these managers were not struggling to sustain an atmosphere of sharing and collaboration. Again, given their relatively small team (N=4), they managed their meetings and kept their interactions effective in discussing different issues. It seemed that their teamwork was particularly important for creating and implementing new projects.

Similarly to firm A, firm B's managers differentiated between innovativeness and risk taking in their own way. As one of the managers (Mr. C) pointed out, their team classifies new projects based on their levels of risk. This classification is based on the complexity of the initiatives as well as the risks perceived by the team members. As risk deals with the possibility of failure (Kreiser, et al., 2013), managers classify innovative and initiating actions based on the different levels of risk and the possibility of failure. This implies that being innovative does not necessarily mean being a high risk taker in every aspect of

decision- making. Available resources and the potential profit derived from the projects could be seen as important drivers of risky decisions for this firm, as stated by Mrs. D.

Managers acknowledged the importance of innovation and of pioneering competitive actions in their growth and survival and this has been rewarding for their firm. This finding is in line with the suggestion in the literature that new ventures, partly due to their flexibility, benefit from innovation (e.g. Rosenbusch, et al., 2011).

Overall, the interviews did not yield additional insights regarding the impacts of differences among team members with respect to their metacognitive abilities. Although both firms' sets of managers recognized the importance of their differences, it was difficult to assess how accurate they were in talking about their metacognitive abilities. Both teams have shown strong teamwork which might be attributed to their size. This finding adds an extra dimension to understanding the team behavior, team size. It has been suggested that team size impacts TMT processes (e.g. Simsek, et al., 2005; Carmeli, et al., 2012). In the case of the interviewed teams, team size related to teamwork; thus it could be considered as an important factor for a wide variety of team behavior and processes such as task conflict, team interdependence, and communication quality.

The teamwork and unity of efforts have been beneficial for both teams, for instance, quick decision-marking for firm A and creating and implementing new projects for firm B. The interview with both firms' TMTs demonstrated that managers make a distinction among entrepreneurial components and adopt them as a reflection of their internal characteristics such as the firm's age, goal (Schjoedt, et al., 2013), and resources. This is in line with the argument of Wales et al. (2011: 913) who pointed out that "organizations can adopt distinctly different manifestations of entrepreneurial orientation as a reflection of changing external environments and internal characteristics." As such, entrepreneurial orientation components had different performance implications for these two firms. For

instance, the young growing firm B has benefited more from innovativeness than the established firm A. One possible explanation could be that the new firms, because of their flexibility and less specialized structures and routines, are more likely to create alternative uses for resources and benefit from innovation (Bradley, et al., 2011; Rosenbusch, et al., 2011). In fact, younger firms would more probably hold an organizational context more favorable to the pursuit and adoption of entrepreneurial initiatives (Anderson and Eshima, 2013). In the case of risk-taking activities, both firms seemed very cautious as such activities consume considerable resources (Rosenbusch, et al., 2011). Nonetheless, as suggested by firm B's managers, they appeared to have a systematic risk analysis which allows them to benefit from developing and implementing innovative projects.

Given the above, the interviews seem to suggest that to benefit from behaving entrepreneurially, beyond managerial attitudes and mindset, firms need certain organizational characteristics and practices (Alegre and Chiva, 2013). This accordingly points to important managerial implications which will be discussed in Chapter seven.

While each of these explanations is likely to be true, there may be other internal and external factors which impact these firms' practice of entrepreneurial activities and performance which are beyond the scope of this study.

5.18 Chapter Summary

This chapter presents the data analysis and results. It explains the analysis of both quantitative and qualitative data. Based on these analyses, the next chapter will address the research hypotheses.

-CHAPTER SIX-

DISCUSSION

6.1 Introduction

This chapter discusses the results obtained in Chapter five. It presents the interpretation of the findings and addresses the hypotheses developed in Chapter three.

6.2 TMT Metacognitive Diversity and Performance: the Moderating Role of Behavioral Integration

The results showed that both TMT metacognitive knowledge and metacognitive experience diversity are positively associated with firm performance. The findings confirmed that firm performance could be explained by the composition of TMT members with respect to their metacognitive abilities. It has been argued that metacognition is beneficial for a wide range of individual activities (e.g. Baron, 2007; Baron and Henry, 2010), and the result of this study further supports its positive effects on a team's performance. This finding is in line with previous research (e.g. Osmon, et al., 2007) and the information/decision-making perspective (Williams and O'Reilly, 1998) that different cognitive abilities of managers bring the team different options and solutions for decision-making and problem solving.

One possible explanation for this direct positive relationship could be the importance of metacognitive knowledge and experience. It has been argued that metacognitive knowledge and experience form a set of "valuable, rare, and inimitable cognitive resources" (Haynie, et al., 2010:225). Such metacognitive resources are important assets (Porath and Bateman, 2006) which help individuals to understand their own array of knowledge and skills (Nambisan and Baron, 2012), decision-making, and action (Haynie, et al., 2012; Mitchell, et al., 2011). In the case of top managers as a firm's key decision-

makers, such understanding could be extended to the firm's strengths and weaknesses (Nambisan and Baron, 2012) and accordingly its courses of action and strategies (Baron, et al., 2013). Given a team composed of managers with different metacognitive abilities, there would be various interpretations and assessments of the firm's strategies and actions.

When there are differences team members engage in debate and discussion (Sciascia, et al., 2013). In particular, when differences relate to individual understanding and assessment of the firm, there could be in-depth discussions and debate. Such discussions and debates would allow the team to consider different alternatives and select the most appropriate one (Olson, et al., 2007). The complexity and uncertainty of managerial tasks often calls for a greater variety of perspectives and more discussion among top managers (Wei and Wu, 2013), which allows a more comprehensive search and analysis of strategic alternatives (Pitcher and Smith, 2001). Thus, in-depth discussions and debate arising from top managers' different metacognitive abilities are likely to enhance the comprehensiveness and quality of their decisions as a team (Nielsen and Nielsen, 2013).

In addition to the importance of metacognitive knowledge and experience, another possible reason for the direct relationship could be the study setting. Due to their liabilities of ownership and smallness, SMEs' TMTs have latitude of action (Alexiev, et al., 2010; Brettel and Rottenberger, 2013). They have greater autonomy and managerial discretion than top managers of larger firms (Baron, et al., 2011). More notably, these firms are often governed by a small number of top managers (Engelen, et al., 2012; Harmancioglu, Grinstein, and Goldman, 2010), thus managers' individual metacognition could be more leveraged into the team decision-making. As a consequence, SMEs could afford a more direct setting to empirically examine the effects of TMT metacognitive ability on firm performance. As such, the statistical association between TMT

metacognitive diversity and firm performance could be stronger for these firms (Simsek and Heavey, 2011). This accordingly implies that besides the diversity variable, it is important to consider the context in which managerial decisions and actions take place (Nielsen and Nielsen, 2013) as it provides the “purpose, resources, social cues, norms, and meanings that shape behavior” (Jackson, et al., 2003:813).

These findings, nonetheless, are in contrast with the recent research (e.g. Sciascia, et al., 2013; Wei and Wu, 2013) which argues that the direct relationship between TMT diversity and firm performance may not be meaningful. This argument could not be supported as the current results demonstrated that the direct relationship is meaningful when measuring diversity in team members’ metacognitive abilities. Consistent with Nielsen and Nielsen (2013), this study contends that treating diversity as a general construct and attributing it to specific consequences may be misleading. No matter whether the diversity variable falls under the categories of “demographic attributes” or “psychological dimensions”, it should not be attributed to specific outcomes. Like demographic attributes, diversity across different psychological aspects could lead to different consequences. For instance, with respect to managerial cognition, while Miller et al. (1998) reported a negative effect of TMT cognitive diversity on the comprehensiveness of decision-making, the study of Olson et al. (2007) implied the favorable impacts of cognitive diversity on strategic decision-making. Interestingly, Wei and Wu (2013) showed that differences in top managers’ thinking were not significantly related to firm performance. Boone and Hendriks (2009) found that the explanatory power of functional background (demographic characteristics) diversity compared to locus of control (personality variable) diversity is much larger for firm performance.

As argued with demographic attributes (Kaplan, 2011), not every psychological aspect could capture context-specific interpretations. In this respect, metacognition could be

considered as a task-related cognition through which top managers individually understand their own decision-making and information processing and as a team make sense of their firm's strategies and courses of action.

It has been argued that metacognition is important in the recognition of multiple alternatives for formulating a problem or decision task (Haynie and Shepherd, 2009; Haynie, et al., 2012; Nambisan and Baron, 2012). It presents the individuals' cognitive base and ability to "(1) recognize that there are multiple ways to analyze a situation, (2) consciously consider those alternatives, and (3) learn from feedback so as to inform future decisions" (Haynie, et al., 2012:5). The upper echelons theory is built on the premise, proposed by March and Simon (1958), that "each decision-maker brings his or her own set of 'givens' to an administrative situation which reflects decision-makers' cognitive base: 1) knowledge or assumption about future events, 2) knowledge of alternatives, 3) knowledge of consequences attached to alternatives" (Hambrick and Mason, 1984:195). Those givens, which also reflect the decision-makers' values, help managers to make sense of what is happening and what action to take (Hambrick and Mason, 1984). Metacognition would be well situated in the upper echelons assumptions as it could be considered as those "givens" through which managers recognize multiple ways for framing a problem or decision task, and consciously consider the alternatives to address a decision task (Haynie and Shepherd, 2009; Haynie, et al., 2012). As such, it could have performance implications, as illustrated in this study.

The interview with managers was not useful for supplementing the quantitative data regarding the impacts of metacognitive diversity on firm performance. Although managers acknowledged the importance of their differences, it is debatable whether they described their differences in terms of their metacognitive abilities. The qualitative data, therefore, were not able to provide suggestive evidence in this respect.

Supporting the expectations it was found that TMT behavioral integration positively moderates the relationship between TMT metacognitive knowledge and experience diversity and firm performance, such that the direct relationship is more pronounced when the team exhibits behavioral integration. This suggests that teams with a spirit of sharing and collaboration more effectively utilize and act upon their different metacognitive knowledge and experiences. Behavioral integration helps top managers to gain a good understanding of the situation they encounter and thereby reach a common premise in decision-making (Camelo, et al., 2010).

A behaviorally integrated team is more likely to trust each member's abilities (On, et al., 2013). Such trust enables them to manage conflicts (Carmeli, et al., 2012) which could emerge while discussing different understanding and assessments of the firm's decisions and actions. Teams with managed conflict will productively display a high level of cognitive conflict (Clark and Maggitti, 2012). Such conflict has been shown to enhance decision understanding, decision commitment, and decision quality (Olson, et al., 2007). Teamwork also enables managers to see the value of the complementarities and integration of each other's ability (Buyl, et al., 2013; Raes, et al., 2013). Therefore, a behaviorally integrated team is more likely to fully leverage their metacognitive abilities to agree on qualified decisions and thereby effective actions.

This finding is in line with the argument of Eisenhardt (2013) that TMTs who are diverse and have a prior working experience together could be beneficial for the performance of small firms. In this respect, Ling and Kellermanns (2010) found that family firm-specific sources of TMT diversity have more positive effects on firm performance when the information exchange among TMT members is more frequent. Similarly, the studies of Zahra and Wiklund (2010) and Boone and Hendriks (2009) showed that TMT functional background diversity is beneficial when the team is

integrated. Nonetheless, Boone and Hendriks (2009) found that the impacts of TMT locus of control diversity could not be enhanced through the team's unity of efforts or information exchange. Although these studies, along with the present findings, imply the importance of teamwork, they call for close attention to the nature of both the diversity variable and team process while examining their interactive effects. This would allow a strong explanation to be built of how TMT differences, together with their behavior, impact firm performance.

In the case of this study, TMT behavioral integration relates to the team's quantity and quality of information exchange and decision-making behavior (Zahra and Wiklund, 2010). Metacognition, as discussed earlier in this chapter, represents managerial ability to process information and make decisions. Accordingly, this study theoretically predicted that TMT behavioral integration would be salient for teams with different information-processing and decision-making abilities, and as a result, their interactive effects could be consequential for firms. The empirical findings have supported this theoretical expectation and suggested that the TMT interaction process which allows different task-related information stemming from team members' individual metacognitive ability is openly discussed, leading to more qualified decisions and actions (Cannella, et al., 2008; Raes, et al., 2011). Accordingly, TMT research should consider appropriate theoretical bases for including the diversity variable and team process to yield a better understanding of their interactive effects on firm performance.

As interviews revealed, teamwork has been beneficial for teams, for instance for quick decision-making and creating and implementing new projects. Both interviewed teams have shown strong teamwork, which might be attributed to their size. As suggested by managers, their small size has enabled them to work with each other effectively. This is in line with previous research which suggested that TMT size impacts TMT processes (e.g.

Amason, et al., 2006; Carmeli, et al., 2012; Simsek, et al., 2005). Complications come to be more pronounced as TMT size continues to increase (Simsek, et al., 2005), thus smaller teams may have a greater opportunity to share and collaborate in order to enhance their performance. TMT size, therefore, could be considered as an important factor in understanding a wide variety of team behavior and processes such as competence-based trust, team interdependence, and communication quality.

Further to the above findings, the next section explains the results of the intervening mechanisms.

6.3 Discussing the Results of Moderated Mediation Analysis

Consistent with the study premise, the results showed that entrepreneurial orientation could be considered as a multidimensional construct. In addition to quantitative analysis, the interviews also revealed that top managers make a distinction among entrepreneurial orientation components (innovativeness and risk taking). This confirms the multidimensional view of entrepreneurial orientation that innovativeness, risk taking, and proactiveness could be treated independently (Baron, et al., 2013; Kollmann and Stöckmann, 2012; Kreiser, et al., 2013; Lumpkin and Dess, 1996). More notably, it was found that managers adopt different components as a reflection of their internal characteristics such as age, available resources, and actual goals (Wales, et al., 2011).

TMT metacognitive knowledge and experience diversity appeared not to have the same implications for these three components. The results suggest that TMT metacognitive ability may not be a factor which directly contributes to certain aspects of team entrepreneurial behavior. Although it has been argued that cognitive factors are crucial in predicting entrepreneurial behavior (Fini, et al., 2012), the present results revealed that this may not hold true for every aspect of entrepreneurial behavior and actions. In this respect, collaboration and teamwork also seemed to be insufficient

conditions to make the team more entrepreneurially confident and committed. Although behavioral integration has been shown to be beneficial for a wide range of team as well as firm activities, it might not capture the sort of collaboration, information exchange, and joint decision-making which is very relevant and significant to some specific aspects of entrepreneurial behavior and action (Ling, et al., 2008). This accordingly implies that to better comprehend the implications of TMT mechanisms and processes, it is important to ensure that they capture context-specific team behavior. In this regard, Wei and Wu (2013) suggested that to better comprehend how a diverse TMT functions, both its mechanism process and the conditions influencing the process need to be taken into account.

With respect to the impacts of entrepreneurial orientation on firm performance, the empirical results revealed that three components of entrepreneurial orientation did not contribute equally to performance. That is, while innovativeness and proactiveness were shown to be positive, risk taking was negatively associated with firm performance. Therefore, the results suggest that the effect of TMT metacognitive diversity on performance is partially mediated by entrepreneurial orientation. These results are not surprising: as argued by Buyl et al. (2011a), the mediating processes are complicated processes, including several mediators that function simultaneously. It was observed that the mediated paths have been moderated by the degree of TMT behavioral integration. The positive moderation effects of TMT behavioral integration did not hold for all associations among TMT metacognitive diversity and entrepreneurial orientation components and the partially mediated effects are moderated mediation by nature. The results of the integrated model including moderated-mediation paths are shown in the figures below. To better illustrate the paths, two separate figures (shown as Figure 9) for

each independent variable (TMT metacognitive knowledge and experience diversity) and their associations have been developed.

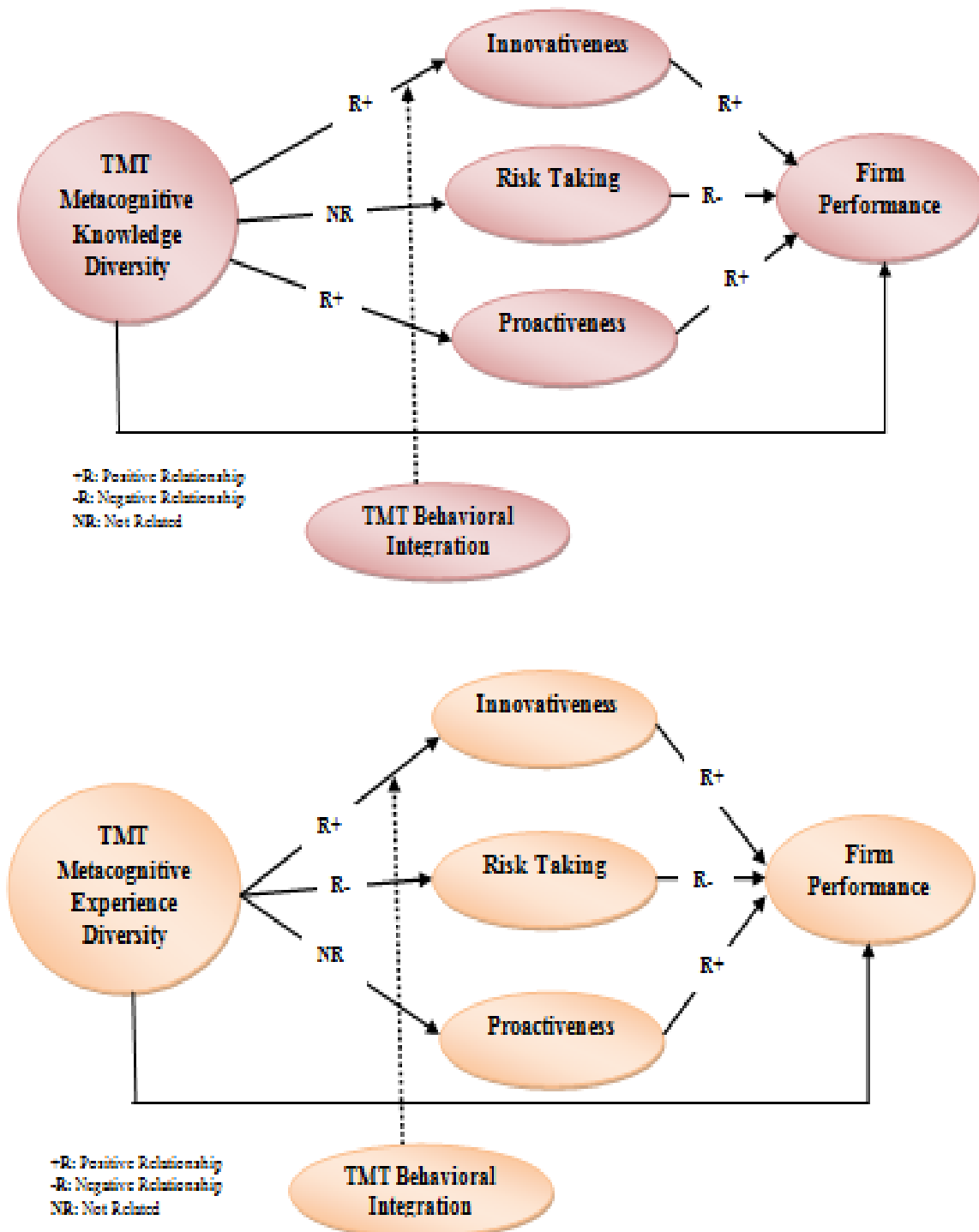


Figure 9: The Direct and Indirect Effects of TMT Metacognitive Knowledge and Experience Diversity

The following sections elaborate these results.

6.3.1 TMT Metacognitive Diversity, Behavioral Integration, Innovativeness, and Performance

As observed, both TMT metacognitive knowledge and experience diversity were positively associated with innovativeness. It has been argued that metacognition is important in recognizing and interpreting innovative opportunities (Haynie, et al., 2010; Nambisan and Baron, 2012). Given that top managers' interpretation efforts influence innovativeness (Plambeck, 2012), several studies have acknowledged the importance of metacognition in the pursuit of innovative activities (e.g. Baron, et al., 2013; Grégoire, et al., 2011; Nambisan and Baron, 2012). More recently, Baron et al. (2013) found that metacognitive knowledge could make individual entrepreneurs more confident in pursuing innovative activities. This study further confirms the importance of both metacognitive knowledge and experience in TMT innovative behavior and action. These findings are specifically relevant for small firms whose managers, to a great extent, impact the formation and implementation of innovation goals (Harmancioglu, et al., 2010).

Diversity in top managers' metacognitive knowledge and experience would bring the team different recognitions and interpretations which are important for creating novel and exploratory ideas (Alexiev, et al., 2010; Qian, et al., 2013). This finding is in line with the notion that diversity could encourage team members to share ideas for radical new products or new unexplored markets (Alexiev, et al., 2010; Talke, et al., 2011). In this respect, Wei and Lau (2012) showed that TMT age and tenure diversity positively impact firm innovation. Similarly, Talke et al. (2011) found that TMT demographic diversity is positively associated with a firm's strategic innovation orientation.

Consistent with the expectation, these beneficial effects were more pronounced when the team exhibited behavioral integration. A more positive TMT metacognitive diversity-innovativeness relationship has been found for teams with higher levels of behavioral integration. Thus, behavioral integration could be considered as an important mechanism that heightens the positive effect of TMT metacognitive diversity (both knowledge and experience) on innovativeness. This finding is consistent with previous research (e.g. Lubatkin, et al., 2006; Simsek, et al., 2005; Zahra and Wiklund, 2010) which found that behavioral integration was beneficial to the team's entrepreneurial behavior such as product innovation. A behaviorally integrated team is more open to their various points of view (Carmeli, et al., 2011), thus their different recognitions and interpretations of innovative opportunities can be realized and acted upon more effectively. When top managers show a high level of behavioral integration, they send the employees more consistent and clear messages about what they need to accomplish (Raes, et al., 2013). Such messages are important since in developing entrepreneurial attitudes and behavior like innovativeness, top managers need to communicate it within their organization (Wales, et al., 2011). Furthermore, as behavioral integration brings trust (On, et al., 2013), it might help employees deal with the potential complication of new processes, practices, or structures (Vaccaro, et al., 2012). As a consequence, a behaviorally integrated team with a holistic understanding of innovative projects is more apt to develop and manifest innovative attitudes and behavior within their firms.

As predicted, innovativeness could be rewarding for SMEs. This is in line with previous research which found innovativeness beneficial for the performance of SMEs (e.g. Casillas and Moreno, 2010; Kreiser, et al., 2013; Lechner and Gudmundsson, 2012; Rosenbusch, et al., 2011). Although some scholars (e.g. Plambeck, 2012) have described small firms as more conservative than large firms, it has been argued that small firms

could benefit from innovation, partly due to their flexibility (e.g. Rosenbusch, et al., 2011). The empirical results of this study have supported this view.

Despite these findings, the qualitative data could not provide any insight into the impacts of TMT metacognitive diversity on innovativeness. Nevertheless, it was perceived that in the young growing firm B, innovativeness has been acknowledged as an important factor in their growth and success. Therefore, adopting an innovative proclivity may be an effective response to beat liabilities associated with their smallness (Grande, et al., 2011; Rosenbusch, et al., 2011). Innovativeness could help small firms to assign their limited resources where they can create more value (Rosenbusch, et al., 2011).

6.3.2 TMT Metacognitive Diversity, Behavioral Integration, Risk Taking, and Performance

While TMT metacognitive knowledge diversity had no impact on risk taking, the findings implied the negative effects of TMT metacognitive experience diversity. Different understanding and interpretations of the situation could not make the team positive in dealing with the ambiguity and uncertainty and confident in their ability to reap the potential benefits of risky activities. Such results might imply that the metacognitive ability of top managers could not completely explain the team's risk-taking behavior. From another point of view, it may imply that the effects of TMT diversity, besides the nature of diversity itself, depend on the nature of the TMT's task and the situation (Jackson, et al., 2003; Wei and Wu, 2013).

In this respect, the qualitative analysis drew attention to the importance of available resources for managers in pursuit of risky activities. It has been generally argued that entrepreneurial management is influenced by the resources available to management (Bradley, Wiklund, and Shepherd, 2011). This could be particularly true for risk-taking activities whose presence may have a chance of loss (Grande, et al., 2011). Risk-taking

activities are specifically critical for SMEs which do not hold the resources to absorb potential losses (Rosenbusch, Rauch, and Bausch, 2013). Accordingly, these firms' managers are more required to manage risk very carefully to protect the limited resources (Zhao, Seibert, and Lumpkin, 2010). To these managers, risk may reflect the possibility of failure (Kreiser, et al., 2013; Lechner and Gudmundsson, 2012), thus they are more likely to negatively evaluate the triggering issues (Plambeck, 2012). As a consequence, the outcome of managers' metacognitive process would be influenced by the firm's available resources (Plambeck, 2012). In this respect, risk taking could be considered as a managerial attitude, and may stem from their metacognitive process, which must be supported by certain organizational conditions as well as practices to be acted upon (Alegre and Chiva, 2013). Therefore, top managers' different understandings and interpretations of the potential of risk could not completely explain their risk-taking behavior.

Interestingly, the interview with the team of the young growing firm B indicated that they classify new projects based on their levels of risk. The classification was based on the complexity of initiatives as well as their attached risks as perceived by team members. This suggests that being innovative does not necessarily mean being a high risk taker in every aspect of decision-making. This is not only in line with the multidimensional view of entrepreneurial orientation but also implies that firms who carry out a systematic risk analysis could enjoy their propensity to innovation (Casillas and Moreno, 2010).

Contrary to expectations, the presence of behavioral integration might not be helpful in making managers more positive in their different metacognitive abilities to deal with risky situations. Although behavioral integration could ensure the quality and completeness of decision-making (Carmeli and Schaubroeck, 2006; Ling, et al., 2008) and bring trust (On, et al., 2013), it may lack the mechanisms necessary to lessen the

uncertainty and ambiguity associated with risky decisions. Accordingly, the results did not provide significant conclusions regarding both hypotheses related to the association between TMT metacognitive diversity (knowledge and experience) and risk taking.

Risk taking, as the results showed, was negatively related to the performance of SMEs. This is in line with earlier works on SMEs which found that risk taking lowered their performance (e.g. Kollmann and Stöckmann, 2012; Kreiser, et al., 2013; Lechner and Gudmundsson, 2012). The entrepreneurial orientation dimension of risk taking has been theoretically depicted as a double-edged sword (Lechner and Gudmundsson, 2012). Specifically, risk-taking behavior does not appear to represent a worthwhile attempt for small firms (Kreiser, et al., 2013). Owing to the size and accordingly resources, small firms are less likely to be risk assuming than their large counterparts (Real, et al., 2012). The scarce resources might hinder their entrepreneurial process and probability of success (Grande, et al., 2011). Consistent with this argument, interviews showed that those projects which were recognized as very risky have not always been beneficial for the firms.

6.3.3 TMT Metacognitive Diversity, Behavioral Integration, Proactiveness, and Performance

The results showed that TMT metacognitive knowledge diversity was positively associated with firm proactive behavior, while such positive effects were not observed for TMT metacognitive experience diversity. It has been argued that cognitive factors in general (Foo, 2011) and metacognition in particular (Baron, et al., 2013) play an important role in the managerial evaluation of business opportunities. Research has also indicated that diversity could be beneficial for firms' proactive market orientation (e.g. Talke, et al., 2011). Therefore, the results on TMT metacognitive knowledge diversity are consistent with previous research assumptions and findings. Nonetheless, diversity in

TMT members' metacognitive experience had no influence on proactiveness. It seems likely that managers' metacognitive knowledge accounts for the team's forward-looking perspective and there may exist other unmeasured factors that influence the association between TMT metacognitive experience diversity and their proclivity to engage in proactive behavior.

Teamwork and collaboration, as hypothesized, were shown to make the team more proactive in recognizing and seizing market opportunities based on their different metacognitive knowledge. However, contrary to predictions, such teamwork seemed to be an inadequate condition for creating a forward-looking perspective among top managers with different metacognitive experience. Accordingly, only the hypothesis relating to the association between TMT metacognitive knowledge diversity and proactiveness was confirmed. It is possible to assume that the association between TMT metacognitive experience diversity and proactiveness is more complex than expected requiring more detailed investigations.

As predicted, proactiveness was positively related to the performance of SMEs. This finding is consistent with earlier works (e.g. Casillas and Moreno, 2010; Kollmann and Stöckmann, 2012; Kreiser, et al., 2013; Wiklund and Shepherd, 2005). It has been argued that a forward-looking perspective enables firms to recognize, capture, and capitalize on emerging business opportunities (Casillas and Moreno, 2010; Tang, et al., 2010; Wiklund and Shepherd, 2005) and thereby enhance their growth rate (Casillas and Moreno, 2010). Proactive firms could identify emerging customer needs as well as technologies and implement them in novel solutions (Talke, et al., 2011). In particular, SMEs could benefit from their proactive behavior despite their lack of resources. As a matter of fact, their small size allows them to be fast in recognizing, capitalizing, and benefiting from business opportunities (Real, et al., 2012).

The interview with managers did not provide further evidence regarding the effects of their proactive behavior on performance as they did not make a clear distinction between innovativeness and proactiveness. Given that quantitative analysis showed that managers differentiated between these two components of entrepreneurial orientation, further research needs to check whether the method of investigation would influence the managers' understanding and perspective of each component.

Having verified the study hypotheses, the next section presents the findings on the control variables of the model.

6.4 Discussing the Results of Control Variable Analysis

As noted earlier in Chapter four, this study took special care to include relevant and important control variables. A total of 15 variables at the firm level, industry level, environmental level, team level, and CEO level were controlled. A detailed look at the control variables has generated new insights into each level. To better demonstrate each control variable and their effects, Figure 10 below has been developed.



Figure 10: The Control Variables and their Effects

As data analysis revealed, while size of firm was positively associated with firm performance, firm age was not significantly related to it. This seems to suggest that while the quantity of the resources is important for the performance of SMEs (Rosenbusch, et al., 2011), their age may be less related to their functioning (Lubatkin, et al., 2006). The industry type was controlled to capture specific industry effects that might impact on firm

performance. The results, nonetheless, showed that industry does not have any significant impact on performance.

Family ownership was controlled in this study as it has been shown to impact firm entrepreneurial orientation (Simsek, et al., 2010). The data indicated that family ownership was negatively related to risk taking and innovativeness but unrelated to proactiveness. Family firms present a rather distinct category in terms of ownership and governance (Naldi, et al., 2007). It has been argued that they lack entrepreneurial spirit (Cruz and Nordqvist, 2012) and tend to be more conservative (Casillas and Moreno, 2010; Dess, Pinkham, and Yang, 2011; Miller and Le Breton-Miller, 2011) due to their strong routines and personal values which impede their ability to face changes and new business opportunities (Escribá-Esteve, et al., 2009). Accordingly, this study, in line with previous research (e.g. Cruz and Nordqvist, 2012; Escribá-Esteve, et al., 2009; Sciascia, et al., 2013), suggests that having non-family managers is important for these firms to uphold entrepreneurial orientation. In particular, non-family TMT members with enough power and delegated authority would perform effectively (Minichilli, Corbetta, and MacMillan, 2010).

The importance of environmental dimensions demands more research on their impacts on performance (e.g. Rosenbusch, et al., 2013). This study used environmental uncertainty as a control. The results on the link between environmental uncertainty and firm performance revealed that this environmental dimension had detrimental effects on performance. It implies that managers' difficulty in understanding the direction of change in markets and competition (Carmeli, et al., 2011) may result in less effective actions. It accordingly suggests that SME managers need to be aware of how their perception and understanding of unexpected changes could impact their decisions and actions. They should scan their environment carefully (Rosenbusch, et al., 2013) in order to

comprehend important relationships among many environmental elements (Walters, Kroll, and Wright, 2010).

Team tenure was shown to be unrelated to performance. Team tenure may reflect the patterns of information search and processing within the team (Wong, Ormiston, and Tetlock, 2011). It could influence the firm's strategic decision processes and outcomes (Finkelstein and Hambrick, 1990; Simons, et al., 1999). However, its association with performance has been regarded as more complex than scholars generally assumed (Simsek, 2007). As pointed out by Simsek et al. (2005: 79), "team tenure may be too imprecise an index to capture what team members individually and collectively bring to it." Similarly, CEOs' firm tenure was also shown to be unrelated to firm performance. Nevertheless, team average industry experience was positively associated with performance.

Functional background reflects specialized knowledge and perspective of managers which could impact their information assessment and comprehension (Bell, et al., 2011; Cao, et al., 2010). Accordingly, TMT functional diversity has been shown to influence performance (Buyl, et al., 2011a; Cannella, et al., 2008; Nielsen and Nielsen, 2013). This study controlled two types of functional diversity: intrapersonal functional diversity and dominant functional diversity (Bunderson and Sutcliffe, 2002). As observed, these two did not have the same impact on performance. While TMT intrapersonal functional diversity had a positive effect, the findings implied the non-significant effects of TMT dominant functional diversity. These findings are in line with the studies of Bunderson and Sutcliffe (2002) and Cannella et al. (2008). From a broader perspective, this finding implies the multidimensionality of the diversity construct (Nielsen and Nielsen, 2013) and calls for greater attention to considering and treating each demographic attribute individually.

A look at the links between TMT metacognitive knowledge and experience, and demographic diversity revealed mixed associations. For instance, while gender and educational-background diversity were shown to be unrelated, educational-level and industry experience diversity were positively related to both TMT metacognitive knowledge and experience diversity. Age diversity was positively related only to TMT metacognitive experience diversity. This could be because metacognitive experiences are affective and thus more readily explained by age (Flavell, 1987; Haynie, et al., 2012).

Although previous research found no evidence for the association between demographic and cognitive diversity (e.g. Glick, Miller, and Huber, 1993; Kilduff, et al., 2000), this study found rather different associations. This suggests that not every demographic attribute conveys the valid implications of managerial thinking and beliefs. This is not very different from what Hambrick and Mason (1984:204) proposed: “observable demographic factors simply do not provide a reliable portrayal of a person’s make-up.” Nonetheless, it challenges the general assumption adopted by previous research using demographics as a proxy of managerial cognition.

Given this, some scholars (e.g. Buyl, et al., 2011b; Kaplan, 2011; Narayanan, et al., 2011) have suggested that TMT demographic diversity could be an antecedent of, instead of a proxy for, managerial cognition. This study further suggests that to better understand the antecedent role of TMT demographic diversity, one needs to consider whether the demographic aspect plays any role in the development and manifestation of the cognitive construct. In the case of this study, it has been argued that metacognition is a function of age and experience (Haynie and Shepherd, 2009; Haynie, et al., 2012). Because of this, some statistically significant path coefficients have been observed for the link between demographic and metacognitive diversity.

6.5 Chapter Summary

This chapter discussed the findings of the empirical results obtained in Chapter five. It answered the questions raised in Chapter one and addressed the hypotheses developed in Chapter three. It drew attention to the importance of the concept of metacognition and its potential implications for TMT diversity research. Incorporating behavioral integration and entrepreneurial orientation components was shown to provide a more detailed understanding of the role of TMT metacognitive diversity and behavior in firms' entrepreneurial performance. The findings provided evidence for partial mediation effects of entrepreneurial orientation and the existence of moderation effects of behavioral integration. The final section provided a discussion on the effects of control variables of the model.

-CHAPTER 7-

IMPLICATIONS AND CONCLUSIONS

7.1 Introduction

This chapter presents a summary of findings and explains how they address the research questions identified in Chapter one. It discusses the theoretical and managerial contributions of the study, explains the key limitations and suggests areas for future research.

7.2 Answering the Research Questions

Five research questions were developed in Chapter one. This section answers the questions based on the results obtained in Chapter five. Answering these questions further illustrates how the present findings contribute to the knowledge gaps pointed out in Chapter one.

Question 1: To what extent is the association between TMT metacognitive knowledge diversity and the performance of SMEs influenced by team behavioral integration?

As observed, TMT metacognitive knowledge diversity and performance had a direct positive relationship. This relationship was strengthened when the team was behaviorally integrated. Managers draw upon their metacognitive knowledge to select or develop the most appropriate strategies in order to use them in performing important tasks (Nambisan and Baron, 2012). Collaboration in information exchange and decision-making appears to allow the team to see the value of the complementarities and integration of each member's ability to choose and develop strategies and accordingly implement the effective ones (Raes, et al., 2013). Therefore, the more behaviorally integrated the team, the greater the potential benefit of their metacognitive knowledge contribution to performance.

Question 2: To what extent is the association between TMT metacognitive experience diversity and the performance of SMEs influenced by team behavioral integration?

Very similar to the findings for question one, metacognitive experience diversity has also proven to be more beneficial for the teams with a high level of behavioral integration. Managers draw on their metacognitive experience to identify multiple alternatives for framing a problem or decision task (Haynie, et al., 2012; Mitchell, et al., 2011). When a team has a spirit of sharing and collaboration, their different identifications of alternatives bring them together with the most effective ones, resulting in more competent actions.

The positive performance effects of metacognitive diversity (both knowledge and experience) were stronger in TMTs with a high level of behavioral integration. Such beneficial effects were particularly relevant for SMEs. The lack of slack resources and administrative systems, which assist larger firms in their decision-making processes, makes small firms rely more on the abilities of their top managers to perform (Escribá-Esteve, et al., 2009; Lubatkin, et al., 2006). Accordingly, the study questions have been answered more clearly through their lens.

The important implication which could be drawn from answering these two questions is that metacognitive knowledge and experience play an important role in top managers' functioning. The management literature has long focused on the knowledge and experience of executives to predict organizational outcomes (Haynie, et al., 2012); in particular, researchers adopting the upper echelons perspective have often measured TMT education, functional background, and tenure as attributes that are reflective of their knowledge and experience (Olson, et al., 2007), and indicators of sources of their cognition (Kaplan, 2011). These attributes, nonetheless, have been shown to be insufficient for reflecting managers' cognition and perspectives (Wei and Wu, 2013) and

capturing context-specific interpretations (Kaplan, 2011). In light of the lack of concerted effort to investigate the implications of TMT cognition, this study took a step towards filling this gap by focusing on the concept of metacognition and exploring how the existence of different metacognitive knowledge and experience among top managers influences firm performance. The beneficial effects of the team metacognitive ability drew attention to the importance of the concept of metacognition for upper echelons research and suggested that it may have the potential to reflect top managers' views and perspectives on how their firms should function.

Question 3: To what extent does the interaction between TMT metacognitive knowledge diversity and behavioral integration impact team entrepreneurial orientation as a determinant of the performance of SMEs?

Question 4: To what extent does the interaction between TMT metacognitive experience diversity and behavioral integration impact team entrepreneurial orientation as a determinant of the performance of SMEs?

Questions 3 and 4 have been answered through a moderated mediation analysis. With respect to question 3, as data showed, TMT behavioral integration seemed to possess the mechanisms necessary to strengthen the positive relationship between TMT metacognitive knowledge diversity and both innovativeness and proactiveness. Nonetheless, regardless of the level of behavioral integration, TMT metacognitive knowledge diversity was not significantly related to risk taking. Accordingly, TMT metacognitive knowledge diversity and behavioral integration positively interacted and influenced innovativeness and proactiveness which both contributed to performance.

With regard to question 4, TMT metacognitive experience diversity and behavioral integration positively interacted and influenced the entrepreneurial orientation dimension of innovativeness. The positive effects of TMT metacognitive experience diversity were

not observed for either proactiveness or risk taking. Even the presence of behavioral integration could not make any difference.

In sum, the effects of TMT metacognitive diversity on performance were partially mediated by entrepreneurial orientation. These partial mediation effects are not surprising as the support for mediated explanations has been relatively modest in upper echelons literature (e.g. Buyl, et al., 2011a; Simons, et al., 1999). These findings, however, informed both upper echelons and entrepreneurship research. This addressed upper echelons scholars' calls to investigate mechanisms through which TMT diversity influences firm performance (e.g. Buyl, et al., 2011a; Talke, et al., 2011). This study showed that innovativeness and to some extent proactiveness could be considered the mechanisms through which TMT metacognitive diversity contributes to performance. This study also advanced the knowledge on the antecedents of entrepreneurial orientation (Baron, et al., 2013) by showing that development and management of entrepreneurial attitudes and actions is rather a shared, team effort (West, 2007). Top managers' abilities and behavior collectively as a team could be seen as an important factor in their innovative and competitive efforts.

In light of the absence of theoretical and empirical research on the moderating role of TMT behavioral integration (Boone and Hendriks, 2009; Hambrick, 2007; Ling, et al., 2008), this study integrated this construct and examined its moderation effects. Collaboration and teamwork were shown to enable the team to capitalize on their different metacognitive abilities to contribute to the firm performance. Nevertheless, such behavior appeared inadequate to make the team more confident in their metacognitive abilities to cope with the complexity and uncertainty associated with certain entrepreneurial activities such as risk taking. Behavioral integration has been shown to be beneficial for team performance (e.g. Carmeli and Schaubroeck, 2006); however, as the

present findings suggested, it is less likely to capture the sort of teamwork that is relevant and important for certain aspects of entrepreneurial behavior and activities (Ling, et al., 2008). It subsequently calls for close attention to the essence of team mechanism and process and whether it captures the aspects of team behavior that are relevant and significant to the outcomes of interest.

Question 5: What are the implications of this integrated model for both the strategic management of small firms and small business policymakers?

This question pertains to the study's managerial implications. Given that the study's main constructs could be either developed through training (i.e. metacognition) or managed (i.e. entrepreneurial orientation and behavioral integration), the empirical findings have afforded important practical implications which will be addressed in following sections.

The next section explains the theoretical contributions of the study.

7.3 Theoretical Contributions

This study presented an attempt to bring together the upper echelons perspective and entrepreneurship literature to underline the importance of TMTs, their metacognitive abilities and behavior in a firm's entrepreneurial performance. It contributed to the upper echelons theory by developing and testing a moderated-mediation model that has yielded an explanation of the TMT diversity-firm performance relationship through a metacognitive lens. This study accordingly enriched the existing upper echelons literature in several ways. In contrast to the traditional focus on demography, this study examined the psychological aspect of top managers. While the importance of TMT diversity has been realized (Ling and Kellermanns, 2010), few scholars have investigated this phenomenon through the cognitive lens (e.g. Olson, et al., 2007). Due to the challenges

encountered in collecting psychological data from top managers who do not have the time to answer psychological tests or be observed (Wong, et al., 2011), such research has been slow to accumulate (Nielsen, 2010; Souitaris and Maestro, 2010).

Metacognitive knowledge and experience are important theory- and practice-relevant yet under-researched constructs in both upper echelons and entrepreneurship literature. This study drew on these concepts whose measures have been recently developed by Haynie and Shepherd (2009). The reliable measure has enabled this research to examine an important aspect of managerial cognition. This study collected data on each top manager's metacognitive knowledge and experience and then measured the diversity within each team. Although challenging, this method of data collection and analysis has enabled the research to offer a more objective measure of cognition (Miller, et al., 1998; Wei and Wu, 2013) and thereby provide a better understanding of top managers' actual behavior and its impacts. In addition to metacognition, this study collected data on other constructs (i.e. entrepreneurial orientation, behavioral integration, performance, and environmental uncertainty) from multiple respondents. It has been argued that this method is more reliable than a single respondent in strategy research (Carmeli, et al., 2012; Miller, 2011).

As findings suggested, metacognitive diversity (both knowledge and experience) is an important differentiator amongst team members and could be considered among the few other diversity attributes such as preference and belief diversity (Olson, et al., 2007), and nationality diversity (Nielsen and Nielsen, 2013), which enhance decision-making and firm performance. Although a high level of such abilities in a team of managers might be more favorable (Dierdorff and Ellington, 2012; Mitchell, et al., 2011), as the findings demonstrated, different levels of such abilities still enhance firm performance. This could be attributed to the importance of metacognition. As pointed out by Haynie et al.

(2010:225), “metacognitive knowledge and experience may constitute a set of valuable, rare, and inimitable cognitive resources,” thus access to multiple metacognitive resources could be beneficial.

Metacognition has been shown to be important not only for the performance of individual CEOs (Mitchell, et al., 2011), but also for the performance of a team of top managers as this study found. Therefore, it could be considered as a “task-relevant cognition” (van Knippenberg and Schippers, 2007), which would have firm-level implications. The implications could be particularly relevant for small firms whose top management teams often have greater opportunity to form the course of their firms than teams of large firms (Eisenhardt, 2013).

These findings are promising as metacognitive knowledge and experience seem to have direct implications for firms. Although this study’s sample was small and the majority of the participant firms had small teams, it does not lessen the potential impacts of the team’s different metacognitive abilities. Rather, this study suggests that metacognitive knowledge and experiences have the potential to be further assessed and inform existing research on TMT diversity.

Furthermore, the analysis of control variables has afforded important insights, one of which is into the association between metacognitive and demographic diversity. As observed, demographic attributes were associated differently with metacognitive knowledge and experience diversity. Examining these associations allowed this research to provide further evidence that proxy assumption (i.e. demographics as proxies of managerial cognition) does not hold in reality (Nielsen, 2010). Although examining the demographic attributes of managers would be insightful since they represent managers’ knowledge accumulations from previous experiences (Kaplan, 2011), treating them as a

proxy of underlying attributes such as cognition may be misleading. Accordingly, this study contributed to the discussion on the proxy role of demographics.

In addition to including the cognitive construct, this study examined the moderating role of behavioral integration and mediating role of entrepreneurial orientation to deepen the understanding of the role of TMT metacognitive diversity in firm performance. The focus on the moderating role of team behavioral integration has revealed when team members' mutual interactions and collaboration could be expected to be beneficial or otherwise.

Drawing from the entrepreneurship literature, this study examined the mediating role of entrepreneurial orientation components: innovativeness, risk taking, and proactiveness. Treating entrepreneurial orientation components individually has afforded this research a more explanatory power and nuanced understanding of how metacognitive diversity (experience and knowledge) impacts firm performance through the firm's entrepreneurial behavior. In addition, this study contributed to the existing discussion on the dimensionality of the entrepreneurial orientation construct by empirically showing that managers make a distinction among its components.

This study connected entrepreneurship literature with the notion of upper echelons. In creating this link, this study developed a theory about how differences among a team of top managers with respect to their metacognitive abilities lead to entrepreneurial orientation as an important determinant of firm performance. Unlike existing entrepreneurship research which has mainly focused on an individual level of analysis (e.g. Baron, et al., 2013; Mukherji, et al., 2011), this study focused on the team level. Given that entrepreneurship scholars have primarily focused on the performance implications of entrepreneurial orientation rather than its antecedents (Baron, et al., 2013; Miller, 2011; Miller and Le Breton-Miller, 2011; Rosenbusch, et al., 2013), this study

contributed to this side of entrepreneurship research by explaining the entrepreneurial orientation from a TMT perspective. It provided evidence indicating that TMT metacognitive ability is related to the adoption of certain dimensions of entrepreneurship orientation.

Furthermore, upper echelons research has emphasized the importance of considering the nature of interaction among TMT members, known as “team process” (Ling, et al., 2008), in the understanding of the TMT and its impacts. Entrepreneurship research does not seem to have paid adequate attention to this notion. Bearing in mind the dynamic and uncertain nature of the entrepreneurial tasks, team processes may yield worthwhile insights into how team members’ individual entrepreneurial attitude and behavior convert to the team’s propensity for entrepreneurial activities. This study underlined this issue by focusing on TMT behavioral integration as one of the major TMT processes and illustrated how the interaction effects of team metacognitive diversity and behavioral integration contribute to entrepreneurial orientation.

In conclusion, the theoretical discussion and empirical results of this study point to the importance of examining metacognition at the team level. This study suggests that future upper echelons research may benefit from the concept of metacognition and its reliable measure to develop a better understanding of TMTs and their behavior in organizational strategy and performance. The importance of such research also extends to entrepreneurship literature in which the antecedents of firm entrepreneurial behavior and actions have been less studied, particularly from the upper echelons perspective.

7.4 Managerial Implications

Diversity is a fact of today’s organizations (Homan, et al., 2008). Managing it and turning it into an asset has become a priority for organizations in order to reinforce their competitiveness (Kearney, et al., 2009). Metacognitive knowledge and experience are

important cognitive resources that are beneficial for a wide range of a firm's activities, particularly uncertain and novel ones. Having multiple metacognitive resources which are diverse in nature requires individual top managers to be aware of their own metacognition. This may help them to better recognize their own ability to engage in the firm's decision-making and action. Firms also need to take the importance of such abilities among their key decision-makers into account.

While some personality traits are beyond the control of both managers and entrepreneurs (Fini, et al., 2012), metacognition could be developed through training (Nambisan and Baron, 2012; Schmidt and Ford, 2003). Accordingly, firms should be aware of this and try to instill such training in their managerial practices. Several techniques could be used to strengthen managers' metacognition such as mental contrasting and implementation intentions (Nambisan and Baron, 2012). Supplementing such techniques with diversity practices aimed at lessening the negative consequences associated with team diversity (Bell, et al., 2011) could make top managers appreciate each other's abilities and thereby help the firm to build a competent and high-performing team. Furthermore, since the diverse metacognitive abilities of managers were shown to be beneficial for the team's innovativeness, designing and developing information-processing routines would help to exploit the team members' diverse points of view which may stem from their different metacognitive abilities (Wei and Wu, 2013).

Top managers' metacognition could be an important factor in TMT development. It could also be considered as a factor in the selection and recruitment policies of the firm. Given the available methods of gaining data on managers' metacognitive abilities, like the quantitative measures used in this study, firms may use them to evaluate such abilities within their top teams. This could be particularly important for small firms whose top

managers' abilities are the core of their success given their limited and low-quality resources (Holcomb, Holmes, and Connelly, 2009).

Managing teamwork at the top is rather a challenging task (Wei and Wu, 2013). As pointed out by Carmeli et al. (2011:400), "TMTs have unique features compared to other groups in organizations because TMT members deal with the firm responsibilities individually as senior executives, and interdependently as members of the firm's top decision-making team." Given such responsibilities, top managers should recognize how their interactions and collaborations impact task performance (Carmeli, 2008). CEOs as the people responsible for motivating and directing the TMT members in SMEs (Cao, et al., 2010) should be aware of the interaction and collaboration of their fellow top managers. They should facilitate a co-operative climate which is beneficial for the sharing of task-relevant information, where team members do not feel threatened or annoyed by diversity (Kearney, et al., 2009) in their metacognitive abilities. In this respect, firms should select CEOs who are able to pursue their fellow top managers to work collaboratively and eliminate any feelings of threat or indifference (Wei and Wu, 2013).

It has been argued that the survival of SMEs depends on their ability to pursue entrepreneurial activities (Real, et al., 2012). Managing such activities, however, is a challenging task (Wales, et al., 2011). This study found that while innovativeness and proactiveness are beneficial, risk taking negatively impacts the performance of SMEs. Proactive firms better perceive and recognize the opportunities and resources existing within an industry (Tang, et al., 2010). Similarly, innovativeness is associated with higher brand equity, attracting highly skilled employees (Rosenbusch, et al., 2011) and superior growth rate accordingly (Casillas and Moreno, 2010).

These favorable effects point to important managerial implications. Performance improvement at firm level may require top managers to be cognizant of the management

of their entrepreneurial activities in order to suppress the negative effects of their risky decisions while maintaining the focus on their innovative and proactive behavior (Kreiser, et al., 2013). This means that they should manage the entrepreneurial orientation dimensions individually (Kollmann and Stöckmann, 2012). This could, for instance, be done by a careful risk analysis. Top managers would benefit from consciously adjusting the firm's context with their interpretations of environmental changes in their entrepreneurial decision-making (Plambeck, 2012). They need to create and support an appropriate organizational atmosphere (Escribá-Esteve and Montoro-Sánchez, 2012) where innovating and initiating competitive actions are perceived to be both desirable and feasible (Fini, et al., 2012). High-quality communication between CEOs and other top managers allows more viewpoints to be exchanged and thereby more creative strategies are made (Cao, et al., 2010).

As qualitative findings showed, and consistent with the argument of Kollmann and Stöckmann (2012), managers need to pay focused attention to being innovative and proactive while considering aligning their firm's level of risk taking with the available resource base and the actual goals of the firm. Entrepreneurial orientation could be developed over time through consistent investment in resources (Lechner and Gudmundsson, 2012). This is particularly important for SMEs which have limited resources (Anderson and Eshima, 2013) and often compete in niche markets where potential growth can be restricted (Lechner and Gudmundsson, 2012).

Additionally, the analysis of the control variable of family ownership showed that family firms are typically reluctant to pursue entrepreneurial activities. For these firms to benefit from entrepreneurial orientation they should be more welcoming to non-family TMT members who bring fresh ideas and perspectives (Cruz and Nordqvist, 2012; Sciascia, et al., 2013).

Innovativeness and partly proactiveness are more likely to succeed in a climate where managers exhibit behavioral integration. As pointed out by Wales et al. (2011:899), “top managers develop their firm’s entrepreneurial strategy, communicate it within their organization, and watch as entrepreneurial behavior begins to blossom throughout their firm.” Hence, top managers need to know that their mutual interaction and collaboration could help them to better communicate and develop entrepreneurial strategies with other relevant firm actors such as middle managers and non-managerial employees whose entrepreneurial orientation-related attitudes and behavior are important for pursuing entrepreneurial initiatives (Wales, et al., 2011). It also calls for a better development of channels between managers and employees to encourage effective implementation of entrepreneurial activities throughout the organization (Engelen, et al., 2012). In this respect, top managers need to know that they are responsible for managing the interface with middle managers and other employees (Raes, et al., 2011) who are more likely to notice opportunities in daily business and implement strategies (Engelen, et al., 2012; Wales, et al., 2011).

These findings also have some implications for policymakers. Given the role of SMEs in economic and technological development (Rosenbusch, et al., 2011), policymakers in the small business sector should be aware of the importance of entrepreneurial activities in these firms’ growth and performance. They should set proper policies, programs such as consultancy and training (Shinnar, Giacomini, and Janssen, 2012), and incentives to support and encourage these firms to innovate and initiate and thereby facilitate their success. By improving access to resources, policymakers can create a better environment for these firms to perform in (Rosenbusch, et al., 2013). New ventures are often started by entrepreneurial teams rather than single entrepreneurs (Schjoedt, et al., 2013), thus setting

proper training for the management of their teamwork could enhance their survival and growth.

7.5 Limitations and Future Research Directions

Several limitations of this study might open directions for future research. From a content perspective, future upper echelons research may benefit from the concept of metacognition and examining its role in different team- and firm-level outcomes such as strategic decision- making. Future work might also look at the differences among top managers with respect to other psychological factors such as managerial personality and values.

While this study examined TMT behavioral integration, integrating other important dimensions of team behavior and processes such as communication frequency, debate, and task conflict with the concept of metacognition might offer new insights. More specifically, since TMT behavioral integration seemed insufficient to make teams confident in dealing with the uncertainty associated with risky situations, it might be interesting to examine which aspects of team mechanisms and processes form or influence team risk-taking behavior.

This study examined entrepreneurial orientation as one of the most important concepts in the entrepreneurship literature (Slevin and Terjesen, 2011; Wales, et al., 2011); however, it agrees that there are other potential mediators that deserve consideration in future research. In this respect, future work can benefit from other aspects of firms' entrepreneurial behavior and activities such as opportunity evaluation. Other relevant mediators such as firm strategy could also provide important implications. Although it was beyond the scope of this study, it would be insightful to undertake a more detailed investigation into the effects of entrepreneurial orientation on performance by

incorporating mediators and moderators such as firms' internal and external factors (e.g. resources and environmental conditions).

From a methodological point of view, while this study's sample is relatively small, it was, nevertheless, large enough to yield sufficient statistical power to examine the hypotheses. Although small samples are not uncommon in TMT research (van Knippenberg, et al., 2011), future work with a larger sample size may offer stronger implications. Moreover, as pointed out by Buyl et al. (2011a:172), the statistical power of examining moderation and mediation effects in field settings is low. Future research with larger samples is therefore needed to corroborate this study's findings.

This study's sample consisted of SMEs. Using these firms has afforded a greater possibility of variance in the exercise of entrepreneurial as well as administrative management styles (Bradley, et al., 2011). Unlike SMEs, large firms typically have more layers of management (Brettel and Rottenberger, 2013), thus their TMTs may need other levers to direct the firms' entrepreneurial activities and performance (Alexiev, et al., 2010; Fini, et al., 2012). It would be interesting to investigate whether the findings also hold true for large firms or yield distinct results.

Similar to all cross-sectional research, this study could not make strong claims about the causal relationships proposed in the study's conceptual model. Future work could address this limitation through a longitudinal research design. Longitudinal research could also deal with the problem of endogeneity and explore changes in TMT diversity over time (Talke, et al., 2011). Collecting data on the study constructs over time and using lagged performance would lessen the concerns regarding reverse causality (Engelen, et al., 2012).

This study used a subjective measure of the performance of SMEs. Although there is evidence that subjective measures of performance significantly correlate with objective

measures (Wei and Wu, 2013), future research is likely to benefit from using objective performance data to bear out the confidence in this study's findings. Another limitation relates to common-method bias. This study attempted to lessen this bias by collecting data from different sources —TMT members and CEOs—as well as performing Harman's single factor test to assess the existence and severity of this bias in this study. The results of the empirical test revealed that common-method bias did not significantly impact the findings.

Although this study conducted some semi-structured interviews, they were not helpful for examining absolute differences among top managers with respect to their metacognitive abilities. Future research may apply alternative methods, such as in-depth case studies, to gain more insights into this study's proposed relationships and accordingly add richness to the findings.

Finally, the characteristics of entrepreneurship differ across countries (Cruz and Nordqvist, 2012; Sciascia, et al., 2013). Variations in culture and policies may impact entrepreneurial behavior and success (Grande, et al., 2011; Kreiser, et al., 2010). Further evidence from other countries, therefore, would enhance the generalizability of the findings and validate the conclusions.

7.6 Conclusion

This research was a first attempt to integrate the concept of metacognition into the upper echelons model and investigate its implications in the TMT diversity-firm performance relationship. By focusing on the concepts of metacognition and entrepreneurial orientation, this study suggested that connecting notions from different bodies of social science with the upper echelons perspective may shed new light on the role of TMT attributes and behavior in firm performance. Similarly, integrating insights

from the upper echelons theory with entrepreneurship research implies that other bodies of management research may benefit from the notion of upper echelons and examining how a team of key firm decision-makers collectively understand and perform the tasks.

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List of Appendices

Appendix 1. Ethics Committee's Approval Letter

21 May 2012

Dear Dr. Jo Rhodes

Re: Top management team diversity and process: Implications for SME entrepreneurial orientation. Ref. No. 5201200100(D)

Thank you for your recent correspondence. Your response has addressed the issues raised by the Faculty of Business & Economics Human Research Ethics Sub Committee, and you may now commence your research.

This research meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The National Statement is available at the following web site:

http://www.nhmrc.gov.au/files_nhmrc/publications/attachments/e72.pdf.

The following personnel are authorised to conduct this research:

Chief Investigator: Jo Rhodes

Other Personnel: Zahra Sadeghinejad Karkavandi

NB. STUDENTS: IT IS YOUR RESPONSIBILITY TO KEEP A COPY OF THIS APPROVAL EMAIL TO SUBMIT WITH YOUR THESIS.

Please note the following standard requirements of approval:

1. The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).
2. Approval will be for a period of five (5) years subject to the provision of annual reports.

Progress Report 1 Due: 21 May 2013

Progress Report 2 Due: 21 May 2014

Progress Report 3 Due: 21 May 2015

Progress Report 4 Due: 21 May 2016

Final Report Due: 21 May 2017

NB. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/for_ms

3. If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final Report and submit a new application for the project. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

4. All amendments to the project must be reviewed and approved by the Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/for_ms

5. Please notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that affect the continued ethical acceptability of the project.

6. At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University. This information is available at the following websites:

<http://www.mq.edu.au/policy/>

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project it is your responsibility to provide the Macquarie University's Research Grants Management Assistant with a copy of this email as soon as possible. Internal and External funding agencies will not be informed that you have final approval for your project and funds will not be released until the Research Grants Management Assistant has received a copy of this email.

If you need to provide a hard copy letter of Final Approval to an external organisation as evidence that you have Final Approval, please do not hesitate to contact the FBE Ethics Committee Secretariat, Yanru Ouyang, via yanru.ouyang@mq.edu.au or 9850 4826.

Please retain a copy of this email as this is your official notification of final ethics approval.

Yours sincerely

Alan Kilgore

Chair, Faculty of Business and Economics Ethics Sub-Committee

Appendix 2. Survey Questionnaire

Top management team members' Questionnaire

Each of the following six sections has specific instructions. Please read them carefully before answering the questions. Use the provided return envelope to send the completed questionnaire back. Return of the questionnaire will be regarded as consent to use the information for research purposes.

Section 1

The following statements are related to your knowledge and experience as a top-level manager. Please indicate the extent to which you agree with each of the following statements by circling the appropriate number, where 1 means you strongly disagree and 7 means you strongly agree.

	Strongly disagree			Neutral		Strongly agree	
	1	2	3	4	5	6	7
1. I think of several ways to solve a problem and choose the best one.	1	2	3	4	5	6	7
2. I challenge my own assumptions about a task before I begin.	1	2	3	4	5	6	7
3. I think about how others may react to my actions.	1	2	3	4	5	6	7
4. I find myself automatically employing strategies that have worked in the past.	1	2	3	4	5	6	7
5. I perform best when I already have knowledge of the task.	1	2	3	4	5	6	7
6. I create my own examples to make information more meaningful.	1	2	3	4	5	6	7
7. I try to use strategies that have worked in the past.	1	2	3	4	5	6	7
8. I ask myself questions about the task before I begin.	1	2	3	4	5	6	7
9. I try to translate new information into my own words.	1	2	3	4	5	6	7
10. I try to break problems down into smaller components.	1	2	3	4	5	6	7
11. I focus on the meaning and significance of new information.	1	2	3	4	5	6	7
12. I think about what I really need to accomplish before I begin a task.	1	2	3	4	5	6	7
13. I use different strategies depending on the situation.	1	2	3	4	5	6	7
14. I organize my time to best accomplish my goals.	1	2	3	4	5	6	7
15. I am good at organizing information.	1	2	3	4	5	6	7
16. I know what kind of information is most important to consider when faced with a problem.	1	2	3	4	5	6	7
17. I consciously focus my attention on important information.	1	2	3	4	5	6	7
18. My "gut" tells me when a given strategy I use will be most effective.	1	2	3	4	5	6	7
19. I depend on my intuition to help me formulate strategies.	1	2	3	4	5	6	7

Section 2

The following statements are related to the level of mutual and collective interactions among your firm's top managers. Please indicate the extent to which you agree with each of the following statements by circling the appropriate number, where 1 means you strongly disagree and 5 means you strongly agree.

In general, the top managers of my firm:

	Strongly disagree			Neutral		Strongly agree
20. Let each other know when their actions affect another team member's work.	1	2		3	4	5
21. Have a clear understanding of the job problems and needs of other team members.	1	2		3	4	5
22. Discuss their expectations of each other.	1	2		3	4	5
23. Volunteer to help some team members, who are busy, to manage their workload.	1	2		3	4	5
24. Are flexible about switching responsibilities to make things easier for each other.	1	2		3	4	5
25. Are willing to help each other complete job and meet deadlines.	1	2		3	4	5
26. Are effective in developing high-quality ideas.	1	2		3	4	5
27. Are effective in generating high-quality solutions.	1	2		3	4	5
28. Are effective in making decisions that require high levels of creativity and innovativeness.	1	2		3	4	5

Section 3

In this section, two statements (on the right and left) are given. Please circle the number which you believe best describes the orientation of your firm. Circle number "1" if the statement on the left side best describes your reaction to the item. Circle number "7" if the statement on your right side best describes your reaction to the item. Circle any number between if your answer falls between the two statements.

In general, the top managers of my firm favour...

29. A strong emphasis on the marketing of tried and true products or services.	1	2	3	4	5	6	7	A strong emphasis on R&D, technological leadership and innovation.
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How many new lines of products or services has your firm marketed during the past three years?

30. No new lines of product or services.	1	2	3	4	5	6	7	Very many new lines of products or services.
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31. Changes in product or service lines have been mostly of a minor nature.	1	2	3	4	5	6	7	Changes in product or service lines have usually been quite dramatic.
---	---	---	---	---	---	---	---	---

In dealing with its competitors, my firm....

32. Typically responds to actions which competitors initiate.	1	2	3	4	5	6	7	Typically initiates actions to which competitors then respond.
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33. Is very seldom the first business to introduce new products/services, administrative techniques, operating technologies, etc.	1	2	3	4	5	6	7	Is very often the first business to, introduce new products/services, administrative techniques, operating technologies, etc.
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34. Typically seeks to avoid competitive clashes, preferring a “live-and-let-live” posture.	1	2	3	4	5	6	7	Typically adopts a very competitive, “undo-the-competitors” posture.
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In general, the top managers of my firm have...

35. A strong proclivity for low risk projects (with normal and certain rates of return).	1	2	3	4	5	6	7	A strong proclivity for high risk projects (with chances of very high returns).
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In general, the top managers of my firm believe that...

36. Owing to the nature of the environment, it is best to explore it gradually via cautious, incremental behavior.	1	2	3	4	5	6	7	Owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives.
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When confronted with decision making situations involving uncertainty, my firm...

37. Typically adopts a cautious, “wait-and-see” posture in order to minimize the probability of making costly decisions.	1	2	3	4	5	6	7	Typically adopts a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities.
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Section 4

Please indicate the extent to which you agree with each of the following statements as it applies to your firm’s environment. In rating your firm’s environment, where relevant, please consider not only the economic but also the social, political, and technological aspects of the environment. Please circle the appropriate number, where 1 means you strongly disagree and 5 means you strongly agree.

	Strongly disagree			Neutral			Strongly agree
	1	2	3	4	5		
38. Very dynamic, changing rapidly in technical, economic, and cultural dimensions.	1	2	3	4	5		
39. Very risky, one false step can mean the firm's undoing.	1	2	3	4	5		
40. Very rapidly expanding through the expansion of old markets and the emergence of new ones.	1	2	3	4	5		
41. Very stressful, exacting, hostile, hard to keep afloat.	1	2	3	4	5		

Section 5

The following statements relate to your firm’s performance. Please circle the appropriate number, where 1 means “much worse” and 5 means “much better”.

Compared to my firm’s main competitors:

	Much worse			Same			Much better
	1	2	3	4	5		
42. My firm’s return on investment over the last three years has been	1	2	3	4	5		
43. My firm’s return on sales over the last three years has been	1	2	3	4	5		

44. My firm's profit growth over the last three years has been	1	2	3	4	5
45. My firm's return on assets over the last three years has been	1	2	3	4	5
46. My firm's overall efficiency of operations over the last three years has been	1	2	3	4	5
47. My firm's sales growth over the last three years has been	1	2	3	4	5
48. My firm's market share growth over the last three years has been	1	2	3	4	5
49. My firm's cash flow from operations over the last three years has been	1	2	3	4	5
50. My firm's overall reputation over the last three years has been	1	2	3	4	5

Section 6

Demographics: the following questions are related to your personal background. Please tick the appropriate answer.

51. What is your gender?

- ☐ Male
- ☐ Female

52. What is your age?

- ☐ Under 30
- ☐ 30-39
- ☐ 40-49
- ☐ 50-59
- ☐ 60 and over

53. Please indicate the highest level of education you have completed:

- ☐ High school or less
- ☐ College including TAFE
- ☐ Bachelor degree
- ☐ Master degree
- ☐ Doctoral degree

54. In which area did you achieve your final degree?

- ☐ Economics and business administration
- ☐ Law
- ☐ Technical education (engineering)
- ☐ Science
- ☐ others

55. How long have you been working with your current team?

- ☐ Less than 1 year
- ☐ 1–2 years
- ☐ 2–5 years
- ☐ 5–10 years
- ☐ More than 10 years

56. How many years of experience do you have in the industry in which your current firm operates?

- ☐ Less than 1 year
- ☐ 1–2 years
- ☐ 2–5 years
- ☐ 5–10 years
- ☐ More than 10 years

57. Do you have previous work experience in an industry different from the one in which your current firm operates?

- ☐ Yes
- ☐ No

58. What is your functional specialty?

- ☐ Marketing and sales
- ☐ Information system
- ☐ Finance
- ☐ Accounting
- ☐ General Management
- ☐ Research and Development
- ☐ Personnel
- ☐ Operations
- ☐ General Counsel/Secretary
- ☐ Others

59. Please indicate your years of previous work experience in each of following functions (if any).

Marketing and sales	.....Years
Information system	.....Years
Finance	.....Years
Accounting	.....Years
General Management	.....Years
Research and Development	.....Years
Personnel	.....Years
Operations	.....Years
General Counsel/Secretary	.....Years
Others	.....Years

End of Questionnaire

Thank You for Your Participation

CEO Questionnaire

Each of the following six sections has specific instructions. Please read them carefully before answering the questions. Use the provided return envelope to send the completed questionnaire back. Return of the questionnaire will be regarded as consent to use the information for research purposes.

Section 1

The following statements are related to your knowledge and experience as a top-level manager. Please indicate the extent to which you agree with each of the following statements by circling the appropriate number, where 1 means you strongly disagree and 7 means you strongly agree.

	Strongly disagree			Neutral			Strongly agree	
	1	2	3	4	5	6	7	
1. I think of several ways to solve a problem and choose the best one.	1	2	3	4	5	6	7	
2. I challenge my own assumptions about a task before I begin.	1	2	3	4	5	6	7	
3. I think about how others may react to my actions.	1	2	3	4	5	6	7	
4. I find myself automatically employing strategies that have worked in the past.	1	2	3	4	5	6	7	
5. I perform best when I already have knowledge of the task.	1	2	3	4	5	6	7	
6. I create my own examples to make information more meaningful.	1	2	3	4	5	6	7	
7. I try to use strategies that have worked in the past.	1	2	3	4	5	6	7	
8. I ask myself questions about the task before I begin.	1	2	3	4	5	6	7	
9. I try to translate new information into my own words.	1	2	3	4	5	6	7	
10. I try to break problems down into smaller components.	1	2	3	4	5	6	7	
11. I focus on the meaning and significance of new information.	1	2	3	4	5	6	7	
12. I think about what I really need to accomplish before I begin a task.	1	2	3	4	5	6	7	
13. I use different strategies depending on the situation.	1	2	3	4	5	6	7	
14. I organize my time to best accomplish my goals.	1	2	3	4	5	6	7	
15. I am good at organizing information.	1	2	3	4	5	6	7	
16. I know what kind of information is most important to consider when faced with a problem.	1	2	3	4	5	6	7	
17. I consciously focus my attention on important information.	1	2	3	4	5	6	7	
18. My "gut" tells me when a given strategy I use will be most effective.	1	2	3	4	5	6	7	
19. I depend on my intuition to help me formulate strategies.	1	2	3	4	5	6	7	

Section 2

The following statements are related to the level of mutual and collective interactions among your firm's top managers .Please indicate the extent to which you agree with each of the following statements by circling the appropriate number, where 1 means you strongly disagree and 5 means you strongly agree.

In general, the top managers of my firm:

	Strongly disagree		Neutral		Strongly agree
20. Let each other know when their actions affect another team member's work.	1	2	3	4	5
21. Have a clear understanding of the job problems and needs of other team members.	1	2	3	4	5
22. Discuss their expectations of each other.	1	2	3	4	5
23. Volunteer to help some team members, who are busy, to manage their workload.	1	2	3	4	5
24. Are flexible about switching responsibilities to make things easier for each other.	1	2	3	4	5
25. Are willing to help each other complete job and meet deadlines.	1	2	3	4	5
26. Are effective in developing high-quality ideas.	1	2	3	4	5
27. Are effective in generating high-quality solutions.	1	2	3	4	5
28. Are effective in making decisions that require high levels of creativity and innovativeness.	1	2	3	4	5

Section 3

In this section, two statements (on the right and left) are given. Please circle the number which you believe best describes the orientation of your firm. Circle number "1" if the statement on the left side best describes your reaction to the item. Circle number "7" if the statement on your right side best describes your reaction to the item. Circle any number between if your answer falls between the two statements.

In general, the top managers of my firm favour...

- | | | |
|--|---------------------------|--|
| 29. A strong emphasis on the marketing of tried and true products or services. | 1 2 3 4 5 6 7 | A strong emphasis on R&D, technological leadership and innovation. |
|--|---------------------------|--|

How many new lines of products or services has your firm marketed during the past three years?

- | | | |
|---|---------------------------|---|
| 30. No new lines of product or services. | 1 2 3 4 5 6 7 | Very many new lines of products or services. |
| 31. Changes in product or service lines have been mostly of a minor nature. | 1 2 3 4 5 6 7 | Changes in product or service lines have usually been quite dramatic. |

In dealing with its competitors, my firm.....

- | | | |
|---|---------------------------|--|
| 32. Typically responds to actions which competitors initiate. | 1 2 3 4 5 6 7 | Typically initiates actions to which competitors then respond. |
|---|---------------------------|--|

33. Is very seldom the first business to introduce new products/services, administrative techniques, operating technologies, etc.	1 2 3 4 5 6 7	Is very often the first business to, introduce new products/services, administrative techniques, operating technologies, etc.
---	---------------------------	---

34. Typically seeks to avoid competitive clashes, preferring a “live-and-let-live” posture.	1 2 3 4 5 6 7	Typically adopts a very competitive, “undo-the-competitors” posture.
---	---------------------------	--

In general, the top managers of my firm have...

35. A strong proclivity for low risk projects (with normal and certain rates of return).	1 2 3 4 5 6 7	A strong proclivity for high risk projects (with chances of very high returns).
--	---------------------------	---

In general, the top managers of my firm believe that...

36. Owing to the nature of the environment, it is best to explore it gradually via cautious, incremental behaviour.	1 2 3 4 5 6 7	Owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives.
---	---------------------------	---

When confronted with decision making situations involving uncertainty, my firm...

37. Typically adopts a cautious, “wait-and-see” posture in order to minimize the probability of making costly decisions.	1 2 3 4 5 6 7	Typically adopts a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities.
--	---------------------------	---

Section 4

Please indicate the extent to which you agree with each of the following statements as it applies to your firm’s environment. In rating your firm’s environment, where relevant, please consider not only the economic but also the social, political, and technological aspects of the environment. Please circle the appropriate number, where 1 means you strongly disagree and 5 means you strongly agree.

	Strongly disagree			Neutral		Strongly agree
38. Very dynamic, changing rapidly in technical, economic, and cultural dimensions.	1	2	3	4	5	
39. Very risky, one false step can mean the firm's undoing.	1	2	3	4	5	
40. Very rapidly expanding through the expansion of old markets and the emergence of new ones.	1	2	3	4	5	
41. Very stressful, exacting, hostile, hard to keep afloat.	1	2	3	4	5	

Section 5

The following statements relate to your firm's performance. Please circle the appropriate number, where 1 means "much worse" and 5 means "much better".

Compared to my firm's main competitors:

	Much worse		Same		Much better
42. My firm's return on investment over the last three years has been	1	2	3	4	5
43. My firm's return on sales over the last three years has been	1	2	3	4	5
44. My firm's profit growth over the last three years has been	1	2	3	4	5
45. My firm's return on assets over the last three years has been	1	2	3	4	5
46. My firm's overall efficiency of operations over the last three years has been	1	2	3	4	5
47. My firm's sales growth over the last three years has been	1	2	3	4	5
48. My firm's market share growth over the last three years has been	1	2	3	4	5
49. My firm's cash flow from operations over the last three years has been	1	2	3	4	5
50. My firm's overall reputation over the last three years has been	1	2	3	4	5

Section 6

The following questions are related to your personal background, top management team size, and firm's ownership structure. Please tick the appropriate answer.

51. What is your gender?

- ☐ Male
- ☐ Female

52. What is your age?

- ☐ Under 30
- ☐ 30-39
- ☐ 40-49
- ☐ 50-59
- ☐ 60 and over

53. Please indicate the highest level of education you have completed:

- ☐ High school or less
- ☐ College including TAFE
- ☐ Bachelor degree
- ☐ Master degree
- ☐ Doctoral degree

55. How long have you been working with your current team?

- ☐ Less than 1 year
- ☐ 1–2 years
- ☐ 2–5 years
- ☐ 5–10 years
- ☐ More than 10 years

57. Do you have previous work experience in an industry different from the one in which your current firm operates?

- ☐ Yes
- ☐ No

58. What is your functional specialty?

- ☐ Marketing and sales
- ☐ Information system
- ☐ Finance
- ☐ Accounting
- ☐ General Management
- ☐ Research and Development
- ☐ Personnel
- ☐ Operations
- ☐ General Counsel/Secretary
- ☐ Others

54. In which area did you achieve your final degree?

- ☐ Economics and business administration
- ☐ Law
- ☐ Technical education (engineering)
- ☐ Science
- ☐ Others

56. How many years of experience do you have in the industry in which your current firm operates?

- ☐ Less than 1 year
- ☐ 1–2 years
- ☐ 2–5 years
- ☐ 5–10 years
- ☐ More than 10 years

59. Please indicate your years of previous work experience in each of following functions (if any).

Marketing and sales	..... Years
Information system	..... Years
Finance	..... Years
Accounting	..... Years
General Management	..... Years
Research and Development	..... Years
Personnel	..... Years
Operations	..... Years
General Counsel/Secretary	..... Years
Others	..... Years

60. How long have you been working as the CEO in this firm?
.....Years

61. What is the total number of your top management team members (i.e. the members who make or are involved with decisions affecting your firm's strategy)?Number of top-level managers

62. Is your firm family owned?

- ☐ Yes ☐ No

End of Questionnaire

Thank You for Your Participation

Appendix 3. Survey's Informed Consent Letters

Top Management Team Members' Information and Consent Form

Name of Project: TMT Diversity and Firm Performance: the Effects of Entrepreneurial Orientation and Team Process

Dear Top Management Team Member,

You are invited to participate in this research study which aims to understand how differences in top management team members' knowledge and experience influences their firm's performance, directly and indirectly, through their firm's entrepreneurial orientation and team members' interactions with each other.

This study is being conducted by Zahra Sadeghinejad (zahra.sadeghinejad@students.mq.edu.au, 0414757475) from the Macquarie Graduate School of Management to meet the requirements of the degree of Doctor of philosophy under the supervision of Dr Jo Rhodes (Jo.Rhodes@mgs.mq.edu.au, 0298509041).

If you decide to participate, you will be asked to take approximately 20-30 minutes to answer the attached questionnaire. The questionnaire consists of six sections with specific instructions given at the beginning of each section. To ensure confidentiality and anonymity a postage-paid return envelope is attached. Once you complete the questionnaire please use the envelope to send the questionnaire back. Return of the questionnaire will be regarded as consent to use the information for research purposes.

The benefits to your firm of participating in this research will be access to the research results. You will be able to use the results to provide input to your top management team's training and decision making policies. The results will be classified according to industry type which will give you a better picture of your firm and your competitors within and outside of your industry.

Any information or personal details gathered in the course of the study are confidential. No individual will be identified in any publication of the results. Only my supervisors and I will have access to the data. A summary of the results of the data can be made available to you on request by contacting me on 0414757475 or zahra.sadeghinejad@students.mq.edu.au. If you would also like to receive more information please feel free to contact me.

The ethical aspects of this study have been approved by the Macquarie University Human Research Ethics Committee. If you have any complaints or reservations about any ethical aspect of your participation in this research, you may contact the Committee through the Director, Research Ethics (telephone (02) 9850 7854; email ethics@mq.edu.au). Any complaint you make will be treated in confidence and investigated, and you will be informed of the outcome.

Researcher's Name: Zahra Sadeghinejad

Researcher's Signature:

Date:

CEO Information and Consent Form

Name of Project: TMT Diversity and Firm Performance: the Effects of Entrepreneurial Orientation and Team Process

Dear CEO,

You are invited to participate in this research study which aims to understand how differences in top management team members' knowledge and experience influences their firm's performance, directly and indirectly, through their firm's entrepreneurial orientation and team members' interactions with each other.

This study is being conducted by Zahra Sadeghinejad (zahra.sadeghinejad@students.mq.edu.au , 0414757475) from the Macquarie Graduate School of Management to meet the requirements of the degree of Doctor of philosophy under the supervision of Dr Jo Rhodes (Jo.Rhodes@mgsm.edu.au , 0298509041).

If you decide to participate, you will be asked to take approximately 20-30 minutes to answer the attached questionnaire. The questionnaire consists of six sections with specific

instructions given at the beginning of each section. As this is research around top management team members, you will be further asked to pass the questionnaires and postage-paid return envelopes to your top managers. I have enclosed extra questionnaires for your team members to complete. Top management team members can be defined as “top-level members who make or are involved with decisions affecting your firm’s strategy”. Return of the questionnaire will be regarded as consent to participate in this research.

The benefits to your firm of participating in this research will be access to the research results. You will be able to use the results to provide input to your top management team’s training and decision making policies. The results will be classified according to industry type which will give you a better picture of your firm and your competitors within and outside of your industry.

Any information or personal details gathered in the course of the study are confidential. No individual will be identified in any publication of the results. Only my supervisors and I will have access to the data. A summary of the results of the data can be made available to you on request by contacting me on 0414757475 or zahra.sadeghinejad@students.mq.edu.au. If you would also like to receive more information please feel free to contact me.

The ethical aspects of this study have been approved by the Macquarie University Human Research Ethics Committee. If you have any complaints or reservations about any ethical aspect of your participation in this research, you may contact the Committee through the Director, Research Ethics (telephone (02) 9850 7854; email ethics@mq.edu.au). Any complaint you make will be treated in confidence and investigated, and you will be informed of the outcome.

Researcher’s Name: Zahra Sadeghinejad

Researcher’s Signature:

Date:

Appendix 4. Interview Protocol

Interview Protocol

I would like to talk to you about your ability to draw on your past knowledge and experience to approach new tasks and decisions. Such ability helps individuals to gather and assign meaning to decision cues and accordingly generate multiple alternatives for framing a problem or decision task. This ability is called metacognitive ability (metacognitive knowledge and metacognitive experience) which develops over your lifetime and is unique to an individual. I am interested in understanding how you perceive this ability in yourself and particularly how you believe the existence of this ability among your top management team members impact the firm's entrepreneurial activities and overall performance.

Section 1:

1. Do you often rely on such abilities to perform the tasks (e.g. decision making)?
 - Probe:
 - Metacognitive knowledge
 - Metacognitive experience
2. Do you think that such abilities help you to carry out the tasks successfully and make better decisions for the firm?
 - Probe:
 - Metacognitive knowledge
 - Metacognitive experience
 - Firm performance
3. Do you believe that such abilities among your top management team members help the team to make better decisions and solve the problems for the firm?
 - Probe:
 - Functioning in the TMT
 - Diversity (advantages and disadvantages)
 - Firm performance

Section 2

4. Do you think such abilities help you to direct your firm towards innovative activities?
 - Probe
 - Functioning in the TMT
 - Diversity (advantages and disadvantages)
 - Innovativeness

5. Do you think such abilities help you to be more risk taker regarding the firm's activities?
 - Probe
 - Functioning in the TMT
 - Diversity (advantages and disadvantages)
 - Risk Taking
6. Do you think such abilities help you to direct your firm towards more proactive competitive behavior?
 - Probe
 - Functioning in the TMT
 - Diversity (advantages and disadvantages)
 - Proactiveness

Section 3

7. Do you think your top management team members work as a team?
 - Probe
 - TMT behavioral integration
8. Do you believe that collaboration and teamwork help your team to utilize better their different abilities to make decisions and solve the problems for the firm?
 - Probe
 - Metacognitive knowledge
 - Metacognitive experience
 - Firm performance

Section 4

9. Do you think undertaking innovative activities impacts the performance of your firm?
 - Probe:
 - Kind of innovation
 - Impact on different aspects of performance
10. Do you think taking risks impacts the performance of your firm?
 - Probe:
 - Areas and aspects of risk
 - Impact on different aspects of performance
11. Do you think being proactive impacts the performance of your firm?
 - Probe:
 - Types of proactive behavior
 - Impact on different aspects of performance

Appendix 5. Interviews' Informed Consent Letter

CEO's Interview Information and Consent Form

Name of Project: TMT Diversity and Firm Performance: the Effects of Entrepreneurial Orientation and Team Process

Dear CEO,

It will be much appreciated if you give 45 to 60 minutes of your time to participate in an interview. This interview is part of a doctoral study that aims to understand how differences in top management team members' knowledge and experience influences their firm's performance, directly and indirectly, through their firm's entrepreneurial orientation and team members' interactions with each other. This study is being conducted by Zahra Sadeghinejad (zahra.sadeghinejad@students.mq.edu.au, 0414757475) from the Macquarie Graduate School of Management to meet the requirements of the degree of Doctor of philosophy under the supervision of Dr Jo Rhodes (Jo.Rhodes@mgsm.edu.au , 0298509041).

The benefits to your firm of participating in this research will be access to the research results. You will be able to use the results to provide input to your top management team's training and decision making policies. The results will be classified according to industry type which will give you a better picture of your firm and your competitors within and outside of your industry. A summary of the results of the data can be made available to you on request by contacting me on 0414757475 or zahra.sadeghinejad@students.mq.edu.au. If you would also like to receive more information please feel free to contact me.

With your permission I would like to record your responses. Sample interview questions are attached for your perusal. Before we begin, please feel free to raise any question or issue you may want to share. Your participation in this interview is strictly voluntary and you can withdraw from the study at any time. Further, all information you provide will be confidential, secured, saved and coded with password-protection to ensure anonymity, safety and confidentiality. Only my supervisors and I will have access to the data and no individual will be identified in any publication of the results.

The ethical aspects of this study have been approved by the Macquarie University Ethics Committee. If you have any complaints or reservations about any ethical aspect of your participation in this research, you may contact the Committee through the Director, Research Ethics (telephone (02) 9850 7854; email ethics@mq.edu.au). Any complaint you make will be treated in confidence and investigated, and you will be informed of the outcome.

Given this guideline please provide your permission for the following items:

- I agree to participate in this research, knowing that I can withdraw from further participation in the research at any time without consequence. I have been given a copy of this form to keep.
- I agree to the interview session being tape recorded.
- Data collected from the interview will be used in reports and publications. Quotations and data will not be identifiable to any interviewee in reports or publications.

Participant's Name:

Participant's Signature:

Date:

Investigator's Name:

Investigator's Signature:

Date:

I, _____ have read (or, where appropriate, have had read to me) and understand the information above and any questions I have asked have been answered to my satisfaction.

Top Management Team Members' Interview Information and Consent Form

Name of Project: TMT Diversity and Firm Performance: the Effects of Entrepreneurial Orientation and Team Process

Dear Top Management Team Member,

It will be much appreciated if you give 45 to 60 minutes of your time to participate in an interview. This interview is part of a doctoral study that aims to understand how differences in top management team members' knowledge and experience influences their firm's performance, directly and indirectly, through their firm's entrepreneurial orientation and team members' interactions with each other. This study is being conducted by Zahra Sadeghinejad (zahra.sadeghinejad@students.mq.edu.au, 0414757475) from the Macquarie Graduate School of Management to meet the requirements of the degree of Doctor of philosophy under the supervision of Dr Jo Rhodes (Jo.Rhodes@mgsm.edu.au , 0298509041).

The benefits to your firm of participating in this research will be access to the research results. You will be able to use the results to provide input to your top management team's training and decision making policies. The results will be classified according to industry type which will give you a better picture of your firm and your competitors within and outside of your industry. A summary of the results of the data can be made available to you on request by contacting me on 0414757475 or zahra.sadeghinejad@students.mq.edu.au. If you would also like to receive more information please feel free to contact me.

With your permission I would like to record your responses. Sample interview questions are attached for your perusal. Before we begin, please feel free to raise any question or issue you may want to share. Your participation in this interview is strictly voluntary and you can withdraw from the study at any time. Further, all information you provide will be confidential, secured, saved and coded with password-protection to ensure anonymity, safety and confidentiality. Only my supervisors and I will have access to the data and no individual will be identified in any publication of the results.

The ethical aspects of this study have been approved by the Macquarie University Ethics Committee. If you have any complaints or reservations about any ethical aspect of your participation in this research, you may contact the Committee through the Director, Research Ethics (telephone (02) 9850 7854; email ethics@mq.edu.au). Any complaint you make will be treated in confidence and investigated, and you will be informed of the outcome.

Given this guideline please provide your permission for the following items:

- I agree to participate in this research, knowing that I can withdraw from further participation in the research at any time without consequence. I have been given a copy of this form to keep.
- I agree to the interview session being tape recorded.
- Data collected from the interview will be used in reports and publications. Quotations and data will not be identifiable to any interviewee in reports or publications.

Participant's Name:

Participant's Signature:

Date:

Investigator's Name:

Investigator's Signature:

Date:

I, _____ have read (or, where appropriate, have had read to me) and understand the information above and any questions I have asked have been answered to my satisfaction.

Appendix6. Inter-construct Correlation Matrix

17	18	19	20	21	22	23	24	25	Mean	S.D.
									3.91	.43
									3.65	.45
									3.01	.51
									2.97	.42
									3.48	.41
									3.88	.38
									.38	.26
									.37	.24
									-	-
									2.55	.89
									15.07	5.70
									56.12	21.757
									.15	.08
									.95	.03
									.78	.04
									.89	.03
									2.74	1.08
									3.01	.76
									.65	.02
									.47	.04
									.33	.12
									.15	.36
									.21	.40
									.18	.38
									.17	.37
									.30	.46
1.00										
0.053	1.00									
0.046	-0.082	1.00								
0.076	-0.02	0.03	1.00							
0.014	0.015	0.06	0.01	1.00						
0.016	-0.017	0.011	0.001	-0.018	1.00					
0.017	-0.019	0.012	0.013	-0.013	0.002	1.00				
0.022	-0.012	0.011	0.019	0.014	0.013	0.001	1.00			
0.044	-0.034	0.013	0.011	0.014	0.014	0.003	0.021	1.00		
0.037	-0.011	0.017	0.013	0.015	0.017	0.002	0.022	-0.0231		

6	7	8	9	10	11	12	13	14	15	16
1.00										
0.33	1.00									
0.31	0.212	1.00								
-0.071	0.071	0.09	1.00							
0.035	0.029	0.03	0.03	1.00						
0.006	0.124	0.02	0.068	0.029	1.00					
0.19	0.19	0.18	-0.098	0.106	0.23	1.00				
0.077	0.02	0.18	0.004	0.08	0.05	0.074	1.00			
-0.038	0.06	0.05	0.083	0.027	0.043	0.023	0.07	1.00		
0.15	0.18	0.19	0.03	0.06	0.074	0.065	0.06	0.07	1.00	
0.13	0.03	0.07	0.01	0.09	0.057	0.061	0.09	0.04	0.011	1.00
0.071	0.02	0.03	0.08	0.083	0.03	0.075	0.091	0.08	0.02	0.056
-0.029	-0.04	-0.03	0.07	0.055	0.04	0.066	0.024	0.04	0.057	0.034
0.06	0.19	0.18	0.039	0.03	0.07	0.046	0.06	0.016	0.09	0.04
0.18	0.06	0.05	-0.045	0.1	0.042	0.03	0.01	0.031	0.04	0.03
0.09	0.01	0.02	0.01	0.05	-0.10	0.052	0.01	0.062	0.01	0.01
0.007	0.001	0.003	0.001	0.009	0.007	0.001	0.003	0.005	0.003	0.001
0.016	0.001	0.006	0.005	0.001	0.006	0.001	0.006	0.001	0.006	0.001
0.001	0.002	0.001	0.012	0.002	0.001	0.002	0.001	0.003	0.001	0.002
0.004	0.019	0.005	0.009	0.003	0.004	0.009	0.006	0.003	0.004	0.003
0.009	0.003	0.009	0.004	0.003	0.009	0.003	0.006	0.003	0.007	0.003

factor	1	2	3	4	5
BI	1.00				
Inn	0.17	1.00			
Risk	0.05	0.181	1.00		
Pro	0.18	0.17	0.13	1.00	
Uncertainty	0.19	0.21	0.15	0.16	1.00
perform	0.21	0.33	-0.36	0.33	-0.19
MGKD	0.20	0.29	-0.052	0.39	0.035
MGED	0.18	0.25	-0.21	0.16	-0.05
Family-owned	0.039	-0.023	-0.22	0.025	0.01
T-CEO	0.08	-0.024	0.049	-0.061	0.03
Firm-age	-0.088	-0.04	-0.053	-0.018	0.02
Firm-size	0.31	0.08	-0.071	-0.106	-0.056
TMT Age D	0.03	-0.118	0.087	-0.126	0.037
TMT Gender D	0.005	-0.144	-0.042	0.049	-0.04
Edu-level-D	-0.04	-0.048	-0.106	0.01	-0.029
Edu-Back-D	0.03	0.011	-0.087	0.09	0.07
Team-Ten	-0.001	0.057	0.069	0.193	0.09
team_ind_ave	0.13	0.03	0.022	0.025	-0.031
team_ind_d	0.058	0.03	0.045	0.028	0.08
intra_per_f_d	0.048	0.121	0.097	0.039	-0.013
dom_f_d	0.006	-0.015	-0.093	0.027	0.01
Industry 1	0.009	0.003	0.011	0.001	0.009
Industry 2	0.011	0.006	0.005	0.015	0.001
Industry 3	0.009	0.011	0.012	0.012	0.009
Industry 4	0.019	0.005	0.009	0.019	0.013
Industry 5	0.007	0.009	0.014	0.014	0.009

Appendix7. Interview Transcript

In compliance with the research's code of conduct, interviews' transcripts cannot be appended here. To obtain access to this file a written permission from the Macquarie University's Ethics Committee must be provided.

Appendix8. Interaction Effects: Path Analysis Product Terms for Moderation

Table 34: Unstandardized Path estimates of model with interaction terms for moderation analysis

		Paths	Estimate	S.E.	C.R.
Inn	<---	MGKD	0.57	0.086	6.63
Risk	<---	MGKD	-0.11	0.085	-1.29
Pro	<---	MGKD	0.31	0.086	3.60
Inn	<---	MGED	0.26	0.089	2.92
Risk	<---	MGED	0.12	0.088	1.36
Pro	<---	MGED	-0.51	0.089	-5.73
Inn	<---	BI_X_MGKD	0.41	0.088	4.66
Risk	<---	BI_X_MGKD	0.02	0.087	0.23
Pro	<---	BI_X_MGKD	0.28	0.089	3.15
Inn	<---	BI_X_MGED	0.46	0.078	5.90
Risk	<---	BI_X_MGED	0.13	0.077	1.69
Pro	<---	BI_X_MGED	0.11	0.078	1.41
Inn	<---	BI	0.13	0.042	3.10
Risk	<---	BI	0.01	0.042	0.24
Pro	<---	BI	0.15	0.042	3.57
Performance	<---	Inn	0.23	0.086	2.67
Performance	<---	Risk	-0.25	0.087	-2.87
Performance	<---	Pro	0.24	0.085	2.82
Performance	<---	MGKD	0.35	0.088	3.98
Performance	<---	MGED	0.27	0.092	2.93
Performance	<---	BI_X_MGKD	0.44	0.091	4.84
Performance	<---	BI_X_MGED	0.39	0.09	4.33
Performance	<---	BI	0.09	0.043	2.09