



WORKING PAPER

ITLS-WP-16-10

The relationship between top management team (TMT) metacognition, entrepreneurial orientation and firm performance in Small and Medium Enterprises (SMEs)

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May 2016

ISSN 1832-570X

INSTITUTE of TRANSPORT and LOGISTICS STUDIES

The Australian Key Centre in
Transport and Logistics Management

The University of Sydney

Established under the Australian Research Council's Key Centre Program.

NUMBER: Working Paper ITLS-WP-16-10

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ABSTRACT: This study integrates entrepreneurial orientation and top management team (TMT) behavioural integration, as a mediator and moderator respectively, to determine the effect of TMT metacognition on firm performance in SMEs. Fifteen hundred SMEs were surveyed and 140 usable returns were used in this study. The result revealed that risk in entrepreneurial orientation is often associated with lower firm performance and innovativeness and proactiveness could be considered the mechanisms through which TMT metacognition contributes most to higher organisational performance. This finding is significant for SMEs, whose resources are limited, and TMT could consider less risky projects, but still maintaining its innovativeness and proactiveness, particularly in the niche market areas. Furthermore, the empirical result supported previous findings that top managers' abilities and behaviour collectively as a team could be seen as an important factor in their innovative and competitive outcomes in SMEs.

KEY WORDS: *Top management team (TMT), metacognition, entrepreneurial orientation, behavioural integration, SME performance*

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DATE: May 2016

1. Introduction

Strategic management studies have discussed extensively the role of top managers as a team (e.g. West 2007; Wei and Wu 2013) on organisational performance. Advocates of this approach argued that focusing on an entire team of top managers will provide stronger explanations of a firm's outcomes (Hambrick 2007). That is, 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 influences the performance of the firm (Colbert, Barrick and Bradley 2014). Due to the difficulties encountered in collecting psychological data in top management teams, Hambrick and Mason (1984) suggested that a top management team (TMT)'s demographic attributes (e.g. age, functional background, and education) can be used as useful proxies of their cognition and values. However, Wei and Wu (2013) argued that demographic attributes have been shown inadequate for understanding the cognition and perspectives of top managers. Hence, the cognitive and value input measurements of top management team on firm's performance remains a significant gap in current literature.

Recent effort in this area has shifted to focus on the influence of 'metacognition' of top management team on firm performance (Shepherd and Patzelt 2012, Baron et al. 2013). Metacognition refers to individuals' knowledge of, and control over, their own cognitive processes (Baron et al. 2013; Flavell 1979). It is 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). Metacognition 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).

Furthermore, it has been suggested that team collaboration and integration could also affect firm performance (Certo et al. 2006; Eesley, Hsu and Roberts 2013). In particular, it has been argued that team processes which explain team members' interactions guided toward task accomplishment

(Mathieu et al. 2008) needs to be in place to better comprehend the effects of team integration (Boone and Hendriks 2009). Based on this assumption, it is the intention of this study to adopt a contingency lens to examine the impact of the TMT metacognition on firms' performance, arguing that TMT behavioural integration may moderate this impact. TMT behavioural integration is defined as the extent to which TMT members engage in mutual and collective interaction (Hambrick 2007).

Furthermore, since there are differences in the performance management of SMEs and big organisations, the result of this study could provide a significant theoretical contribution on entrepreneurial orientation of TMT in SME's performance. That is, the relationship of metacognition diversity of TMT and entrepreneurial orientation of team members on SMEs performance can be determined.

2. Literature review

-Top Management Team (TMT) diversity

Top management team (TMT) diversity is defined as distributional differences among top management team members with respect to a common attribute. 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). Although some would argued that demographic diversity is a reasonable proxy of cognitive diversity (Hambrick, 2007, Nielsen, 2010), there is a lack of clarity in the findings on the relationship between TMT demographic diversity and performance (Nielsen and Nielsen, 2013). It has been argued that metacognition of team managers could be a better measurement of managers cognitive contribution (Baron and Henry, 2010; Kozhevnikov, 2007; Armstrong and Hird, 2009) and a significant differentiator that could be expected to have important firm-level implications (Wei and Wu, 2013).

3. Structure and Function of Metacognition

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). Cognition refers to the activities of thinking, knowing, and processing information (Armstrong and Hird, 2009:421). Metacognition is a higher-level heuristic applied by individuals to process information about their environment (Kozhevnikov, 2007). That is, the ability to regulate and control the use of their knowledge and experience in unfamiliar circumstances (Perfect and Schwartz, 2004).

It has been argued that metacognition consists of two primary functions: monitoring and control (Blume and Covin, 2011; Flavell, 1979). Metacognitive monitoring refers to “those processes that allow the individual to observe, reflect on, or experience his or her own cognitive processes” (Perfect and Schwartz, 2004:4). 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). Metacognitive control refers to the “conscious and non-conscious decisions that an individual makes based on the output of his or her monitoring processes” (Perfect and Schwartz, 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. 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 is 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 often refers to “one’s conscious and cognitive understanding of 1) people, 2) tasks, and 3) strategy” (Haynie, et al., 2010:222). ‘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. Metacognitive knowledge and experience develop over time and regulate the use of heuristics in making choices (Flavell, 1976; Haynie, et al., 2012).

Despite the general understanding that teams often produce better decision and result, it is still inconclusive on team metacognition on firm performance. This study has adopted the Flavell's (1987) metacognition diversity of 'knowledge' and 'experience' approach (Blume and Covin 2011; Haynie, et al., 2012) to examine the influence of top management team (TMT) metacognition on firm performance.

4. 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). Haynie and Shepherd (2009) employed the concept of metacognition to develop an inventory for measuring the cognitive adaptability of entrepreneurs. Haynie et al., (2010) suggested that metacognitive abilities are significant abilities for entrepreneurs who have to act under uncertainty. They 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. Similarly, Baron and Henry (2010) argued 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 the entrepreneurial activities (Haynie et al., 2010).

5. Entrepreneurial orientation and Performance

Entrepreneurial orientation has been widely acknowledged as an important construct to explain firm performance (Green, Covin, and Slevin, 2008; Li, et al., 2009). It has been argued that entrepreneurial oriented firms who are innovative, risk taking, and proactive, generally outperform firms who are not (Anderson and Eshima, 2013). The level of a firm's entrepreneurial orientation is related to its ability to effectively compete and perform. This is particularly true for SMEs whose survival depends on their ability to pursue entrepreneurial activities (Real, et al., 2014).

6. Behavioural Integration and firm performance

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). Amongst team processes, TMT behavioural integration has been argued to be an important one (Magni, et al., 2009). It captures three important interrelated elements of the TMT process, including "a team's (1) level of collaborative behaviour, (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 behavioural integration presents the best attempt to comprehend the TMT process (Barrick, et al., 2007).

Mooney and Sonnenfeld (2001) showed that behavioural integration is negatively associated with affective and cognitive conflict. The study of Li and Hambrick (2005) on 71 joint venture management groups showed that behavioural disintegration—the obverse of behavioural integration—led to poor performance. Carmeli and Schaubroeck (2006) showed that more behaviourally integrated TMTs make better-quality strategic decisions than less behaviourally integrated ones. Favourable effects of behavioural integration on human resource performance and economic achievements were found by Carmeli (2008). Hence, collaboration in top team managers and the effectiveness of their team integration could significantly affect the strategy, decisions and performance of the firm.

7. Small and Medium-sized Enterprises performance

Small to medium-sized enterprises (SMEs) are typically different from large firms in various ways (Terziovski, 2010). SMEs have limited access to resources such as financial capital. They do not often have their own brands or unique products, adequate marketing and finances, and market reputation. SMEs have been argued to face greater risks than their large counterparts (Camisón and Villar-López, 2010).

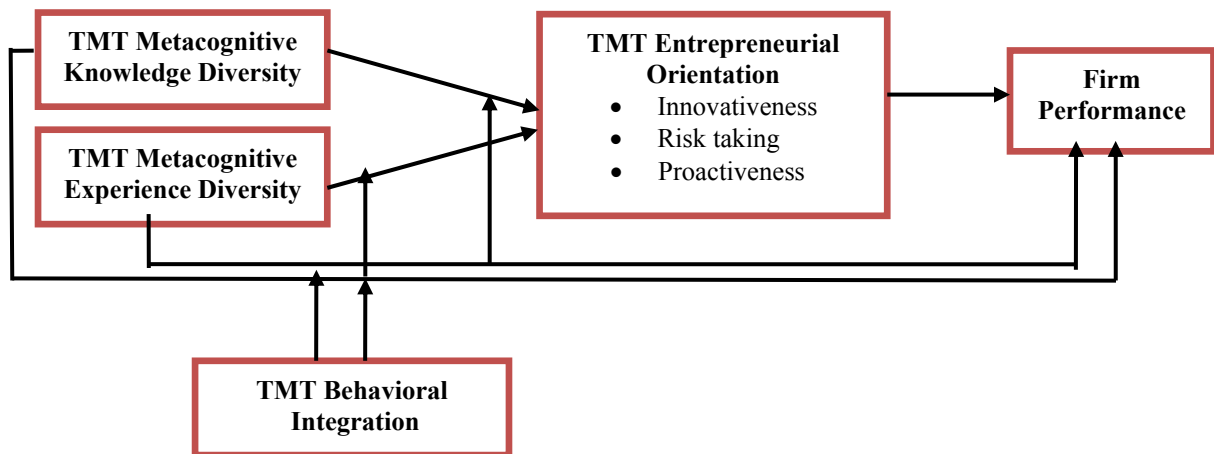
Despite these shortcomings, their simple and fluid nature and structure (Ling, et al., 2008; Terziovski, 2010) allow them to be more flexible to environmental events and move faster than large firms (Baker and Sinkula, 2009). In this respect, Chen and Hambrick (1995) showed that in initiating competitive challenges small firms are faster than large firms. More notably, their flexibility allows them to behave more entrepreneurially (Real, et al., 2014) 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.

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 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). They are less restricted by extraneous influences, thus the role of their top teams is more manifest than that of large firms. 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).

8. Conceptual framework

The conceptual model (Figure 1) below illustrates the relationships among TMT metacognitive knowledge and experience diversity, entrepreneurial orientation components (innovativeness, risk taking, and proactiveness), TMT behavioural integration, and firm performance. The dependent variable is firm performance. Entrepreneurial orientation and TMT behavioural integration are the mediating and moderating variables respectively.

Figure 1: Conceptual framework



9. Hypotheses

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 behaviourally integrated. A behaviourally 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). A behaviourally 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. Hence, the moderating effect of team integration on team metacognition and subsequent

performance could be significant. This is particularly important for SMEs who often depend primarily on their top team's ability to perform (Escribá-Esteve, et al., 2009; Ling, et al., 2008). Thus:

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

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

Although entrepreneurial orientation could be seen as a unidimensional construct, others have argued that there are three main components (innovativeness, risk taking, and proactiveness) (Brettel and Rottenberger, 2013). 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).

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. Specifically, it has been suggested that metacognitive knowledge and experience are important for the recognition and interpretation of innovative opportunities (Grégoire, et al., 2011). To effectively exchange those recognitions and act upon them, a team needs to be behaviourally integrated. 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. Thus:

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

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

Risk taking captures a firm's tendency towards bold and high-risk projects (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). It has been suggested that metacognitive knowledge and experience are important for effectively adjusting to changing environmental conditions (Haynie and Shepherd, 2009). 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.

Although limited resources in SMEs often face more uncertainty (Armario, Ruiz, and Armario, 2008) and subsequently their managers are more concerned regarding risky decisions (Plambeck, 2012), if the team is behaviourally integrated, their different metacognitive knowledge and experience could 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 behaviourally integrated.

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

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 has been suggested that metacognitive knowledge and experience are important in adapting to novel and new situations (Haynie and Shepherd, 2009). Initiating competitive actions is those novel situations where metacognitive knowledge and

experience could have important implications. Team behavioural 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). Given that being proactive requires managers to have a sharing culture (Tang, et al., 2010; Zhao, et al., 2011), a behaviourally 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.

Thus:

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

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

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). However, 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 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. Thus:

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

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).

Given the above, although SMEs due to their scarce resources may assess the issues more negatively (Plambeck, 2012), 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.

Proactiveness 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). 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). Thus:

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

10. Research Design

A quantitative approach was adopted to test the proposed relationships. To measure metacognitive knowledge and experience, Haynie and Shepherd's (2009) scale was adopted with an established reliability index of 0.726 and 0.718 respectively. Recent studies based on the same scale reported a reliability of 0.834 for metacognition knowledge (Haynie, et al., 2012) and a reliability of 0.74 for metacognition experience (Mitchell et al. 2011) respectively.

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). 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). Furthermore, a recent study of De Clercq et al. (2010) reported a reliability of 0.92. After collecting responses, they were aggregated at the team level. This study also employed an analysis of variance to examine the consistency of team members' responses (Simsek and Heavey, 2011, Souitaris and Maestro, 2010).

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), a reliability index of 0.87. Furthermore, Tang et al. (2010) reported the reliability of proactiveness ($\alpha = 0.65$), innovativeness ($\alpha = 0.78$) and risk taking ($\alpha = 0.78$) respectively.

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).

Simsek et al. (2005) scale, a reliability index of 0.85, was used to measure TMT behavioural integration. Other recent studies of Raes et al. (2013) and Carmeli et al. (2011) reported reliabilities of 0.91 and 0.93 respectively.

Relevant and important control variables were also included in this study. 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).

11. Data Collection and Analysis

The list of SMEs and their individual contacts were collected from Dun and Bradstreet, Australia. Dun and Bradstreet is the world's leading and longest-established business information company.

This study drew a random sample of 1,500 SMEs from this database. The questionnaires, along with the informed consent letters and postage-paid return envelopes, were addressed directly to the managing director (CEO) or director of the firms (data provided by Dun and Bradstreet). This study identified CEOs as the people who are most knowledgeable about their fellow top managers. They were then asked to distribute the questionnaires to their top team members. In order to ensure confidentiality and anonymity, postage-paid return envelopes were provided for team members (Simsek and Heavey, 2011; 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. Respondents were asked to identify whether they were CEO or senior executives. A pilot study was 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). Only minor corrections were made to wording of a few questions and there was no concern regarding the ambiguity of questions.

This study used structural equation modelling (SEM) within the AMOS software package to test the mediating model (Ling, et al., 2008). To test the moderating model, multigroup moderation analysis in AMOS was conducted. A total of 1,500 SMEs were sent the survey questionnaire and 168 firms returned the survey. 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. That is, a response rate of almost 9%.

12. Result

The participating firms operated in five industries were: 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 3.29 members.

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The result of this study revealed that all construct measurement models exhibit adequate fit (Table 1, 1a,1b). Two alternative models were created by confirmatory measurement. 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 ($\chi^2 = 1208.843$, GFI=.829, AGFI=0.806, IFI=0.888, TLI=0.865, and RMSEA=0.043). This provides evidence for the fitness of the hypothesized model.

Table 1a: 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	1208.843	443	2.73	0.829	0.806	0.888	0.865		0.043
Full Confirmatory Factor Model with EO as a first-order construct	1408.743	435	3.23	0.799	0.756	0.765	0.784		0.058

Table I: Fit Indices of Construct Measurement Models

Latent variable	χ^2	DF	CMIN/DF	GFI	AGFI	IFI	TLI	CFI	RMSEA
Behavioural Integration	24.18	25	.968	.963	.933	.999	.999		.001
Metacognitive knowledge diversity	50.19	33	1.52	.972	.953	.988	.987		.034
Metacognitive experience diversity	19.99	12	1.66	.987	.970	.985	.868		.039
Innovativeness	.595	1	.595	.997	.982	1.0	1.0		.001
Risk taking	1.77	1	1.77	.991	.944	.766	.860		.03

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Proactiveness	.358	1	.358	.999	.995	1.0	1.0	.001
Performance	26	27	.963	.963	.938	1.0	1.0	.001
Environmental Uncertainty	1.65	1	1.67	.959	.888	.826	.832	.03

Table 1b: Fit Indices among Alternative Measurement Nested Models

<i>fit indices among alternative measurement nested models</i>											
Nested Model	χ^2	Df	χ^2/DF	CFI	IFI	TLI	AGFI	RMSEA	Comparison	$\Delta \chi^2$	ΔDf
Model5:	1208.843	443	2/73	0.94	0.829	0.806	0.888	0.865	5 versus 4	48.8***	8
Model4:	1258.643	451	2.79	0.94	0.829	0.805	0.868	0.845	4 versus 3	30.7**	12
Model3:	1299.343	459	2/78	0.92	0.819	0.804	0.866	0.849	3 versus 2	29.65**	13
Model2: Covariates only	1318.995	472	2/77	0.91	0.812	0.802	0.866	0.839	2 versus 1	19.25**	5
Model 1: Mn : Null model	1338.243	477	2/78	0.91	0.809	0.801	0.859	0.834	-	-	-

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

According to Anderson and Gerbing (1988) approach, 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 results show significant differences between alternative models and suggest that Model 5 (the unconstrained alternative model (Mu)) has the best fit to the data. Thus, Model 5 (Mu) as the hypothesized model is most likely the appropriate model fitting data and this can be used in hypothesis testing (Table 1b).

Based on the mean of the imputed variable (Elbanna, et al., 2013), two groups represent top management teams with low (i.e. group 1) and high (i.e. group 2) degrees of behavioural integration were created for multigroup analysis in AMOS. A chi-square difference test was performed to detect whether the difference between these models is statistically significant to allow a comparison of moderation paths. The result showed that the chi-square difference is 20.844, degrees of freedom difference is 11, and the difference is significant at P-value=0.0350<0.05. The result indicated that

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several paths differ across different groups, implying the moderation effects. The relationship between TMT metacognitive knowledge diversity and firm innovativeness is significant in both teams with a low degree of behavioural integration ($B=0.21$, $P=0.01<0.05$) and teams with a high degree of behavioural 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, behavioural integration moderates the relationship between top management team metacognitive knowledge diversity and the degree of firm innovativeness.

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, 2010). Furthermore, because a number of paths between components of entrepreneurial orientation and firm performance were not moderated, a full sample, not multigroup samples, was loaded in AMOS. The result showed that there were a number of non-significant paths (i.e. $CR < 1.96$) (Table 2 & 2a).

Table 2: Fully Standardized Estimates of Multigroup Paths Analysis

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

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Table 2a: The Results of Bootstrapping Multigroup Mediation

Mediations in Multi-group SEM (moderated mediation)					
Direct Path	Direct Beta Without Mediation	Mediation Effects	Direct Beta W 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. 0.14 n.s.	No mediation No mediation
		I-P-R	0.25** 0.26***	0.23** 0.25**	Partial Partial
		Innovativeness	0.28*** 0.30***	0.28** 0.33**	Partial Partial
		Proactiveness	0.19* 0.22*	0.16 n.s. 0.15 n.s.	No mediation No mediation
MGED- Performance	0.4*** 0.42***	Risktaking	-0.22* -0.23*	-0.22* -0.24*	Partial Partial
		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. $p > 0.05$)

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 behavioural integration. It is also evident that this difference was 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 behaviourally 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 behavioural integration. This difference was 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 behaviourally 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 ($B=0.26$, $P<0.05$) behavioural integration. Furthermore, the increase in path significance caused by behavioural integration was 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 behaviourally 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 ($B=0.38$, $P<0.05$) behavioural integration. Furthermore, the moderating role of behavioural 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 behaviourally integrated,” is supported.

Hypothesis 5, “TMT metacognitive knowledge diversity will positively enhance the risk taking of SMEs when the team is behaviourally integrated,” is rejected. Multigroup path analysis showed that the relationship between TMT metacognitive knowledge diversity and risk taking was not significant regardless of the degree of team behavioural integration ($B=0.41$, $P=0.07>0.05$ for low BI, $B=0.41$, $P=0.08>0.05$ for high BI).

The results for hypothesis 6 suggested that the relationship between TMT metacognitive experience diversity and risk taking was significant but negative in both teams with a low degree of behavioural integration ($B=-.33$, $P<0.05$) and in those with a high degree of behavioural integration ($B=-.31$, $P<0.05$). Additionally the difference in path significance was negligible and not statistically

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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 behaviourally 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 behaviourally integrated.” It was found that the association between TMT metacognitive knowledge diversity and proactiveness was 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 behavioural integration and this difference in path significance is also statistically significant ($Z=2.75, P<0.05$). This indicates that behavioural 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 behaviourally integrated,” is rejected. Analysis shows that the association between TMT metacognitive experience diversity and proactiveness was not statistically significant for either TMTs with low ($B=0.13, P>0.05$) or high ($B=0.12, P>0.05$) degrees of behavioural 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. Table 3 provided a summary of the results of hypotheses testing. The study path model is illustrated in Figure 2.

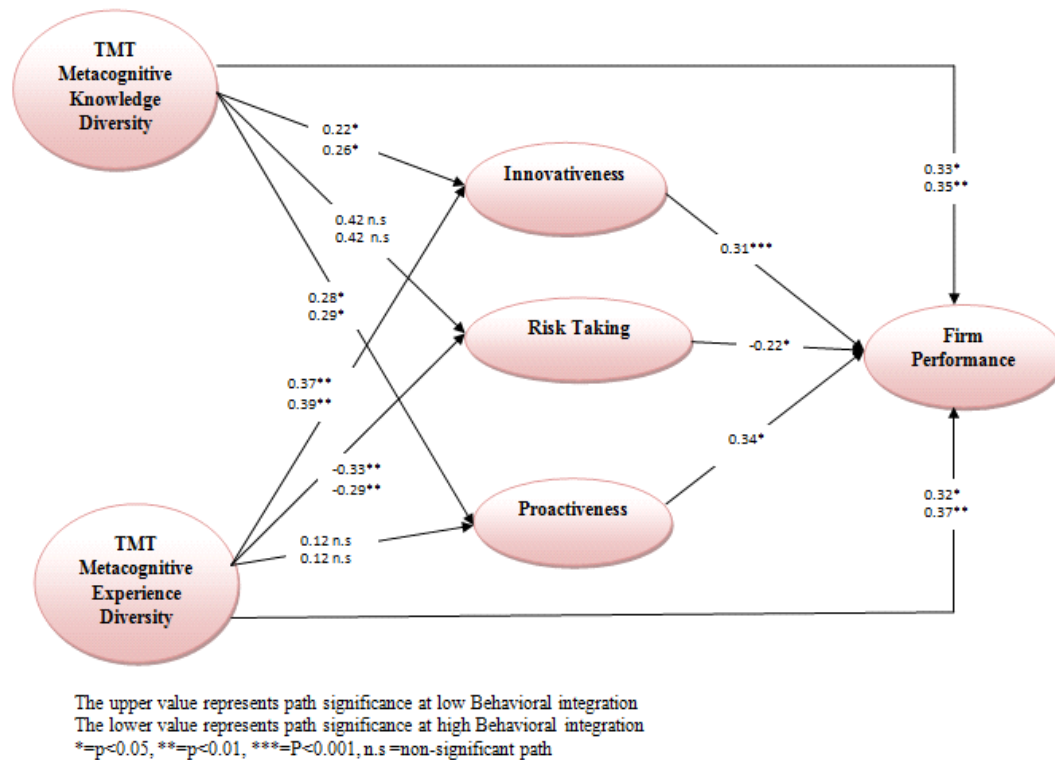
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Table 3: The Study Hypotheses and Results

Hypotheses	Results
H1: TMT metacognitive knowledge diversity will positively enhance the performance of SMEs when the team is behaviourally integrated.	Supported
H2: TMT metacognitive experience diversity will positively enhance the performance of SMEs when the team is behaviourally integrated.	Supported
H3: TMT metacognitive knowledge diversity will positively enhance the innovativeness of SMEs when the team is behaviourally integrated.	Supported
H4: TMT metacognitive experience diversity will positively enhance the innovativeness of SMEs when the team is behaviourally integrated.	Supported
H5: TMT metacognitive knowledge diversity will positively enhance the risk taking of SMEs when the team is behaviourally integrated.	Rejected
H6: TMT metacognitive experience diversity will positively enhance the risk taking of SMEs when the team is behaviourally integrated.	Rejected
H7: TMT metacognitive knowledge diversity will positively enhance the proactiveness of SMEs when the team is behaviourally integrated.	Supported
H8: TMT metacognitive experience diversity will positively enhance the proactiveness of SMEs when the team is behaviourally 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

Figure 2: Standardized Path Estimates



13. Discussion

The findings confirmed that positive firm performance could be explained by the composition of TMT members with respect to their metacognitive abilities. This finding is in line with previous research (Oslo, 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, 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 and accordingly its courses

of action and strategies. Given a team composed of managers with different metacognitive abilities, there would be various interpretations and assessments of the firm's strategies and actions.

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 (Harmancioglu, Grinstein, and Goldman, 2010), thus managers' individual metacognition could be more leveraged into the team decision-making. 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 behaviour" (Jackson, et al., 2003:813).

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.

Supporting the expectations, it was found that TMT behavioural 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 behavioural integration. This suggests that teams with a spirit of sharing and collaboration more effectively utilize and act upon their different metacognitive knowledge and experiences. Behavioural integration helps top managers to gain a good understanding of the situation they encounter and thereby reach a common premise in decision-making (Cameli, et al., 2010). Hence, the findings in this study have supported the theoretical expectation and suggested that TMT behavioural integration could provide similar positive result in firm performance as in big firms.

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The results in this study 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 behavioural integration. The positive moderation effects of TMT behavioural 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.

Both TMT metacognitive knowledge and experience diversity were positively associated with innovativeness. Given that top managers' interpretation efforts influence innovativeness (Plambeck, 2012), several studies have acknowledged the importance of metacognition in the pursuit of innovative activities (Grégoire, et al., 2011). These findings are specifically relevant for SMEs 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) supported 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 behavioural integration. Thus, behavioural 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 (Lubatkin, et al., 2006; Simsek, et al., 2005; Zahra and Wiklund, 2010) which found that behavioural integration was beneficial to the team's entrepreneurial behaviour such as product innovation. Furthermore, as behavioural 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 behaviourally integrated team with a holistic understanding of innovative projects is more apt to develop and manifest innovative attitudes and behaviour 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 (Casillas and Moreno, 2010; Kreiser, et al., 2013; Lechner and Gudmundsson, 2014; Rosenbusch, et al., 2011). Previous studies (Plambeck, 2012) have described small firms as more conservative than large firms and 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.

Risk taking, as the results showed, was negatively related to the performance of SMEs. This is in line with earlier studies which found that risk taking lowered their performance (Kollmann and Stöckmann, 2012; Kreiser, et al., 2013; Lechner and Gudmundsson, 2014). The entrepreneurial orientation dimension of risk taking has been theoretically depicted as a double-edged sword (Lechner and Gudmundsson, 2014). Specifically, risk-taking behaviour does not appear to represent a worthwhile attempt for small firms (Kreiser, et al., 2013). This may be the smaller size and accordingly resources, managers in small firms are less likely to be risk assuming than their large counterparts (Real, et al., 2014). This is a significant finding in relation to risk and performance in SMEs.

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 behaviour 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., 2014).

14. Conclusion

There are significant contributions based on the findings in this study. First, the empirical findings in this study support previous result that different metacognitive abilities of managers (knowledge and experience) could provide better team decision-making and problem solving resulting in greater firm performance. However, since SMEs have a smaller number of top managers, managers' individual metacognition has a greater leveraged into the team decision-making and has a greater impact on firm performance compared to managers in big firms. Second, this study advanced the knowledge on the antecedents of entrepreneurial orientation by showing that development and management of entrepreneurial attitudes and actions is rather a shared, team effort (West, 2007). Third, entrepreneurial orientation of risk in TMTs in SMEs is much less than their large counterparts. This may be the smaller size and accordingly resources, managers in small firms are less likely to be risk assuming than their large counterparts. Hence, TMT managers in SMEs may better deploy other aspects of entrepreneurship (such as innovation and proactiveness) to maintain their competitiveness. Fourth, behavioural integration is an important factor to enhance positive effect of TMT metacognitive diversity (both knowledge and experience) on firm performance. Although this finding is consistent with previous studies (Lubatkin, et al., 2006; Simsek, et al., 2005; Zahra and Wiklund, 2010), it consolidates the application of behavioural integration in to SMEs operation. Fifth, unlike existing entrepreneurship research which has mainly focused on an individual level of analysis (Mukherji, et al., 2011), this study focused on the team level. Past entrepreneurship studies have mainly focused on the performance implications of entrepreneurial orientation rather than its

antecedents (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 in SME perspective.

15. Limitations and Future Research Directions

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). This study could not make strong claims about the causal relationships. Future work could address this limitation through a longitudinal research design. Finally, the characteristics of entrepreneurship differ across countries (Cruz and Nordqvist, 2012; Sciascia, et al., 2013). Variations in culture and policies may impact entrepreneurial behaviour and success (Grande, et al., 2011; Kreiser, et al., 2010). Further evidence from other countries or cultures, therefore, would enhance the generalizability of the findings and validate the conclusions.

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