

**Strategy Processes, Organizational Capabilities, and Firm Performance
Through the Theoretical Lenses of the Resource Based View and Dynamic
Capabilities: A Study of Indian High-Tech Firms**



Sameer Qaiyum

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Declaration of Authorship

I Sameer Qaiyum hereby declare that this thesis and the work presented in it is entirely my own. Where I have consulted the work of others, this is always clearly stated.

Signed: Sameer Qaiyum

Date: 25/09/2016

ABSTRACT

The strategy process literature studies how strategies are formed in firms, but underemphasizes the role of firms' internal capabilities. Conversely, the resource-based view (RBV), and the dynamic capabilities view (DCV) emphasizes the role of firms' internal capabilities but underplays the role of strategy processes. In response to these gaps, this study empirically examines the relationship between strategy processes, organizational capabilities, and firm performance, using the theoretical lenses of RBV and DCV.

Specifically, three research models have been constructed: The base model tested the relationship between strategy processes, organizational capabilities, and firm performance. The second model dwelled further deep into the first half of the base model and emphasized the complexities arising from the combination of different strategy processes, and the combination of different organizational capabilities. The last model concentrated on the second half of the base model, with a particular focus on the comparison of ordinary and dynamic capabilities strength.

Based on survey data from 260 Indian high-tech firms, the thesis finds broad support for all the three models. These results inform the strategy process literature of the importance of organizational capabilities as the mediator between strategy processes and firm performance, responding to long-standing demands for the introduction of a mediating variable between this relationship. They enhance ambidexterity literature as they show how firms align ambidexterity at strategy process and organizational capabilities level, thus, listening to recent calls for providing strategic antecedents of organizational ambidexterity. They also contribute to RBV and DCV literature by cautioning against any exalted position given to dynamic capabilities, which helps settle the on-going debate on the abilities of different capabilities to generate competitive advantage.

Overall, the findings suggest that to improve firms' profitability and growth; managers need to employ different types of strategy processes that take into account both ordinary and dynamic capabilities in technological and marketing functions.

DEDICATION

To my family

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LIST OF KEY CONCEPTS AND DEFINITIONS USED IN THIS STUDY

Strategy Processes

The organization-wide processes through which organization strategies are formed, validated and implemented within a firm (Chakravarthy and White, 2002).

Command Mode	A type of strategy process in which strategies are formed, validated and implemented by a central figure; usually a chief economic officer (CEO) and his small coterie (Bailey, Johnson, and Daniels, 2000).
Planning Mode	A type of strategy process in which strategies are formed, validated and implemented through centralized planning by top management team (TMT) (Bailey, Johnson, and Daniels, 2000).
Transactive Mode	A type of strategy process in which strategies are formed, validated and implemented through ongoing dialogue between key stakeholders that include managers, staff and executives (Hart and Banbury, 1994).
Autonomous Mode	A type of strategy process in which strategies are formed and implemented by employees and validated by top managers (Lumpkin, Cogliser, and Schneider, 2009).

Organizational Capabilities

Capabilities of a firm are “what it can do as a result of teams of resources working together. A firm's capabilities can be identified and appraised using a standard functional classification of the firm's activities” (Grant, 1991: 120)

Ordinary Capabilities	A class of capabilities that are required for firm's day-to-day operations (Winter, 2003).
Ordinary Marketing Capability	Firm's ability to serve a particular group of existing customers Danneels (2012).
Ordinary Technological Capability	Firm's ability to produce a product or service for its existing customers Danneels (2012).
Dynamic Capabilities	A class of capabilities that are required to create, modify and extend the resource base (Helfat <i>et al.</i> , 2007).
Dynamic Marketing Capability	Firm's ability to identify and penetrate markets previously unserved (Danneels, 2012).

Dynamic
Technological
Capability

Firm's ability to identify and adapt new technologies.
(Danneels, 2012).

Firm Performance

Firm Efficiency

A measure of firm's current profitability (Auh and Menguc, 2005).

Firm Effectiveness

A measure of firm's growth (Auh and Menguc, 2005).

Environmental Turbulence

“rapid market and technology changes that managers perceive as hostile and stressful conditions for their firm” (Atuahene-Gima, 2005: 66).

LIST OF ACRONYMS

RBV	Resource Based View
DCV	Dynamic Capabilities View
VRIN	Valuable, Rare, Inimitable, Non-substitutable
High-tech	High Technology
SBU	Strategic Business Unit
TMT	Top Management Team
CEO	Chief Executive Officer
OECD	Organisation for Economic Co-operation and Development
PLS	Partial Least Square
SEM	Structural Equation Modelling

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

Post-1990s, the competitive landscape faced by modern-era firms, especially high-tech ones, has changed drastically. Technologies now change more rapidly, leading to shortening of product lifecycles, and frequent changes in customer preference. Although this phenomenon is being observed primarily in high-tech sectors, traditional sectors are also not very stable anymore (D'Aveni, 1994). This has brought a sharp focus to internal resources and capabilities of firm (Barney, 1991). With a changing competitive landscape, not only resources and capabilities have to be aligned and realigned continually with the external environment, but also new resources and capabilities need to be developed (Teece, Pisano, and Shuen, 1997). Thus, to remain in the game, firms need to make their strategies by taking into account their resources and capabilities and align them with changing market conditions (Grant, 1991).

Failure to make strategies on the basis of resources and capabilities, often than not, has proven too costly for firms. For instance, although Blackberry, Borders, Kodak, and Blockbusters were in different industries, but faced the same predicament. Specifically, they had four things in common (i) All of them were highly successful firms that faced rapid

changing business environments; (ii) All of them ignored their stock of resources and capabilities while making their strategies; (iii) All of them had a direct high-tech competitor (Blackberry-Apple, Borders-Amazon, Kodak-Fuji Films and Blockbuster-Netflix) that based their strategies on their resources and capabilities, and (iv) These direct high-tech competitors not only survived but thrived, but are today at the top of their game in their respective industries (Satell, 2014; Silcoff, Mcnish, and Ladurantaye, 2013; Magee, 2011; Mui, 2012).

In short, managers of Blackberry, Borders, Kodak, and Blockbuster were just managing their enterprises, but those of Apples, Amazon, Fuji Films, and Netflix were *strategically* managing their organizations. Thus, the focus of this research is the processes that managers engage in to manage their enterprise strategically. Formally, such processes are known as *strategy processes* (Burgelman, 1991; 2002; Mintzberg, Ahlstrand, and Lampel, 1998).

1.2 RESEARCH RATIONALE

1.2.1 Theoretical Justification

There are two broad approaches to strategic management that could be used to answer the research aim and question, arising from issues related to strategy processes. These are industrial organization economics and RBV approaches to strategic management (Teece, Pisano, and Shuen, 1997). In the industrial organization economics framework, strategizing is about finding the right industry or the right niches within an industry, and influencing the external five forces (suppliers, customers, competitors, entry barriers, and substitute products) to retain favorable position (Porter, 1981). Thus, the nature of the game is certainly *positioning* in this framework. However, skeptics point out that companies like Blackberry, Borders, Kodak, and Blockbusters were aware of the market forces that made up their respective industries, and certainly knew how to play the positioning game. For instance,

Borders was very much aware of the changes taking place in the five forces that made up the book retail industry. It perfectly knew that to survive in the new environment it had to position itself in e-market, which it eventually did try. However, instead of developing expertise in e-market, it questionably decided to outsource its website to rival Amazon (Magee, 2011). With the effect that when the new industry finally took a concrete shape, and capabilities in e-market became paramount, Borders did not have capabilities in e-market. It had outsourced those capabilities.

The other approach to strategic management, RBV, and its extension DCV, highlights the importance of internal capabilities over the game of positioning (Barney, 1991). In this approach, unlike industrial organization economics, the success and failure of firms are tied to their unique resources and capabilities. It follows that success or failure of firms is due to their commitment, or lack of it, to building unique resources and capabilities. For instance, if Borders had followed this approach to strategic management, it would not have outsourced its website (an e-capability) to its competitor. Instead, it would have rather concentrated on building those e-capabilities, necessary in the e-commerce era. However, it chose the industrial organization economics approach and tried to position itself favorably in the e-commerce industry, without giving sufficient consideration to building relevant and unique capabilities (Magee, 2011). Conversely, its competitor, Amazon, silently and patiently built e-capabilities necessary for the e-commerce era. Same is the story of Blackberry-Apple, Kodak-Fuji Films, and Blockbuster-Netflix dyads – each of the successful high-tech competitors built the necessary capabilities, while the failure ones fruitlessly hung on to the positioning game. Thus, RBV and DCV approaches to strategic management are more apt to understand the research aim and question, arising out of the issues of success or failure of high-tech firms.

1.2.2 Methodological Justification

Research could fall anywhere on the theory building continuum; ranging from replicating previous effects to introducing new variables. Similarly, it can also fall on theory testing continuum; from being inductive and grounded in logic to hypotheticodeductive and grounded in previous theories (Colquitt and Zapata-Phelan, 2007). This research is a mix of theory building (in the form of theory expansion) and theory testing that is well grounded in existing RBV, DCV and ambidexterity theories. As such this research serves to expand the boundaries of these theories. Such expansion requires exploring previously unexplored relationships and not so much so in understanding the relationships between different variables (Newbert, 2007). The difference between understanding and exploring relationships is an important one, and that influences the choice of research methodology. The quantitative approach could help establish previously unexplored relationships deductively, and qualitative could go deeper to ascertain the reason behind those relationships inductively. Thus, a qualitative approach is chosen during highest form theory-building stage (to understand the reason behind relationships) where there is a little previous theory, while the quantitative approach is more of a theory testing and theory expansion approach (establishing unexplored relationships) deductively grounded in existing theories. Hence, the choice of one approach over the other largely depends on the intent of theory building versus expansion/testing (Punch, 1998). Since RBV and DCV theories have been criticized for being too much tilted towards theory building with little focus given to theory testing/expansion (Arend and Bromiley, 2009), this research seeks to fill this gap by establishing relationships between different variables. It follows that a quantitative approach will suit the intent of this research.

1.2.3 Practical Justification

India provides a very rich context outside of usual *developed economies* context to test and expand RBV theory because of several reasons. Most of the major theoretical lenses used in strategic management such as institutional theory, transaction cost economics, and RBV have been developed in the West (Wright, Filatotchev, Hoskisson, and Peng, 2005). These theories, in general, presuppose that the institution surrounding the firms are perfect. RBV theory, in particular, makes the assumption that firms in these economies do not face resource or capability scarcity. Thus, these theories assume that there will be minimum, if any, an impediment to market-based strategies (Hoskisson, Eden, Lau and Wright, 2000). However, the institutional settings of the emerging economies are such that they act as barriers to market-based strategies (Hoskisson et al., 2000). Also, there is resource scarcity in emerging economies (Wright et al., 2005), especially of a managerial kind (Hoskisson et al., 2000).

Indian high-tech setting is unique in the sense that despite being an emerging economy the impediments to implementation of market-based strategies in high-tech firms is not as high as they are in many other emerging economies. The institutional obstacles impeding manager's ability to implement market-based strategies are minimum because the high-tech sector grew in India without coming under the radar of local government (Brown, 2013). In contrast, in much of the other emerging economies, there is negative influence of government (Hoskisson et al., 2000). Similarly, the managerial resource scarcity that impede implementation of market-based strategies in other emerging economies is less of a problem in India for variety of reasons: (a) India has largest pool of English-speaking workforce in the world (NASSCOM-McKinsey Report, 2005) that facilitates transfer of know-how related to market-based strategies implementation from developed economies, especially Anglo-Saxon block, to India (b) the workforce in the high-tech sector is very responsive to western

style of management (Upadhy and Vasavi, 2006) and (c) the returnee entrepreneurs, who became catalyst for high-tech sector growth in India, have brought market-based implementation style to this sector (Chacko, 2007).

However, despite facing less institutional and managerial resource impediments, the demand and factor markets of Indian high-tech sector is still a far cry from that of the west. On the factor side, the major impediment being the hierarchical cultural orientation of Indian firms in general (Arora, Arunachalam, Asundi, and Fernandes, 2000), and less than needed investment in university-industry partnership (Ganesh, 2013). Both of which constrains resource building. On the demand side, the Indian high-tech players have just started to move up the value chain ladder (Kale and Little, 2007). Previously, they were employed for low-value jobs. As such, they are new to high-end technology jobs.

Such a peculiar environment provides a very rich context to test and expand upon RBV (and related theories of DCV and ambidexterity) that were originally conceived for efficient western markets. This will provide further proof of their generalizability even in less than efficient product and factor markets.

1.3 RESEARCH AIM AND QUESTIONS

Strategic management literature is primarily concerned with how certain firms create more profit than others (Teece, Pisano, and Shuen, 1997). The RBV approach to strategic management (Barney, 1991; Dierickx and Cool, 1989; Huang, Dyerson, Wu, and Harindranath, 2015; Penrose, 1959; Teece, Pisano, and Shuen, 1997; Wernerfelt, 1984) focuses on resources and capabilities that enable a firm to create superior profit. From this perspective, it is the heterogeneously distributed valuable resources and capabilities that differentiate firms from each other and lead to superior profit. Although RBV acknowledges that it is the strategy processes (i.e., processes through which strategies are formed and

implemented) that make use of these resources and capabilities for gaining superior profit (Grant, 1991), strategy processes are rarely discussed in the RBV literature in-depth. Thus, this research aims:

“To understand how strategy processes interact with resources and capabilities for a firm to achieve superior performance.”

To fulfill the stated research aim, this thesis formulates several research questions about the complex relationship between strategy processes, organizational capabilities, and firm performance. To this end, this thesis uses the theoretical lenses of RBV and DCV. Strategy processes are the organization-wide processes through which strategies are formed, validated and implemented within a firm (Chakravarthy and White, 2002). Capabilities of a firm are “what it can do as a result of teams of resources working together. A firm's capabilities can be identified and appraised using a standard functional classification of the firm's activities” (Grant, 1991: 120). Finally, firm performance refers to a firm's profitability and growth (Auh and Menguc, 2005). Three inter-related research questions (and accordingly three research models) are developed to study the relationships.

1.3.1 Research Question One

The first part captures the relationship between the three variables in its entity, and studies the relationship between strategy processes, organizational capabilities, and firm performance. Strategy processes are usually studied following the industrial organization economics approach that takes a very structural view of strategy (Wolf and Floyd, 2013). According to this stream of research, there are pockets of profitable positions within the industry, and the nature of the game is such that firms need to position themselves inside

those favorable pockets to gain sustainable competitive advantage. Thus, strategy processes are usually seen as directly influencing firm performance, without much importance given to organizational resources and capabilities. However, despite several decades of work on this linkage between strategy processes and firm performance, there are mixed results on the effect of strategic processes on firm performance (Hutzschenreuter and Kleindienst, 2006; Wolf and Floyd, 2013). On the other hand, RBV posits that strategies need to be based on firms' resources and capabilities, suggesting the role of resources and capabilities in strategy processes and firm performance linkage (Wolf and Floyd, 2013). Thus, the literature on both sides (strategy processes and RBV) tackles the same problem of superior firm performance but hardly convergence. This anomaly in current research, is addressed in this research by formulating the following research question and accordingly, the base model in Figure 1.1:

1. *What is the relationship between strategy processes, organizational capabilities, and firm performance?*

Figure 1.1: Strategy Processes, Organizational Capabilities, and Firm Performance: The Base Model



1.3.2 Research Question Two

The second part of this thesis dwells more deeply into the first half (Figure 1.2) of the base model (i.e., strategy processes and organizational capabilities). DCV emphasizes the distinction between ordinary and dynamic capabilities. Ordinary capabilities are a class of capabilities that are required for a firm's day-to-day operation (Winter, 2003). Dynamic

capabilities are a class of capabilities that a firm may require to create, modify, and extend the resource base (Helfat *et al.*, 2007). More precisely, ordinary capabilities are the exploitative capabilities, and dynamic capabilities are explorative capabilities that are discussed in organizational learning and other related literature (Raisch and Birkinshaw, 2008).

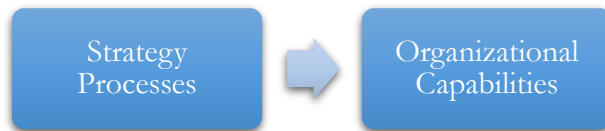
Explorative and exploitative capabilities come at the expense of each other (Levinthal and March 1993), and hence there exists a tension between the two. This tension arises because the institutionalized learning (what has already been learned in the form of ordinary capabilities) impedes the assimilation of new learning, and the development of dynamic capabilities (Crossan, Lane, and White, 1999). The second problematic interaction lies in the feedback learning. Intuiting within established organizations with ordinary capabilities requires destroying the routines that constitute ordinary capabilities so that intuitive insights and actions can be allowed and perused. This is extremely difficult because an organization's collective mindset and the ensuing current investment in ordinary capabilities act as formidable physical and cognitive barriers to change. Thus, it is extremely difficult to manage both ordinary and dynamic capabilities. However, firms have to do so, as dynamic capabilities at the cost of ordinary capabilities will erode current profitability, and ordinary capabilities at the cost of dynamic capabilities will reduce future growth. The ability to manage both simultaneously is termed ambidexterity.

Although the simultaneous management of exploration and exploitation has been studied within the strategy process literature and within the organizational capabilities literature, these parallel literature have rarely interacted. At the conceptual level, strategic ambidexterity (managing exploration and exploitation at the strategy process level) has been discussed (e.g., Burgelman, 1991), but it has rarely been studied in detail. On the other hand, there is a rich body of conceptual and empirical literature on ambidextrous capability (Birkinshaw and Gupta, 2013). However, despite complementarities and obvious

relationships between the two types of ambidexterity, they have not been linked. Thus, we have little understanding of the nature of strategic ambidexterity, and the relationship between strategic and capability ambidexterity. These shortcomings have led to the formulation of the following research question:

2. *How can a firm align strategy processes and organizational capabilities from the ambidexterity perspective?*

Figure 1.2: Strategy Processes and Organizational Capabilities



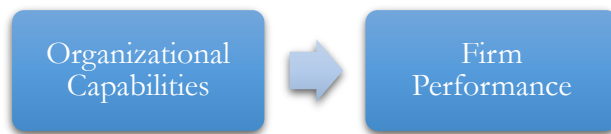
1.3.3 Research Question Three

The third and the last part takes a closer look at the second half (Figure 1.3) of the relationship (i.e., organizational capabilities and firm performance). RBV emphasizes that ordinary capabilities are needed for day-to-day activities, and also explains the economic payoff of ordinary capabilities that makes them a source of superior firm performance. On the other hand, DCV highlights the role of dynamic capabilities in creating a new stock of resources, and how a firm can earn superior performance by creating new knowledge and growing beyond its current boundaries (Teece, Pisano, and Shuen, 1997). Thus, both RBV and DCV, and associated capabilities (ordinary and dynamic), explains superior performance in different ways. Although potentially both ordinary and dynamic capabilities can be sources of superior firm performance (Helfat and Winter, 2011), there is a lack of empirical work that compares and contrast the contribution of ordinary and dynamic capabilities, especially

in the Indian high-tech sectors. To this end, this research formulates the following research question:

3. *To what extent do ordinary and dynamic capabilities contribute to firm performance?*

Figure 1.3: Organizational Capabilities and Firm Performance



1.4 RESEARCH CONTRIBUTIONS

This study contributes to strategic management in three different ways.

1.4.1 Strategy Processes, Organizational Capabilities, and Firm Performance

First, previous literature on strategy processes has found inconclusive results for any direct relationship between strategy processes and firm performance (Hutzschenreuter and Kleindienst, 2006). This has prompted skepticism that the current theory on the contributions of strategy processes is inadequate or insufficient (Wolf and Floyd, 2013). This has resulted in calls for an enhanced understanding of the strategy processes and firm performance relationship that takes into account any mediating variable(s) that may transmit the effect of strategy processes on firm performance (Grant, 1991). This research complements the traditional industrial organization economics approach to studying strategy processes that reduce the role of strategy processes to positioning a firm within a favorable pocket of industry. To this end, this research brings the RBV and DCV approach to strategic

management to the center stage (Barney, 1991). This highlights the role of organizational capabilities as mediating variables placed between the strategy processes and firm performance relationship.

1.4.2 Strategy Processes and Organizational Capabilities

Second, although organizational ambidexterity as a field is maturing, and its antecedents and consequences have been clearly laid out (Raisch and Birkinshaw, 2008), but surprisingly very little effort, if any, has been made to understand ambidexterity at the intersection between strategy processes and organizational capabilities. In prior research, strategic ambidexterity and ambidextrous capability are indistinguishable (e.g., Burgelman, 1991). In this research, not only ambidexterity at the two levels are clearly defined, but a relationship between the two is argued and empirically examined. This shows that to explore and exploit at the same time firms need to align strategy processes with organizational capabilities. By aligning the two, organizations can make sure that they not only make use of their current stocks of knowledge but also can produce new ones.

1.4.3 Organizational Capabilities and Firm Performance

Third, although dynamic capabilities are widely attributed to be sources of superior firm performance, these claims have rarely been tested in comparison to ordinary capabilities (Karna, Richter, and Riesenkampff, 2015). Ordinary capabilities are the baseline capabilities which firms need to have to survive, while dynamic capabilities are more exclusive and touted as the main source of superior profit (Teece, Pisano, and Shuen, 1997). Implicit in this discussion on dynamic capabilities is that dynamic capabilities have more to contribute towards firm performance than ordinary capabilities do (Teece, 2014). Conversely, some have argued that the effect of dynamic capabilities is overstated and that of ordinary

capabilities understated in literature (Eisenhardt and Martin, 2000). However, there is very little empirical work that compares and contrasts the two types of capabilities to ascertain which of the two capabilities (ordinary and dynamic) have more to contribute towards firm performance. This research compares and contrasts the contributions of ordinary and dynamic capabilities, and cautions that despite exalted claims of superior contributions of dynamic capabilities, they may not be the source of superior performance, at least directly.

1.5 RESEARCH APPROACH

As explained earlier, the intent of this thesis is to examine the complex relationship between strategy processes, organizational capabilities, and firm performance. To this end, the quantitative approach - that is rooted in natural science, and that takes a positivist approach to social phenomena- is used (Bryman, 1984). Based on the review of RBV and DCV literature, the theoretical domains of the main constructs (strategy processes, organizational capabilities, and firm performance) are specified, and models that hypothesized the relationship between the main constructs are built.

The quantitative data was obtained from a sample pool that consisted of high-tech firms in India. Based on the official Organisation for Economic Co-operation and Development (OECD) definition (OECD, 2007), three high-tech sectors were identified for this study - electronics, biotechnology, and IT. Senior managers in these firms were approached to take part in the survey. Following a five-phase survey, a total of 260 usable questionnaires were obtained from senior managers of these firms.

Different statistical techniques were employed to test the three research models to answer the corresponding research questions. For the first research model that seeks to understand the base model in totality, covariance based structure equation modeling (SEM) was employed using IBM AMOS software package. For the remaining two models that seek

to understand the first and second halves of the base model, respectively, variance-based SEM was employed using SmartPLS statistical software.

1.6 STRUCTURE OF THE THESIS

Table 1.1: PhD Thesis Structure and Research Activities

PhD Thesis Structure	Contents
Chapter One: Introduction	This chapter introduces the research problem, research aim and questions, research rationale, research approach, and a brief summary of research contributions.
Chapter Two: Theoretical Background	This chapter reviews strategy processes, RBV and DCV, and firm performance literature to introduce the main concepts of the study and to arrive at the taxonomy of strategy processes and different types of organizational capabilities and firm performances.
Chapter Three: Research Model and Hypotheses	This chapter goes in-depth into each of the three previously defined relationships to build theoretical models that can explain these relationships in a more (hypothesized) formal way. The first model explains the relationship between strategy processes, organizational capabilities and firm performance in its entity. The second model continues to dwell deeper into the first half of this model (i.e., strategy processes and organizational capabilities). The last model zooms in the second half of the base model (i.e., organizational capabilities and firm performance).
Chapter Four: Research Methodology	This chapter presents the research methodology applied in this study. First, the research philosophy and the suitability of cross-sectional quantitative methodology for this study are explained. Then a detailed account of sampling, covering the choice of country, industry, size of companies and sample population is given. Finally, the constructing of the questionnaire is explained in detail followed by a discussion on data collection.

Chapter Five:	Analysis and Results	This chapter explains the specific statistical techniques used in this research to analyze the data, and reports the findings of the study.
Chapter Six:	Discussion	This chapter discusses the results in light of theory, as well as the limitations of this study and directions for future research.
Chapter Seven:	Conclusion	This chapter summarizes the contributions of this study, its generalizability, and discusses managerial and policy implications.

1.7 CONCLUSION

The three research models that correspond to the three research questions are complementary to each other, as each enhances the understanding of the other. The base model (Figure, 1.1), using the theoretical framework of RBV and DCV, sets the stage for the general understanding of the relationship between strategy processes, organizational capabilities, and firm performance. Although this model explains the linear relationship between the three constructs, it does not specify the particular relationships between different types of strategy processes and different types of capabilities. The second model (Figure, 1.2) fills this deficiency and explains how different types of strategy processes can be aligned with different types of organizational capabilities (ordinary and dynamic capabilities). Similarly, although the base model explains the relationship between organizational capabilities and firm performance, it does not reveal the strength of these relationships or which of the two (ordinary and dynamic) might be more important to firm performance. To this end, the third model (Figure, 1.3) strengthens the base model by comparing and contrasting the contributions of the two capabilities (ordinary and dynamic) towards firm performance.

CHAPTER TWO

THEORETICAL BACKGROUND

2.1 INTRODUCTION

This chapter is a literature review of the three main constructs (strategy processes, organizational capabilities, and firm performance) used in this thesis. First, it traces the journey of strategy process literature, from its inception till date, and leading up to the strategy process typology. Second, it does an exhaustive review of RBV and DCV literature, with a focus on the two distinct class of organizational capabilities; ordinary and dynamic. Last, a discussion is made on firm performance. Unlike the previous two constructs, there is no stand-alone literature on firm performance. However, over the years, our understanding of what constitute firm performance has been informed by several disparate works. A brief sketch is made of these works, which lead to the introduction of measures used to assess firm performance in this research. But, before any of the three concepts are explored and defined in detail, this chapter starts with a description of why RBV and DCV angles should be used for studying strategy processes.

2.2 WHY RBV/DCV AND AMBIDEXTERITY ANGLES?

2.2.1 Strategy Processes and industrial organization economics

Strategy process research area is a subfield within strategic management, which seeks to understand how strategies are formulated and implemented effectively in an organization (Chakravarthy and Doz, 1992). At least two competitive paradigms exist to help managers formulate better strategies (Huang *et al.*, 2015). The first is the industrial organization economics paradigm that focuses on competitive forces within the industry (Rumelt, Schendel, and Teece, 1994). This paradigm “views the essence of competitive strategy formulation as ‘relating a company to its environment . . . [T]he key aspect of the firm’s environment is the industry or industries in which it competes.’” (Teece, Pisano, and Shuen, 1997: 5111). Five aspects of industry – competition intensity, bargaining power of supplier, bargaining power of buyers, the threat of substitutes, and entry barriers to industry- defines any industry structure (Porter, 1981).

According to industrial organization economics paradigm, there are favorable positions within an industry, where the focal firm can assert more influence over its suppliers, buyers, and competitors, hence, perform better than others. Thus, the intent of strategy processes is reduced to finding favorable position vis-à-vis suppliers, buyers, and competitors. To this end, researchers studying strategy processes, within industrial organization economics paradigm, propose a *direct* link between strategy processes and firm performance (e.g., Brews and Purohit, 2007; Hart and Banbury, 1994). To them, the internal capabilities and resources of the firm are of less importance. Hence, the focus is on strategy processes direct and powerful impact on firm performance, and the role of internal capabilities is side-tracked. However, the extant empirical literature on strategy processes tells a different story. The findings on the relationship between strategy processes and firm

performance are inconclusive (Hutzschenreuter and Kleindienst, 2006). This has led to some to believe that there may be intervening variables acting in between strategy processes and firm performance (Wolf and Floyd, 2013).

2.2.2 Strategy Processes and RBV & DCV

The second paradigm to study strategy processes is the RBV (and its extension DCV), which is born out of the observation that firm-specific effect, and not the industry structure, matters the most in determining firm performance (Hansen and Wernerfelt, 1989; Rumelt, 1991; McGahan and Porter, 1997). RBV is one of the most widely accepted theoretical perspectives in the strategic management field today (Barney, Ketchen, and Wright, 2011; Newbert, 2007). Edith Penrose is credited as the founder of this perspective. In her 1959 book, she proposed a theory of firm growth that tied growth to the possession of resources by the firm. Her theory not only explained how firm's resources propel growth, but also how the lack of resources inhibits growth. Later in the 1980s, authors, such as Lipmann and Rumelt (1982), Wernerfelt (1984), Barney (1986), and Dierickx and Cool (1989), gradually picked up on her work, to emphasize the importance of firm's internal resources and capabilities.

RBV has often been criticized for being too static, and not able to account for firm performance in a dynamic environment (Priem and Butler, 2001). Scholars who are critical of it, argue that in a dynamic environment, where businesses' internal and external conditions change rapidly, the potential of existing resources and capabilities to generate profit diminishes. To circumvent the limitations of RBV, Teece, Pisano, and Shuen (1997) present the core tenants of DCV. Their framework for dynamic capabilities analyses the source and method of firms' sustainable competitive advantage in the rapidly changing technological environment. The sustainable competitive advantage of firm rest on *distinctive processes* termed

dynamic capabilities that help firm create, modify, and extend existing resources and capabilities (Helfat et al., 2007).

Thus, both RBV and its extension DCV focus on firm's internal resources and capabilities. Also, RBV and DCV scholars suspect that the intervening variable between strategy processes and firm performance could be the firm's internal resources and capabilities (Barney, 1991; Grant, 1991). As Dierickx and Cool (1989: 1506-1507) argue that the "key dimension of strategy formulation [process] may be identified as the task of making appropriate choices about strategic expenditures...with a view to accumulating required resources and skills [capabilities]". Consequently, Maritan (2001: 529) drives this point more explicitly by pointing out that managers need "to adopt a "capability mentality," linking strategy development [process] to capital investment by framing their capital plans and budgets in terms of organizational capabilities."

However, despite these early observations, much of the later day literature on RBV and DCV has gone on to expand the nature of internal resources and capabilities. This has left little space for a deeper look into how strategy processes make use of organizational capabilities in pursuance of firm performance. Thus, strategy processes have rarely been understood using RBV and DCV paradigm. The intent of this thesis is to fill in the gap, and in this regard, it uses RBV and DCV lenses to study strategy processes and their contributions.

2.2.3. Strategy processes and ambidexterity

Another lens to look into the phenomenon of strategy processes and organizational capabilities relationship is ambidexterity. The relationship between strategy processes and organizational capabilities need not always be a simple one that entails one-to-one linkage between different types of strategy processes and different types and levels of organizational

capabilities, which can be explained by RBV and DCV lenses. In fact, firms sometimes need to combine different strategy processes first and align them with a combination of different organizational capabilities. As business complexity increases, the firms are forced to concentrate on both short-term performance and long-term success (Tushman and O'Reilly, 1996). This is especially the case for high-tech firms operating in a dynamic environment where the rate of technological obsolescence accelerates and the product life cycle is shortened (Gibson and Birkinshaw, 2004; Wang and Rafiq, 2014). Firms need to *exploit* their existing knowledge for their current viability and short-term success and *explore* new knowledge for their future sustainability and long-term success (Levinthal and March, 1993). A selective focus on either exploitation or exploration may erode firms' competitive advantage over time: firms focusing exclusively on exploitation are unable to gain rewards from a new stock of knowledge arising from exploration; firms completely dependent on exploration suffer from inefficient use of an existing stock of knowledge and a lack of proficiency in its day-to-day operations (March, 1991).

Both, the strategy processes and organizational capabilities have exploratory and exploitative orientations; some strategy processes/organizational capabilities are exploitative in nature, while others are explorative in nature (Burgelman, 1991). Hence, a simultaneous effective management of exploration and exploitation requires combining exploratory and exploitative strategy processes on the one hand, and exploratory and exploitative capabilities on the other hand, and further aligning these combinations (Raisch and Birkinshaw, 2008). RBV and DCV lenses are not sufficient to understand these exploratory and exploitative combinations and their alignment. Ambidexterity lens is particularly useful to understand this phenomenon.

Having looked into the different lenses that could help explain the relationships between strategy processes, organizational capabilities and firm performance, this chapter

reviews and define strategy processes, organizational capabilities, and firm performance, from here onwards.

2.3 STRATEGY PROCESSES

Strategy process research is the study of how strategies are formed and shaped (Chakravarthy and White, 2002). It is an organization-wide phenomenon, and the unit of analysis is organization. Hence, it is distinct from closely related process-based research on strategic *decision-making* and strategic *leadership* (Hart and Banbury, 1994). These research stream, although, informs us immensely about strategy processes, their unit of analysis is ‘decision making’ and ‘leadership’ respectively. Hence, they are not one and the same.

The seminal research in strategy processes has centered on the clinical study of large organizations. Scholars seek to track these organizations over a couple of years or more and present a detailed *processual* view of how strategies are formulated and implemented in these corporations. The pioneering work in this area has been that of Harvard professor Joseph Bower (1970) and Stanford professor Robert Burgelman (1983) who between them laid the foundation of what has come to be known as Bower-Burgelman (BB) model of strategy processes (Noda and Bower, 1996). BB model is an elaborate and often complex explanation of how strategy is formed, as opposed to a description of any specific form of strategy processes. Bower (1970: 24) was very clear at the onset that his study seeks to understand the “business planning process in a large widely diversified firm.”

Burgelman, Bower, and other researchers, who have sought to study strategy processes in large individual organizations have given a vivid account of how strategy is formulated and implemented in those organizations. However, despite the fact that these studies provide a theoretical framework for studying strategy processes in-depth, these studies and their method, provide a very localized version of strategy processes. They do not provide any

generic modes of strategy process that could apply to wide range of organizations, and in a variety of contexts. The more contemporary work on strategy processes discussed below has sought to present generic strategy processes, applicable to wide range of organizations.

2.3.1 Generic Mode (Single and Multi)

The contemporary work on strategy processes seeks to present generic strategy process. Scholars in this camp suggest that there is a “finite set of organizational processes from which strategic decisions evolve which take the form of patterns or gestalts that can be characterized and identified across organizations” (Dess, Lumpkin, and Covin, 1997: 679). Based on this understanding, literature broadly portray strategy process in (i) 'either/or' terms - either rational or incremental (Fredrickson, 1984), adaptive or creative (Regner, 2005), induced or autonomous (Bower, 1970; Burgelman, 1991; 2002), inductive or deductive (Regner, 2003); top-down or bottom-up (Nonaka, 1998) (ii) or as typology of strategy process, that richly describe several modes of strategy process (Bailey, Johnson, and Daniels, 2000; Bourgeois and Brodwin, 1984; Brews and Purohit, 2007; Chaffee, 1985; Chakravarthy and White, 2002; Hart, 1991; 1992; Mintzberg, Ahlstrand, and Lampel, 1998; Mintzberg and Waters, 1985).

The strategy processes in both types of classifications differ with each other on the level of *rationality* employed (Atuahene-Gima and Haiyang, 2004; Hart, 1992; Priem, Rasheed, and Kotulic, 1995), and level of *involvement* of different layer of hierarchies (Andersen, 2004; Hart, 1992). Rationality here is referred to the extent to which the strategic process may be exhaustive, comprehensive, and analytical in approach. Some of the strategy processes, identified in the literature, can display a high degree of rationality, while others might be less rational in their approach. Similarly, some processes involve only CEO and/or senior management, while others involve middle and/or operating managers and employees. Those who apply 'either/or' approach looks at the level of rationality and involvement in discrete

terms. Strategy process is either rational (e.g., rational, induced, inductive and top-down process) or it is not (e.g., incremental, deductive, creative, autonomous and bottom-up process). Similarly, strategy processes either involves CEO and/or 'TMT' (e.g., rational, induced, inductive, top-down process) or middle and/or lower level employees (e.g., creative, deductive, autonomous and bottom-up process). Conversely, those who apply the typology framework, approach it from a continuum lens. For these authors, rationality and involvement need not be discrete but can be rather represented on a continuum scale. There can be a varying degree of rationality as well as involvement, and distinct modes of strategy process can lie at distant intervals on a continuum scale. Thus, it gives rise to a variety of different strategy processes that may constitute a particular typology.

While accepting that both types of portrayals, as discussed above, have their perils in different research settings, the second approach, i.e., typology approach was chosen for this research. Typology approach not only subsume 'either/or' approach, but it also presents an all-encompassing picture of strategy process within the firm. Generally speaking, firms do not exhibit just one or two types of strategy process, but rather an assortment of different types of strategy process (Hart and Banbury, 1994). Put differently, rationality and involvement are not discrete, but are rather continuous. Thus, to not present strategy process through typology approach, is to present a rather very simplistic view of strategy processes present in modern-era firms. Anderson (2004) points out, “we should also recognize that the analyses have some limitations. The focus on [just] decentralized strategy making and strategic planning processes does not consider potential effects of other strategy-making modes, such as autocratic command, visionary leadership, etc.” (2004:1290).

2.3.2 Strategy Process Typology

Within the typology framework approach, there are “bewildering array of competing or overlapping conceptual models” (Hart, 1992: 326). These typologies are constructed either on involvement or rationality; the modes so identified falling in increasing/decreasing order of either involvement or rationality (Anderson, 2004). Based on a comprehensive review of typology literature, it was observed that the majority of the typologies were constructed on involvement (Table 2.1). That is, the modes identified were placed in order of the involvement of organization members. However, these modes also differed with each other on the level of rationality. A careful inductive analysis of typologies related work, identified at least four modes that kept recurring, albeit under different names, and are also conceptually distinct (Table 2.1). These are a command, planning, transactive, and autonomous modes (Table 2.2). Thus, together, these four modes constitute the strategy process typology in this research, and are constructed on the different role members of the organization (from top to bottom) undertakes in the making of strategy.

In terms of involvement, command mode involves the very top hierarchy (CEO and his or her small coterie) in strategy formulation. The rest of the organization is involved in the implementation and monitoring of strategy. In the planning mode, the involvement is increased, to cover almost all of the top managers, apart from CEO and his or her coterie. Transactive mode involves a collegial system of strategy formation, in which CEO, top managers, and middle managers, together, decide the fate of strategy. Autonomous mode, pushes the involvement further down, to include the lower level employees in strategy formation. Thus, command, planning, transactive, and autonomous modes involve a different set of organizational members, and in different proportion, in strategy making. In terms of actors’ involvement, command, planning, transactive, and autonomous represent an increasing (top to bottom) order of involvement.

These modes also differ on the level of rationality employed in strategy making. Planning and command, both, are very comprehensive processes, and represent “two contrasting modes of comprehensive rationality—one dominated by a strong leader (entrepreneurial) [command] and another dominated by formal analysis and procedure (planning)” (Hart, 1992: 331). Transactive and autonomous modes, are less comprehensive processes and represent two different types of autonomy; structural and strategic. Structural autonomy, represented by transactive mode, is the autonomy of means to solve issues and look for opportunities within pre-defined boundaries. Strategic autonomy, represented by autonomous mode, is the autonomy of means as well as ends (Lumpkin, Cogliser, and Schneider, 2009). The lower level employees have freedom to set strategic goals going beyond pre-defined boundaries. The autonomous mode is less rational, viewed on the scale of rationality than the transactive mode. And both, in turn, are less rational than planning and command modes. The next section, below, describes these modes in detail.

Table 2.1: Strategy Process Typologies

Authors	Strategy Processes			
Mintzberg (1973)	Planning	Entrepreneurial	Adaptive	
Bourgeois and Brodwin (1984)		Cultural/ commander	Collaborative/ Change	Crescive
Grandori (1984)	Optimizing	Cybernetic	Satisficing/ incremental	Random
Shrivastava and Grant (1985)	Adaptive planning	Managerial autocracy	Systematic bureaucracy	Political expediency
Chaffee (1985)	Linear	Interpretive	Adaptive	
Mintzberg and Waters (1985)	Planned	Entrepreneurial/ ideological/umbrella	Process/consensus	Unconnected
Ansoff (1987)	Systematic		Reactive/ad hoc	Organic
Hart (1992)	Rational	Symbolic/ Command	Transactive	Generative
Bailey <i>et al.</i> (2000)	Planned	Cultural/ command	Incremental	Political
Lumpkin and Dess (2006)		Simplistic	Adaptive/ participative	Entrepreneurial
This study	Planning	Command	Transactive	Autonomous

Notes: This table summarizes the key typologies of strategy processes to date. The entrepreneurial strategy is depicted in two ways: Mintzberg (1973) and Mintzberg and Waters (1985) refer to a top-down process controlled by an entrepreneur (akin to command mode); Lumpkin and Dess (2006) refer to a bottom-up approach to allow employees to drive entrepreneurship (akin to autonomous mode).

Commentary on table construction: To construct this table, I relied on reputations and citations of the seminal work in the field. These articles represent the best and most representative work in the strategy process area. This is in line with other work on strategy formation typology and related strategic decision typology that have attempted to summarize key typologies used in the field (e.g., Anderson, 2004; Hart, 1992).

Table 2.2: Characteristics of the Four Strategy Processes

<i>Strategy processes</i>	<i>Rationality</i>			<i>Involvement</i>		
	Key drivers	Emergent/Planned	Formulation/Formation	TMT	Middle managers	Employees
<i>Command</i>	Strategy is driven by CEO and small coterie	Emergent for CEO but planned from middle management and employees' viewpoint	Time lag between formulation and implementation	Strategy formulation by CEO; other TMT members provide limited input	Strategy implementation	Follow strategy to the tilt; no upward feedback of any sort
<i>Planning</i>	Strategy driven by formal structures and plans	Planned from the perspective of everyone	Time lag between formulation and implementation.	Strategy formulation by the active involvement of TMT members	Strategy implementation; providing active upward feedback on the effectiveness of strategy	Follow strategy; providing limited upward feedback
<i>Transactive</i>	Strategy is driven by incremental and mutual adjustments	Mixture of planned and emergent strategies from middle management and employees' viewpoint	Distinction between formulation and implementation is at times thin	Actively looking for new opportunities but letting middle managers handle emerging issues	Solving issues within given resource constraints; providing upward feedback to TMT	The following strategy; providing active upward feedback on emerging trends
<i>Autonomous</i>	Strategy is driven by autonomous behavior of employees	Emergent from the perspective of everyone	Formulation and implementation cannot be separated; strategy formed in real time	Retrospectively rationalize strategy	Connecting TMT and employees	Operating outside normal constraints in addressing both issues and opportunities

Source: Mintzberg (1973), Bourgeois and Brodwin (1984), Grandori (1984), Shrivastava and Grant (1985), Chaffee (1985), Mintzberg and Waters (1985), Ansoff (1987), Hart (1992), Bailey *et al.* (2000), and Lumpkin and Dess (2006)

2.3.3 Strategy Process Modes

Command Mode

This kind of strategy process mode has been termed command (Bailey, Johnson, and Daniels, 2000; Bourgeois and Brodwin, 1984; Hart, 1992); managerial autocracy (Shrivastava and Grant, 1985), entrepreneurial (Mintzberg and Waters, 1985), and normative (Nutt, 1981) mode in the literature.

In some organizations, the strategy is made by a strong leader often supported by a small group of the senior team. Strategy formation is concentrated at the top and is separated from strategy implementation. The study of individual corporate histories is replete with example of visionary and strong CEOs, who steered their organizations to exemplary growth and change (Burgelman, 2002; Hart, 1992; Teece, 2012). At Apple, former CEO Steve Jobs was legendary for driving Apple to exemplary heights (Teece, 2012). Michael Dell, of Dell computers, is another CEO often discussed in the literature as someone who drove Dell to growth, year after year (Farkas and Wetlaufer, 1996). Similarly, Henry Ford (Ford Motor Company), Tom Watson (IBM), and Bill Gates (Microsoft) are the epitome of legendary leadership (Hart 1992). What is common among this set of CEO/founder is that these CEOs/founders, along with small group of managers, took total command of planning and strategized their organizations' growth trajectory (Farkas and Wetlaufer, 1996).

Farkas and Wetlaufer (1996) study of 160 chief executives, of major corporations around the world, found that around 20% of the CEOs contemplated that, given their position, only they were best suited for making strategic decisions. Hence, these CEOs asserted that they often supported by a small corporate team- are prepared to determine the path to be followed by their organizations. Similarly, Shrivastava and Grant (1985) empirical study of strategic decision-making processes found that a single key manager was the primary decision-making agent. The entire decision process revolved around his preferences, and the

other members mutely followed. The authors named this centralized one-person decision-making process as managerial autocracy model. The effect of such class of leaders on their organization is profound (Hayward and Hambrick, 1997; Teece, 2012).

The centralized information requirements of this mode place a lot of information load on one person (or a very small TMT). Therefore, such mode is best suited for simpler, less diversified, and stable environment (Bourgeois and Brodwin, 1984; Hart, 1992). The other prerequisite for successful implementation of this mode is organization size and age. These strategies commonly appear in young and/or small organizations, where personal control is achievable (Mintzberg and Water, 1985). In such organizations, planning is relatively easy, and a very centralized control can be effective (Shrivastava and Grant, 1985). These strategies can, however, sometimes be found in larger organizations as well, particularly in those organizations which are facing a crisis. The climate of the crisis in large organizations gives enduring power to their CEOs, whom other organization actors are more willing to follow and take directions (Mintzberg and Water, 1985). Farkas and Wetlaufer (1996) found that the less stable the situation, the more likely the CEO is to believe that he or she must take on the role of chief strategist. Another condition under which such strategy mode will be more effective is the situation in which organization is in a strong competitive position, and has plenty of slack (Bourgeois and Brodwin, 1984).

In such organizations, where there exist such CEOs who take command of the organization, the strategy processes become the sole prerogative of these CEOs, and his set of close associate (Hart, 1992). Such organizations are characterized by a very centralized top-down decision-making (Mintzberg, 1973), where CEO uses economic and competitive analyses to allocate resources in the pursuance of predetermined strategy (Hart, 1992). The endeavor of such type of CEOs is to understand their customer and competitor by

employing extensive analysis as well as reporting and planning systems (Farkas and Wetlaufer, 1996).

Overall, in command mode, the strategy process is clearly divided into the formulation and implementation stage, with a certain lag between the two. Strategy formulation stage involves only the topmost layer, usually a handful of employees (CEO and his or her small coterie). Even in strategy implementation stage, the monitoring and implementation of the strategy are done by the CEO and few others. In terms of rationality, looking from an organization perspective, the strategies are well conceived and planned by looking into several scenarios, by the CEO (Mintzberg and Waters, 1985). However, this type of rationality dominated by a strong leader is very different from the rationality dependent on formal analysis and procedures of planning mode, discussed next (Hart, 1992).

Planning Mode

This kind of strategy process mode has been termed planning (Allison, 1971; Hart, 1992), planned (Bailey, Johnson, and Daniels, 2000; Mintzberg, 1978), linear (Chaffee, 1985), deductive (Nonaka, 1988), bureaucratic (Nutt, 1981), and systematic bureaucracy (Shrivastava and Grant, 1984) in the literature.

In this mode, the strategy is formulated in advance by indulging in formal analysis, such as environmental scanning, portfolio analysis, and industry and competitive analysis (Hart, 1992). TMT institutionalizes such formal analysis by setting detailed strategic plans, which are then implemented by middle managers. Planning, is the most studied of all the modes, with a plethora of conceptual and empirical work spanning more than four decades (Rudd, Greenley, Beatson, and Lings, 2008; Grant, 2003). The interest in planning is not without substantial reason, as planning serves multiple purposes. First, planning facilitates the achievement of organizational goals and objectives (Delmar and Shane, 2003). Second,

it acts as an integration and coordination mechanism for organizational actors (Miller and Cardinal, 1994; Kukalis, 1991). Lorange and Vancil (1977) argue that planning unifies diversified actors in the organization under a single plan, and helps detect any deviation from such a plan. Hence, it facilitates integration and coordination of these actors and their actions. Third, planning expedites long-term adaptation to outside environment (Kukalis, 1991). Fourth, it institutionalizes data gathering and its interpretation (Dutton and Duncan, 1987). Armstrong (1982), for example, argued that one of the consequences of the explicit planning process is the collection and interpretation of data, critical to creating and maintaining organization-environment alignment. Though the conceptual work in planning is broad, much of the empirical work in planning literature has concentrated on its relationship with firm performance.

Despite or because of the extensive work in the field, there exist no clear understanding of the effect planning has on firm performance. While a set of empirical studies have found a positive effect of planning on performance, others have found little evidence of such relationship (Rudd *et al.*, 2008; Kukalis, 1991). These mixed results have been attributed to inconsistency in definition, lack of proper operationalization of the construct (Boyd and Reunning-Elliott, 1998), and lack of attention given to contingency factors such as the external environment (Brews and Hunt, 1999). Some scholars argue that planning, by facilitating faster decision making and reducing uncertainty, benefits organizations facing dynamic and unstable environments (Brinckmann, Grichnik, Kapsa, 2010). Several studies have indeed found that planning is positively related to firm performance in the unstable, turbulent, and dynamic environment (Brews and Hunt, 1999). On the other hand, others have concluded that planning is best suited for the stable environment (Fredrickson, 1984; Fredrickson and Mitchell, 1984; Mintzberg, 1978).

Overall, this is undoubtedly the most rational process of all the four modes (Hart, 1992; Hart and Banbury, 1994; Bailey, 2000). Comprehensiveness is, in fact, the basic feature of a planning process (Fredrickson and Mitchell, 1984). Organizations using this kind of strategy process try to be exhaustive in their decision making and goal setting (Janis and Mann, 1977). In this framework, TMT sets long-term goals and medium-term objectives and direct the energies of organizational actors to achieve the ideal positioning (Reid, 1989). It is therefore also referred to as a hierarchical process in which TMT outlines an overall plan, and middle managers follow suit by setting functional goals within that overall plan (Anderson, 2000). However, the type of rationality differs from command mode, in the sense that it is dependent on formal analysis and procedure as opposed to being dominated by a single personality (CEO) (Hart, 1992). Also, the planning mode, like a command, is also divided between formulation and implementation, and there is a lag between the two stages. However, the strategy formulation stage, unlike command, involves more than just CEO and his or her coterie. The ambit of involvement is increased to include almost all the top managers and in a few cases even middle managers. The implementation stage, again, unlike command, sees a very direct and prominent involvement of middle managers as well as top managers.

Transactive Mode

This kind of strategy processes mode has been termed transactive (Hart, 1992), adaptive (Allison, 1971; Chaffee, 1985; Mintzberg, 1978), incremental (Bailey, Johnson, and Daniels, 2000; Grandori, 1984), deductive (Nonaka, 1988), ad-hoc reactive (Ansoff, 1987), process (Mintzberg and Waters, 1985), and adaptive planning (Shrivastava and Grant, 1984) mode in the literature.

In the transactive mode, there is an on-going dialogue with key stakeholders: employees, suppliers, customers, governments, and regulators (Hart, 1992). This transactive relationship of organization with its key stakeholders becomes the focal point around which most of the strategic decisions are made. The thrust of this mode is maintaining and continually refining these existing relationships. Customers and suppliers are encouraged to work closely with employees in product and process development. Localized successful outcomes are benchmarked, and other organization members are expected to replicate those outcomes. Strategic plans are frequently modified to reflect the incremental and continual nature of transactive mode. This kind of learning which require continuous improvement in product, process, and plans, based on external stakeholder feedback, is beyond the cognitive limits of TMT. TMT members are rarely in direct contact with existing customers and suppliers. In fact, it is the lower level employees who interact on the day to day basis with customers and suppliers and hence are more knowledgeable of external feedback (Burgelman, 1983). Therefore, some decision making is pushed down the hierarchy in this mode (Hart, 1992). With the effect that lower level organization members are empowered to make 'customer-related' decisions without supervisor approval (Ittner and Larcker, 1997).

Overall, in the transactive mode due to the ongoing nature of strategy formation, and continual tweaking in strategy, the line between formulation and implementation is a bit blurry. Middle managers and lower level employees solve issues within the constraints of the stated strategy. At the same time, the top managers are actively involved in setting strategy, with input and feedback from middle managers and lower level employees. It follows that regarding involvement, this mode involves more people from lower down the organization, than command and planning mode. However, the level of engagement of lower level employees is still less than the autonomous mode, discussed next.

Autonomous Mode

This kind of strategy process mode has been termed autonomous (Hart, 1992), political (Bailey, Johnson, and Daniels, 2000), inductive (Nonaka, 1988), bureaucratic (Nutt, 1981), organic (Ansoff, 1987), unconnected (Mintzberg and Waters, 1985), and political expediency (Shrivastava and Grant, 1984) mode in the literature.

In autonomous mode, the strategy is driven by operational-level managers who engage in gatekeeping, bootlegging, and idea generation activities to generate a stream of initiative that diverges from existing strategies (Burgelman, 1983). Based on these autonomous initiatives, middle managers then negotiate a change in strategies with top managers. In turn, top managers, instead of making analytically based decisions, rely on the reputation of middle managers to ratify changes in corporate strategy (Burgelman, 1991). Two streams of conceptual work have contributed immensely to the development of this mode in academia. First, is the literature on the role of middle managers in autonomous initiatives (Bower, 1970; Kanter, 1973; Burgelman, 1983; 1991; 2002), and second is the upward influence/issue selling literature (Dutton *et al.*, 1997; Floyd and Wooldridge, 1992; 1997; Wooldridge and Floyd, 1990).

The literature on the role of middle managers exemplify the characteristics of autonomous managers below TMT. Middle managers act as a mediator between operating and top managers. On the one hand, because of their closeness to lower level managers and customers, they have distinct ideas of strategic issues (Dutton *et al.*, 1997). While on the other hand, their closeness to top managers gives them a clear idea of strategy and organizational goals (Floyd and Lane, 2000). Hence, they can evaluate and conceptualize strategic implications of autonomous initiatives (Burgelman, 1983). They, also use upward influence processes to champion those autonomous initiatives (Floyd and Wooldridge, 1994), and sell those initiatives to top managers (Dutton *et al.*, 1997). Middle managers' role

is not limited to championing or selling autonomous issues to top managers. They also mobilize resources around new projects (Kanter, 1982). Middle managers shield autonomous activities that diverge from corporate strategy, while they attempt to gain legitimacy for them in the organization (Bower, 1970). Kanter dubbed this phenomenon as resource mobilization approach and argued that change and organization-wide innovations, and by that extension, corporate entrepreneurship is dependent on the ability of middle managers to mobilize resources around fledgling autonomous issues (Kanter, 1982; 1983).

The upward influence or issue selling literature exemplify the role of non-TMT members in selling autonomous issues to TMT. These non-TMT managers could be middle managers in large firms which have three layers of management: TMT, middle, and lower. Consequently, in medium to small firms which do not have middle management layers, but just TMT and lower level managers, these non-TMT managers could be the lower level managers. Irrespective of the number of management layers, issue selling, creates the much-needed variation in corporate strategy by reflecting top manager's attention to issues beyond existing competencies (Dutton and Duncan, 1987). Floyd and Wooldridge (1994) have argued that issue selling by non-TMT managers stimulates an organization's strategic thinking, and it contributes positively to its competitive position. These managers risk their reputation and often career by selling critical issues to top managers (Burgelman, 1991). Empirical research has confirmed non-TMT upward influence on strategic decisions (Schilit, 1987), and has shown a positive relationship between non-TMT involvement in strategy and organizational performance (Wooldridge and Floyd, 1990).

The presence of autonomous mode has been detected in several empirical works (Lumpkin, Cogliser, and Schneider, 2009). Most notably, Burgelman and his colleague, making use of data from longitudinal field analysis of Intel Corporation wrote a series of articles (Burgelman, 1991; 2002; Burgelman and Grove, 2007) articulating the role of the

lower level and middle-level managers in driving the organizational strategy. The underlying theme of these articles was the observation that autonomous initiatives by organizational members shifted the allocation of scarce manufacturing resources from the memory business to the emerging microprocessor business, long before top managers could understand or react to it. Hence, top managers' role in this strategy processes was limited to retrospective rationalizing the changes in corporate strategy. This pattern of autonomous decision making inside Intel Corporation was termed by these authors as an autonomous process.

Using mathematical modeling Rotemberg and Saloner (2000) further validated the findings of Burgelman and his colleagues, regarding the role of middle managers in continual allocating resources to autonomous initiatives. They showed that the combination of a visionary CEO consistently biased in favor of certain projects, and a band of autonomous middle managers who are allowed to pursue their entrepreneurial activities, offer greater profit-maximizing possibilities than those firms which commit to a narrow business strategy.

Working within the field of strategic planning, Anderson, and colleague (Anderson 2000; 2004; Anderson and Nielsen 2007) have shown the critical role played by autonomous initiatives of middle and lower level managers in effective strategy formation. Distributed decision authority, defined as “the extent to which middle managers are able to take new initiatives without permission from members of the organization’s top management team” (Anderson, 2004: 1275), has been used as a surrogate for middle managers autonomous behavior in their research. They have found that distributed decision making not only mediates the relationship between planning and firm performance (Anderson, 2000), but it also has a direct correlation with innovation (Anderson and Nielsen, 2007). Their results also show that disbursed decision making is the most effective strategy mode in a dynamic environment (Anderson, 2004).

Overall, in autonomous mode, the distinction between formulation and implementation is completely blurry. In this mode, the strategy is formed as opposed to formulated, meaning it evolves from the bottom up and gets implemented as it is evolving. In terms of involvement, it engages with the lower level employees the most. In fact, the strategy making process is completely pushed to the bottom in this mode. In terms of rationality, this is the least rational mode with the process being dominated by the intuition of lower level employees, as opposed to formal analysis or procedures.

So far the literature on the strategy process has been discussed, and the strategy process typology introduced. Next, this thesis turns to the literature on the organizational capabilities.

2.4 ORGANIZATIONAL CAPABILITIES

Resources are the primary focus in the RBV literature. Some argue that resources can be acquired from strategic factor markets, “where firms buy and sell the resources necessary to implement their strategies” (Barney, 1986: 1232). However, because of different expectations, asymmetric information, and luck, the future value of strategic resources cannot be perfectly predicted by all the acquirers. Thus, some acquirers are able to assess the future value of resources better, and hence able to acquire them at a cost below their going economic value in use. Such firms are able to sustain their competitive advantage (Barney, 1986). Other scholars, however, take issues with this approach, and argue that resources are nontradable and hence cannot be traded in strategic factor markets (Amit and Schoemaker, 1993; Dierickx and Cool, 1989; Teece, 1982, 1986; Williamson, 1979; Zander and Kogut, 1995). Instead, they have to be developed internally (e.g., Henderson and Cockburn, 1994; McGrath, MacMillan, and Venkataraman, 1995; Maritan, 2011). Irrespective of the different approaches, scholars unanimously agree with the core tenant of RBV as proposed by Barney

(1991): a resource needs to be valuable, rare, inimitable, and nonsubstitutable (VRIN), to make it a *potential* source of competitive advantage.

VRIN characteristics in itself do not provide a theory of rent generation. VRIN characteristics only tell us about the *potential* of the resource, but it is “the processes through which particular resources provide competitive advantage” that explains the rent-generating mechanism of RBV (Barney, 2001: 33). As Mahoney and Pandain (1992: 365) points out that “[a] firm may achieve rents not because it has better resources, but rather the firm’s distinctive competence [capabilities] involves making better use of its resources.”

However, the term capabilities “floats in the literature like an iceberg in a foggy Arctic sea, one iceberg among many, not easily recognized as different from several icebergs nearby” (Dosi, Nelson, and Winter, 2000: 3). As a result, capabilities have been defined both as routines (Dosi, Nelson, and Winter, 2000; Teece, Pisano, and Shuen, 1997; Winter, 2003), and processes (Amit and Schoemaker, 1993; Day, 1994). But, the differences in terminology need not necessarily mean differences in the way capabilities are conceptualized or defined, rather it reflects differences in theoretical traditions (Ray, Barney, and Muhanna, 2004). Those who approach the concept of capabilities from the evolutionary economics perspective (like this thesis) describe the underlying constituents of capabilities as routines; those who come from industrial organization economics background describe the same phenomenon as a process.

Second, the term resources and capabilities are used interchangeably, as if they are synonymous. This is particularly the case in the writings of Barney and co-authors (Barney, 1991, 1995; Ray, Barney, and Muhanna, 2004), who declares explicitly that “‘resources’ and ‘capabilities’ are used interchangeably and refer to the tangible and intangible assets firms use to develop and implement their strategies” (Ray, Barney, and Muhanna, 2004: 24). However, others have sought to differentiate between the two (Amit and Schoemaker, 1994, Helfat

and Peteraf, 2003). For them, resources are “stocks of available factors that are owned or controlled by the firm” and consist “of knowhow that can be traded (e.g., patents and licenses), financial or physical assets (e.g., property, plant, and equipment), human capital, etc.” While capabilities are “configuration of resources that enables the firm to accomplish a particular task” (Danneels, 2012: 43).

Pointing out these discrepancies, help us understand what capabilities are, what they can do, and how they can be judged. Capabilities make use of resources, are embedded in organizational routines, and reside in organizational structure, culture, and its systems (Collis, 1994). Also, capabilities are repeatable and fine-tuned for a specific activity, and are expected to perform that activity reliably (Helfat *et al.*, 2007). By reliability, it is implied that the “output of activity is recognizable as such, and functions at least minimally as intended” (Helfat and Winter, 2011: 1244). Thus, capabilities allow “firms to more efficiently or effectively choose and implement the activities necessary to produce and deliver” (Collis, 1994: 145-146).

Wal-Mart’s logistics management capability is a great example of a capability that allows it to deliver products to its stores efficiently. Its logistic capability also known as “cross-docking,” entails a system, in which Wal-Mart continuously receive desired product in its warehouses. These products, in turn, are selected, repacked, and dispatched to stores so smoothly that often these products do not even sit in warehouse inventory. Its superb cross-docking technology ensures that products cross from one loading dock to another within 48 hours (Stalk, Evans, and Shulman, 1992).

That Wal-Mart logistic capability is somewhat valuable to Wal-Mart, seems to be a foregone conclusion, but how do we formally evaluate such capabilities? At least two measures (“technical fitness” and “evolutionary fitness”) have been developed recently to assess organizational capabilities (Helfat *et al.*, 2007). Technical fitness denotes how efficiently the capability performs the activity it is supposed to perform, normalized (divided)

by the cost of that capability. This measure of capability assessment has two dimensions – first is composed of the quality aspect of capability, irrespective of the cost, and second takes into account the cost of developing, maintaining, and deploying that capability. Thus, to be technically fit, a capability does not only need to be efficient in its intended function, but the cost of developing or buying, maintaining, and deploying such capabilities should also be kept minimal. Since, capability means having some minimum efficiency in doing an activity, therefore, it follows, that the technical fitness of capability will always be non-zero.

The second measure, evolutionary fitness, refers to how well capability enables a firm to make a living. Four things define the evolutionary fitness: cost, quality, market demand, and competition (Helfat *et al.*, 2007). The cost and quality aspect are accounted for by technical fitness. However, a firm can possess a capability that has high technical fitness, but is not evolutionary fit – the capability does what it does with efficiency, but it's just that market has little *demand* for the end product or service of that capability, and/or intense *competition* drives profits down. Thus, evolutionary fitness, unlike technical fitness, can be negative. Hence, it is one thing for a capability to be technically fit, but another thing to be evolutionary fit. However, if a capability is both evolutionary and technically fit, then such capability can create competitive advantage - a competitive advantage is achieved if a capability helps a firm either lower its cost compared to its competitors, or increase the value of its product or service to the extent that customers are willing to pay for it, more than what they will pay for a similar product of a competitor (Peteraf and Barney, 2003; Porter, 1996).

However, competitive advantage created by evolutionary fit capability might not always be sustainable in the long run (Helfat and Winter, 2011). To understand what type of capabilities can lead to *sustainable* competitive advantage we need to refer back to VRIN framework. Since capabilities like resource are a firm asset, the VRIN framework is applicable to capabilities as it is to resources (Ray, Barney, and Muhanna, 2004). Thus, although a

capability might fulfill the V aspect of VRIN, in a sense that it creates value, it does not necessarily mean that it fulfills the RIN aspect of the framework. The valuable capability also needs to be rare, inimitable and nonsubstitutable (RIN) to be a source of sustainable competitive advantage (Barney, 1991). Going back to Wal-Mart's example, if the cross docking capability is not heterogeneously distributed among Wal-Mart's competitors, and others also have that capability, then its competitors can generate the same value from cross-docking as Wal-Mart. Similarly, if competitors can work around the cross docking technology to produce the same result or better still copy cross-docking technology then again everyone ends up with the same value.

Thus, technical and evolutionary fitness are the baseline for any superior performance. Without being (technically and evolutionary) fit the capability cannot create competitive advantage. However, to *sustain* that competitive advantage, the technically and evolutionary fit capability also need to be heterogeneously distributed, should have no substitute, and should be difficult to imitate. Although the VRIN framework has gained wide-ranging acceptance as a tool to understand competitive advantage (Barney, Ketchen, and Wright, 2011), but at times the profit generated might not get reflected in the profit books of the firm (Ray, Barney, and Muhanna, 2004).

This is mainly because a firm is a cluster of several capabilities, all of which affect overall firm performance, to some extent or other. For example, suppose a firm has two capabilities A and B. Further if it has a competitive advantage in capability A but a competitive disadvantage in capability B, then the overall firm performance would be average or even below average level. This, despite the fact that capability A creates a competitive advantage at capability level. Thus, studying a single capability makes it harder to detect its effect on competitive advantage. However, if the capability bundle is studied, then there is a greater chance of detecting the overall impact of such bundle. Therefore, this study

concentrates on two most important capabilities (technological and marketing) which together forms a formidable capability bundle.

2.4.1 Technological and Marketing Capabilities

There can be numerous organizational capabilities in a firm, and not all capabilities may be present in all firms (Newbert, 2007). Coupled this with the fact that not all capabilities are equal in their effect on firm performance, it is more fruitful to focus on organizational capabilities that have been previously shown to have the most effect on a firm's financial performance. Based on this criteria, this thesis focuses on organizational capabilities within the technology and marketing functions.

Marketing and technological capabilities stand out, because of their considerable rent-generating power (Song, Droge, Hanvanich, and Calantone, 2005), especially in high-tech firms. The technological capability has been shown to enable firms to achieve superior performance (e.g., Clark and Fujimoto, 1991; Pisano, 1994), while marketing capability has been established as an important capability to have for firms (Day, 1990; 1994). Both RBV and the industrial organization economics (the two dominating frameworks for understanding superior firm performance within strategic management) consider strategies based on technological and marketing differentiation as determinants of performance (Dierickx and Cool, 1989). Moreover, marketing and technological capabilities are complementary organizational capabilities, which reinforce the effect of each other: technological capability brings about innovations, and marketing capability commercializes these innovations into products/services that better serve the market (Weerawardena, 2003). It follows, the bundling of technological and marketing capabilities has important implications for firm performance (Dutta, Narasimhan, and Rajiv, 1999).

2.5 ORDINARY CAPABILITIES AND DYNAMIC CAPABILITIES

In this section, the notion of organizational capabilities is further expanded upon to distinguish between ordinary and dynamic capabilities. While the literature on ordinary capabilities is scant, but that on dynamic capabilities is quite rich. First, ordinary capabilities are explained and then the assessment of their technical and evolutionary fitness made. The discussion on dynamic capabilities, commensurate with its literature, covers several aspects of dynamic capabilities; starting from the discussion on the two broad ways their generic components have been defined, and concluding with the specific form dynamic capabilities might take in organizations. In-between a discussion is also made on their technical and evolutionary fitness.

2.5.1 Ordinary Capabilities

Those class of capabilities that allow firms to earn a living now, by making better use of its resources are termed ordinary capabilities (Teece, 2014). In the language of Porter (1980), ordinary capabilities make use of VRIN resources to either lower cost or differentiate products or both. Such capabilities have been referred vicariously as static (Collis, 1994), zero-level (Winter, 2003), substantive (Zahra, Sapienza, and Davidsson, 2006), first order (Danneels, 2008), operational (Helfat and Winter, 2011), ordinary (Teece, 2014), and zero-order (Schilke, 2014). Despite different labels and various explanations, there are common threads in the description of ordinary capabilities. Ordinary capabilities are required for firms' day-to-day operations and can be "measured against the requirements of specific tasks, such as labor productivity, inventory turns, and time to completion, and can thus be benchmarked internally or externally to industry best practices." (Teece, 2014: 330). That they can also be benchmarked makes it easier to measure their technical fitness. As a matter of fact, so engrossed firms become with ordinary capabilities technical fitness that, more often than

not, they tend to overlook their evolutionary fitness (Teece, Pisano, and Shuen, 1997). However, those ordinary capabilities that are both evolutionary and technically fit can be a source of competitive advantage.

2.5.2 Dynamic Capabilities

The way dynamic capabilities have been formally defined a lot, but these definitions are usually constructed on two classical definitions: “firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments” (Teece, Pisano, and Shuen, 1997: 516), and a class of capabilities that are required to create, modify, and extend the resource base (Helfat *et al.*, 2007). The first stream of work defines dynamic capabilities as a very complex construct consisting of at least three different components: learning, sensing, and integration (Table 2.3). In this line of inquiry, dynamic capabilities are a multi-layered and complete package. The second stream of work does not go into the many layers of dynamic capabilities but instead divide dynamic capabilities into three components: creation, extension, and modification (Figure 2.1). Each of these different components differs on the degree of change brought by them.

The aim of the two broad streams is different. Those who divide dynamic capabilities broadly into three components (learning, sensing and transformation, and coordination and integration) want to understand almost every aspect of dynamic change, from inception to the end. Organizations need to *sense* for opportunities or threats in the outside environment and be able to act on that impetus by transforming routines and resources, to change themselves. This transformation would inadvertently require *coordination* and *integration* of dispersed knowledge. Further, any meaningful change to happen, an organization needs to keep *learning* new things. Thus, defined this way, dynamic capabilities are a complete package

that caters to dynamic change from start to finish. In this perspective, to possess dynamic capabilities means being proficient in not one or two components, but all of them.

In contrast, the aim of those who divide dynamic capabilities into three components, of extension, modification, and creation, is different. These authors are not so much concerned about the each and every sub-process that goes along with every change, but they are more concerned about the *degree* of change. To them, how much the change is being intended, is the focus of the study. However, all the three components described in this perspective could have learning, integration, and sensing layers attached to them. For instance, extension type of dynamic capabilities will entail learning, coordination, and sensing, and so will creation and modification type of capabilities. Thus, the intent of the two broad classifications might be different (complete package versus the type of change), but they certainly complement each other. Below, both the explanations of dynamic capabilities are discussed in detail.

Dynamic Capabilities (Complete Package):

In the seminal work, dynamic capabilities have been argued to consist of three components: coordination and integration, learning and sensing and transformation (Teece, Pisano, and Shuen, 1997; Harrell, O'Reilly, and Tushman, 2006). Close derivatives of this type of characterization is given by (i) Eisenhardt and Martin (2000) who retain coordination and reconfiguration, but add 'gaining and releasing of assets' as a better proximate of overall learning (learning should be not only about gaining resource but also losing them when needed) (ii) Protogerou, Caloghirou, and Lioukas (2011) who retain coordination and learning, and replace reconfiguration with closely related concept of strategic competitive response process (iii) Bowman and Ambrosini (2003) who retain all three seminal processes

and add fourth one, that is, leveraging (iv) Wu (2007) again retain all three seminal processes and add ‘ability to respond to changes’ to it.

Another major perspective, within this research stream, comes from Wang and Ahmed (2007). Wang and Ahmed’s conceptualization is a popular¹ alternative discourse to the dominant North American treatise (e.g., Helfat *et al.*, 2007; Teece, Pisano, and Shuen, 1997). They conceptualize dynamic capabilities to consist of three components: adaptive capability, absorptive capability, and innovation capability. The adaptive capability is firms’ ability to sense emerging opportunities and adapt to it. Absorptive capacity is “the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends ... the ability to evaluate and utilize outside knowledge is largely a function of the level of prior knowledge” Cohen and Levinthal (1990: 128). Innovative capability refers to a “firm’s ability to develop new products and/or markets, through aligning strategic, innovative orientation with innovative behaviors and processes” (Wang and Ahmed, 2007: 16).

This scholarly block broadly converges on the three processes of sensing, learning, and integration. The implementation of new configurations of firm assets requires the effective coordination and integration of a variety of tasks and resources. Learning as the name suggests has to do with learning by which “repetition and experimentation enable tasks to be performed better and quicker. It also enables new production opportunities to be identified” (Teece, Pisano, and Shuen, 1997: 520). Sensing refers to the ability to sense changes in the market and be able to transform accordingly.

Finally, Teece and co-authors (Augier and Teece, 2009; Teece, 2000; 2007) have sought to refine these processes further by effectively defining dynamic capabilities as consisting of

¹ judging by over 1100 citation on google scholar

three components of sensing, seizing, and transformation. By reconceptualising dynamic capabilities in this way, Teece and co-authors have brought sensing and seizing into prominence which otherwise was defined as a function of transformation process (as opposed to as independent sub-processes) in their earlier work. Sensing consists of processes to direct internal R&D and select new technologies, tap suppliers and complementary innovation, and tap development in science and technology. Seizing consists of delineating the customer solution and business model, selecting decision-making protocols, selecting boundaries to manage co-evolution, and building loyalty and commitment. The transformation consists of developing loosely coupled structure, governance, co-specialization, and knowledge management (Teece, 2007). However, such an explanation - of what dynamic capabilities are- define virtually everything that is done within a modern-era firm (S. Winter, personal communications, December 12, 2012). By doing so, such broad and generalized conceptualization explain everything and nothing at the same time.

Table 2.3: Representative Work on Dynamic Capabilities as Complete Package

Authors	Integration and Coordination	Sensing and Transformation	Learning
Teece, Pisano, and Shuen, 1997	<ul style="list-style-type: none"> • Coordination/integration 	<ul style="list-style-type: none"> • Reconfiguration and transformation 	<ul style="list-style-type: none"> • Learning/building
Eisenhardt and Martin, 2000	<ul style="list-style-type: none"> • Integration 	<ul style="list-style-type: none"> • Reconfiguration 	<ul style="list-style-type: none"> • Gain and release of resource
Bowman and Ambrosini, 2003	<ul style="list-style-type: none"> • Creative integration 	<ul style="list-style-type: none"> • Reconfiguration • Leveraging 	<ul style="list-style-type: none"> • Learning
Harreld, O'Reilly, and Tushman, 2006	<ul style="list-style-type: none"> • Coordination 	<ul style="list-style-type: none"> • Transformation 	<ul style="list-style-type: none"> • Learning
Wu, 2007	<ul style="list-style-type: none"> • Resource integration 	<ul style="list-style-type: none"> • Resource reconfiguration 	<ul style="list-style-type: none"> • Learning

Wang and Ahmed, 2007	<ul style="list-style-type: none"> • Absorption 	<ul style="list-style-type: none"> • Adaption • Innovation 	
Augier and Teece, 2009	<ul style="list-style-type: none"> • Seize opportunities 	<ul style="list-style-type: none"> • Sense • Recombination and reconfiguration 	
Protogerou, Caloghirou, and Lioukas, 2011	<ul style="list-style-type: none"> • Coordination/Integration 	<ul style="list-style-type: none"> • Strategic competitive response 	<ul style="list-style-type: none"> • Learning capability
Wang, Senaratne, and Rafiq, 2015	<ul style="list-style-type: none"> • Absorptive 	<ul style="list-style-type: none"> • Transformative 	

Dynamic Capabilities (Degree of Change)

Although the previous classification of dynamic capabilities explains the constituting processes of dynamic capabilities in a detailed way, it does not differentiate the extent of change or innovation that comes with dynamic capabilities. Helfat *et al.* (2007) perspective just does that – it classifies dynamic capabilities into three dynamic components based on the type of learning, and the ensuing extent of deviation from a firm’s existing path.

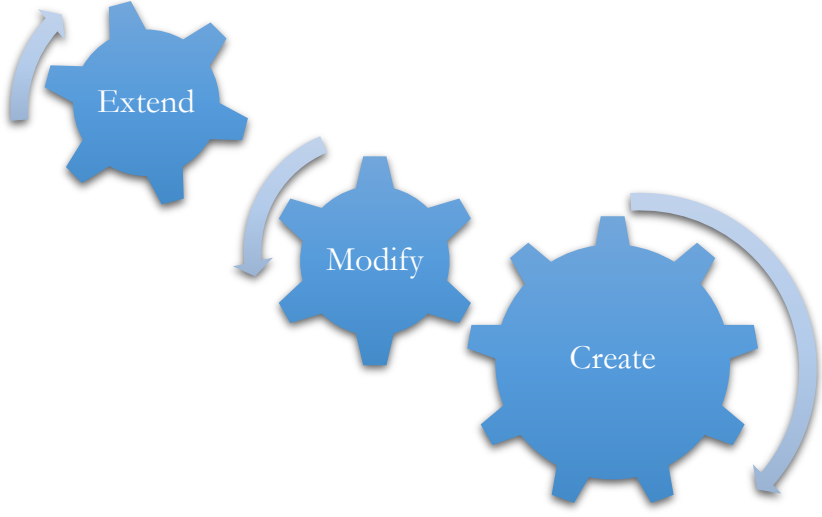
This discourse on dynamic capabilities comes from the joint interpretation by several of leading scholars on dynamic capabilities (Helfat *et al.*, 2007). These authors have interpreted that dynamic capabilities consist of three sub-processes that are needed for *extending, modifying, and creating* firms’ asset base (Figure 2.1). The "asset base" of an organization includes “tangible, intangible, and human assets (or resources) as well as capabilities which the organization owns, controls, or has access to on a preferential basis.” (Helfat *et al.*, 2007: 122). Organizations can create new asset base totally or partially through alliances and acquisitions or through innovation and corporate entrepreneurship. Organizations also can modify their asset base to change their businesses. And organizations can extend their current asset base by doing more of the same, such as by penetrating existing markets.

The extension requires the least amount of learning and creation the most, modification sits somewhere in the middle. Accordingly, some firms are better than others at altering their asset base by creating, modifying, and extending their asset base (Teece, Pisano, and Shuen, 1997; Eisenhardt and Martin, 2000). This study focuses on the first component of dynamic capabilities: the capabilities to *create* asset base. Adding new capabilities to a firm's asset base is important for its sustainability in a changing environment (Helfat, 2000; Leonard-Barton, 1992). It is this type of dynamic capability that lead firms toward exploration and away from exploitation.

Since the intent of this research is to understand dynamic capabilities effects along with ordinary capabilities, this research adopts the *degree of change* perspective on dynamic capabilities and specifically concentrates on the most explorative form of dynamic capabilities: capabilities to *create* new resources and capabilities. The other two type of capabilities related to extension and modification are too close to what ordinary capabilities does. Hence, it might be, conceptually and statistically, difficult to distinguish between them and ordinary capabilities (Helfat and Winter, 2011). Conversely, the most radical form of dynamic capabilities, that is, capabilities to create new resources are much distinct from ordinary capabilities, hence, used in this research to represent dynamic capabilities.

Having discussed different approaches to dynamic capabilities, and stated the perspective this thesis had chosen, in the next section, a discussion is made on the technical and evolutionary fitness of dynamic capabilities.

Figure 2.1: Dynamic Capabilities and Degree of Change

Authors	Incremental Change	In-between Change	Radical Change
Winter, 2003 Helfat <i>et al.</i> , 2007			

Technical and Evolutionary Fitness of Dynamic Capabilities

Since the nature and characteristic of dynamic capabilities are quite complex, assessing its fitness, especially evolutionary fitness, is complex too. First, dynamic capabilities are very costly to accumulate and maintain (Barreto, 2010) which puts considerable strain on their technical fitness, since technical fitness is quality normalized by the *cost* of capability. Second, considerable confusion exists in the literature on the relationship between dynamic capabilities and firm performance. While some (Adner and Helfat, 2003; Teece, 2007; Teece, Pisano, and Shuen, 1997) sees a direct effect of dynamic capabilities on firm performance, others (Ambrosini, Bowman, and Collier, 2009; Ambrosini and Bowman, 2009; Eisenhardt and Martin, 2000; Rindova and Kotha, 2001; Wang and Ahmed, 2007; Zahra, Sapienza, and Davidsson, 2006) disagrees and point to an indirect effect on firm performance, via ordinary capabilities.

While the question whether dynamic capabilities affect firm performance directly or indirectly is by no means closed and remains an active area of research (Barreto, 2010), this

thesis posits that the answer to it may lie in what specific component of dynamic capabilities is being looked into. For instance, using Helfat *et al.* (2007) conceptualization that dynamic capabilities can create, extend, and modify asset base. Thus, whether dynamic capabilities directly affect firm performance or not might depend on what type of dynamic capability is being referred to.

Those type of dynamic capabilities that create new resources will have a direct effect on firm performance. While, the extension or modification type will have an indirect effect on firm performance. Depending on whom we listen to, or how we conceive the dynamic capabilities effect might look like, the assessment of their evolutionary fitness varies considerably. New resource creation type of dynamic capabilities that have a direct effect on firm performance are easier to assess. However, other types (extension and modification) are one step removed from firm performance and evaluating their evolutionary fitness would require evaluating the evolutionary fitness of ordinary capabilities (on which dynamic capabilities act on).

The direct-indirect debate and the difficulty or ease of assessing the evolutionary fitness of dynamic capabilities also addresses the issue of competitive advantage, and whether this advantage can be assessed easily or not. Some argue that dynamic capabilities are heterogeneously distributed, as consist of unique and idiosyncratic processes that are path-dependent (Teece, Pisano, and Shuen, 1997). Thus, dynamic capabilities contributions can be sustained over a long period. However, others tend not to agree with this explanation, and counter argue that “while dynamic capabilities are certainly idiosyncratic in their details, the equally striking observation is that specific dynamic capability also exhibit common features that are associated with effective processes across firms” (Helfat and Winter, 2000:1108). Commonalities across firms imply that dynamic capabilities show equifinal (i.e., there are multiple paths to same dynamic capability). Because of this equifinal, they cannot

be a source of sustained competitive advantage, as what they achieve can always be achieved by following a different path. Thus, according to this perspective source of *sustained* competitive advantage “lies in using dynamic capabilities sooner, more astutely, or more fortuitously than the competition to create resource configurations that have that advantage” (Eisenhardt and Martin, 2000:1117).

So far the discussion on dynamic capabilities centered on their generic components, and their technical and evolutionary fitness. In the next and last section on the topic, I enter into more specific details of dynamic capabilities; the form that dynamic capabilities take in organizations.

2.5.3 Ordinary and Dynamic (Technological and Marketing) Capabilities

Although the above discussion explains the dynamic capabilities components, it does not tell us what dynamic capabilities look like in practice. Terms such as learning, coordination-integration, reconfiguration, sensing, seizing, absorptive, adaptive, innovative, creation, modification, and extension are theoretical terms which we academics use to gain a deeper understanding of the nature and characteristics of dynamic capabilities. But, how do these terms map onto real life routines within organizations? Eisenhardt and Martin (2000) were among the first to argue that dynamic capabilities are *identifiable* and *specific* processes that create value for firms by manipulating resources. For instance, acquisition capability is often cited as an example of dynamic capabilities in literature (Helfat and Peteraf, 2009). Acquisition capability, in turn, to use Helfat *et al.* (2007) perspective, might create, extend or modify the resource base depending on the intent of those deploying it. Similarly, to use Teece and colleagues (1997) perspective, acquisition capability might require coordination and integration of newly acquired business unit with other existing units. It may, further, also require a transformation of acquired as well as existing units to fine tune their working.

Finally, acquisition capabilities also entail learning. Thus, the components of dynamic capabilities tell us what dynamic capabilities entails, and the specific example tells us about the specific shapes dynamic capabilities takes in an organization. The specific example of dynamic capabilities, in this thesis, consists of capabilities in technological and marketing functions.

Specifically, this thesis divides technological and marketing capabilities into ordinary and dynamic capabilities. This distinction serves to distinguish technological and marketing capabilities that enable firms to undertake day-to-day operations (i.e. ordinary technological and marketing capabilities) from those that allow them to upgrade their resource base (i.e. dynamic technological and marketing capabilities). Specifically, ordinary technological capability refers to a firm's ability to produce a product or service for its existing customers, while dynamic technological capability refers to a firm's ability to identify and adapt new technologies (Danneels, 2012). Ordinary marketing capability is the firm's ability to serve a particular group of existing customers, whereas dynamic marketing capability constitute firm's ability to identify and penetrate markets previously unserved (Bruni and Verona, 2009; Danneels, 2012).

2.6 FIRM PERFORMANCE

This research seeks to understand what would be the competitive outcome of effectively managing firm's strategy processes and organizational capabilities. It is argued that competitive outcome of such effective management would be that the focal firm would have a *competitive advantage* over its rival. A capability or strategy process or their combinations will achieve competitive advantage for the firm if the *net* of customers' willingness-to-pay for the end product, minus the cost of accumulating and utilizing that capability or strategy process is (relatively) less (Hoopes and Madsen, 2008). The *relative* dimension in the definition implies

willingness-to-pay “for a good absent competing products or services yet within budget constraints [of buyers] and considering other purchasing opportunities” (Hoopes, Madsen, and Walker, 2003: 891), and keeping the *cost* down compared to the competitors’ cost. Thus, a firm that can achieve competitive advantage due to efficient utilization of its capabilities and strategy processes should be either able to increase the customers’ willingness-to-pay more or decrease the cost structure more than the direct competitors.

Either way, it is believed that the competitive advantage will be reflected in superior firm performance (Porter, 1985). In most cases, (but not all) superior firm performance would be able to capture any competitive advantage a firm has due to efficient handling of its strategy processes and capabilities. Nevertheless, some skeptics believe that exogenous factors (e.g., Hawawini, Subramaniam, and Verdin, 2003; McGahan and Porter, 1997; Rumelt, 1991; Schmalensee, 1985; Spanos and Lioukas, 2001) might play a strong role in firm performance. Hence, firm performance might not always reflect competitive advantage arising out of the efficient utilization of strategy processes and organizational capabilities. However, a critical empirical mass exists that proves that variations in firm performance are mostly due to internal resources and capabilities (Short, Ketchen, Palmer, and Hult, 2007). Thus, firm performance, by and large, does capture the competitive advantage arising from capabilities and strategy processes.

The firm performance itself has been captured in several different ways in the literature. But two themes are most prominent in the operationalization of firm performance; efficiency and effectiveness (Auh and Menguc, 2005; Chakravarthy and White, 2002; Junni, Sarala, Taras, and Tarba, 2013). Firm efficiency stems from a firm's superior ability to deploy its assets and to extract maximum returns or efficiency value from these assets (Auh and Menguc, 2005). Firm effectiveness derives from organizational activities that are geared towards growth - the growth of a firm both within and beyond its existing market and

technological boundaries (Auh and Menguc, 2005). Thus, in this research both the constructs (firm efficiency and firm effectiveness) are used to measure firm performance.

2.7 CONCLUSION

This chapter opened with the discussion on why RBV and DCV angles are needed for studying strategy processes. Which, in effect, highlighted the inefficiency of industrial organization economics paradigm in understanding strategy processes contributions. Later, a literature review of strategy processes literature was done that led to the identification of four modes of strategy process (command, planning, transactive, and autonomous). This typology, consisting of four modes, is constructed on the involvement of organizational members. This was followed by an exhaustive review of organizational capabilities literature. The end product of this review was the identification of two distinct class of capabilities (ordinary and dynamic) and the introduction of four capabilities (ordinary marketing, ordinary technological, dynamic marketing, and dynamic technological). Finally, the chapter concludes with a review of competitive advantage and firm performance constructs leading to firm efficiency and firm effectiveness.

Figure 2.2: Strategy Processes, Organizational Capabilities, and Firm Performance



CHAPTER THREE

RESEARCH MODELS AND HYPOTHESES

3.1 INTRODUCTION

The aim of this chapter is to build research models, to frame hypotheses that can answer the three research questions raised earlier in chapter one. As discussed in chapter one, this is primarily a study of strategy processes, organizational capabilities, and firm performance relationship. The other two parts of the study zooming in on first and second half of this relationship.



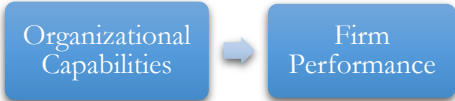
Thus, the base model is built around the relationship between strategy processes, organizational capabilities, and firm performance. This model primarily relies on RBV and DCV literature to construct its model and ensuing hypotheses. It is a straightforward model that intends to unpack the relationship between strategy processes, organizational capabilities, and firm performance.

The second model is built around the relationship between strategy processes and organizational capabilities. This model is a deeper introspection of this relationship than that was possible to do in a previous broader model. It uses the theoretical angle of RBV, DCV, and organizational ambidexterity to build hypotheses surrounding the ambidexterity at

strategy process and organizational capabilities level. The ambidexterity at strategy processes level is termed strategic ambidexterity, and that at capabilities level cross-functional and within functional ambidexterity.

The third and final model dwell deeper into the relationship between organizational capabilities and firm performance, a task that was again impossible in the base model. This model uses the theoretical angle of RBV and DCV to compare and contrast the contributions of both (ordinary and dynamic) capabilities towards firm performance.

Table 3.1: Models, Theoretical Angles, and Hypotheses

Models	Theoretical Angles	Hypotheses
 <pre> graph LR A[Strategy Processes] --> B[Organizational Capabilities] B --> C[Firm Performance] </pre>	RBV, DCV	H1a-H4b
 <pre> graph LR A[Strategy Processes] --> B[Organizational Capabilities] </pre>	RBV, DCV, Organizational Ambidexterity	H5a-H7b
 <pre> graph LR A[Organizational Capabilities] --> B[Firm Performance] </pre>	RBV, DCV	H8-H11

3.2 STRATEGY PROCESSES, ORGANIZATIONAL CAPABILITIES, AND FIRM PERFORMANCE

Strategy process research discerns how strategies are formed, validated and implemented within a firm (Chakravarthy and Doz, 1992). There is an inherent belief among scholars that

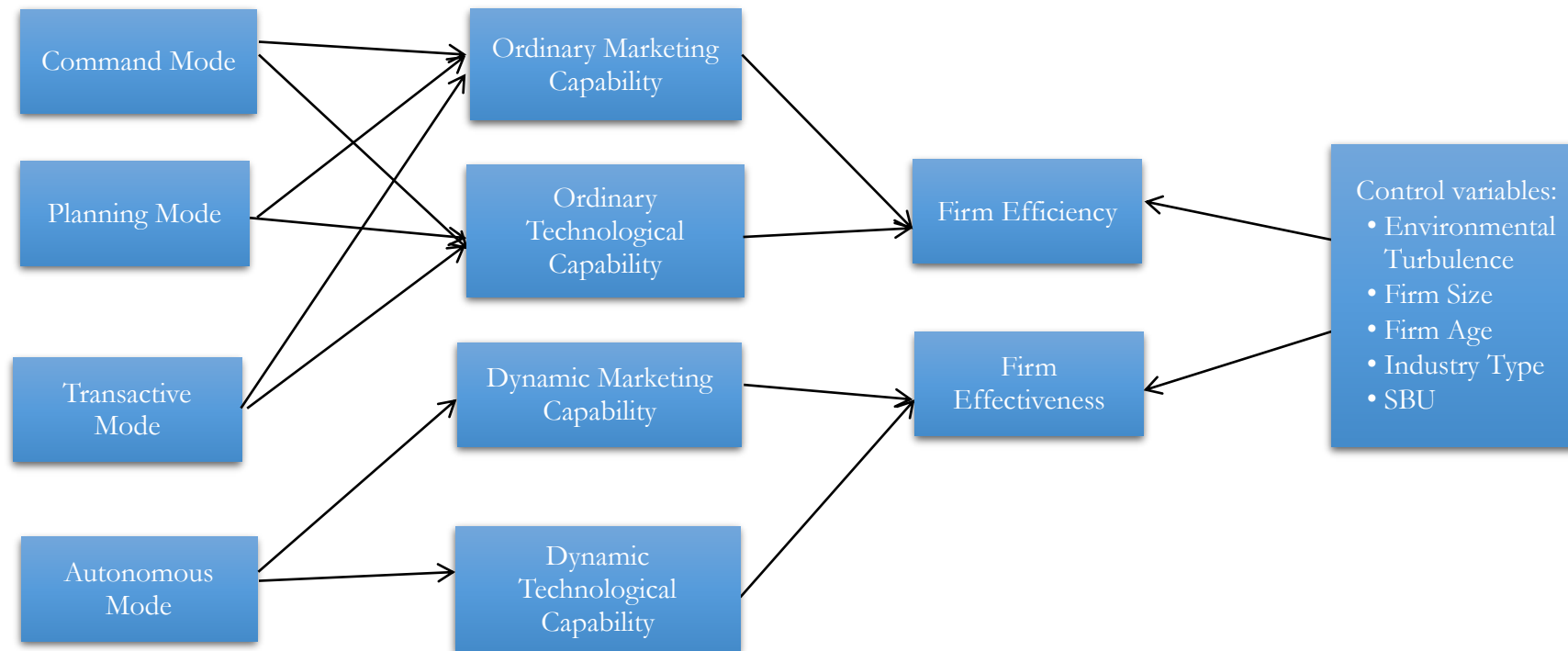
strategy processes have distal financial outcomes (Wolf and Floyd, 2013). However, how strategy processes are translated into firm performance, and whether they have direct effects on firm performance have been questioned in the past decades. Hofer (1976: 262) first raises these concerns: “For a substantial time, those involved in the strategic planning [a mode of strategy process] area have had to accept as a tenet of faith the belief that strategic planning was indeed worthwhile. This belief was justified with the theoretical arguments of Ansoff and others, but there was no research evidence to provide support for these beliefs.” Three decades later, Wolf and Floyd (2013: 9), based on a review of over 30 years' research on the performance outcomes of strategic planning, conclude that “the range of findings leaves considerable room for ambiguity.” This reinforces the ongoing research problem of the relationship between strategy processes and firm performance. Needless to say, planning is just one mode of strategy processes, which together capture the organizational reality (Mintzberg, Ahlstrand, and Lampel, 1998); the evidence of the contribution of other modes of strategy processes to firm performance is equally inconclusive (e.g., Brews and Purohit, 2007; Hart and Banbury, 1994). Without a doubt, the performance outcome of strategy processes remains debatable within strategy process research.

Scholars have attempted to head to the criticism of strategy process research being overly fixated with its distal outcomes, and in the process having ignored the more intermediate outcomes (King, 1983). In particular, Hart and Banbury (1994) question the wide use of profitability alone as the performance indicator in strategy process research, which could have contributed to the ambiguous findings in past research. The attempt to overcome this weakness has led to the inclusion of more intermediate outcomes, such as the integration, coordination, and communication of functional and subunit activity as proximate strategic planning outcomes (Wolf and Floyd, 2013). However, this body of literature is dominated by the industrial organization economics paradigm, where firm analyses its

industry structure that influences its strategic choice and action, and consequently the performance of the firm and the industry - mainly profitability (Bain, 1959; Porter, 1985). Performance outcomes result from a firm's strategic formulation to position itself favorably within the industry, disregarding its internal resources and capabilities. The fact that RBV and its extension DCV, have gained prominence in strategic management research has been overlooked by research on the performance outcomes of strategy processes.

This base model draws on the RBV and DCV to examine organizational capabilities as the intermediate outcomes between strategy processes and firm performance; the performance outcomes of strategy processes are subject to the quality of resources and capabilities available to the focal firm or subsequently built by it (Grant, 1991). Because organizational capabilities are heterogeneously distributed among firms (Barney, 1991), research into the performance outcomes of strategy processes without taking organizational capabilities into consideration indeed creates a black box effect of the working of strategy processes to deliver firms' competitive advantage.

Figure 3.1: Research Model- Strategy Processes, Organizational Capabilities, and Firm Performance



3.2.1 Hypotheses

The RBV includes an implicit discussion on what role strategy processes take vis-à-vis capabilities. Helfat *et al.* (2007) argue that managerial and organizational processes can be part of the functioning of capabilities in two ways: processes can be mechanisms by which capabilities might be 'put to use,' and they can also be mechanisms by which firms can 'develop capabilities.' Following this line of argument, strategy processes have a dual character in which they not only put capabilities into use but also develop them. In particular, Grant (1991) argues that, although the RBV posits that the primary task of strategy is to maximize rents by deploying capabilities, it is equally concerned with the development of the firm's capability base. Thus, managers need to have a capability mentality that can explicitly link firms' strategy processes to organizational capabilities (Maritan, 2001). Below, this research explicitly delineates how strategy processes deploy and develop organizational capabilities that consequently contribute to firm performance.

Following on from this articulation of the four strategy processes and the four distinct capabilities, this base model delineates their effects on two dimensions of firm performances, namely firm efficiency and effectiveness (Auh and Menguc, 2005; Chakravarthy and White, 2002). Firm efficiency stems from a firm's superior ability to deploy its assets and to extract maximum returns or efficiency value from these assets (Auh and Menguc, 2005). Firm effectiveness derives from organizational activities that are geared towards growth - the growth of a firm both within and beyond its existing market and technological boundaries (Auh and Menguc, 2005).

Strategy Processes, Ordinary Capabilities, and Firm Efficiency

Strategy processes are the organization-wide processes through which organization strategies are formed, validated and implemented within a firm (Chakravarthy and White, 2002).

Ordinary capabilities are a class of capabilities that are required for firm's day-to-day operations (Winter, 2003), and firm efficiency is the measure of firm's current profitability (Auh and Menguc, 2005).

Firm efficiency comes from the possession of ordinary capabilities. Firms with ordinary capabilities are more likely to engage in local search, that is, search within the vicinity of their technological and market boundaries, to achieve immediate returns (Levinthal and March, 1993). For instance, Zhou and Wu (2010) find that firms operating in a high-tech environment, with ordinary technological capability, tend to engage in more exploitative activities.

Building on the extant literature, this part of research argues that a firm's increased use of ordinary capabilities will have a positive impact on its efficiency for two reasons. First, the accumulation of expertise in a given market or niche enables a firm to understand that market better, providing insights into how to better exploit current assets to serve these markets (Cohen and Levinthal, 1990). Second, working with similar technologies to produce products/services over time makes a firm efficient in that process. Accordingly, the firm is better able to extract efficiency value from its resources (Zhou and Wu, 2010). Thus, ordinary capabilities improve efficiency by deploying resources such that they increase revenue (Peng and York, 2001), as well as by using resources in a manner that they reduce the products or services cost (Brush and Artz, 1999). These actions when done over again provide certain efficiency to the firm to carry out its day-to-day operations; firms that are proficient in ordinary capabilities can extract better returns from their assets. Three out of the four strategy processes - command, planning and transactive modes, are conducive to ordinary capabilities driving up firm efficiency.

Command mode. This mode is characterized by a centralized decision-making process (Mintzberg, 1973), where participation of employees is consciously controlled and restricted

by the CEO - the commander (Hax and Majluf, 1988; Shrivastava and Grant, 1985). A commander may have an animated effect over employees, galvanizing them towards the direction that the commander wants the firm to take. However, the complexity of firms is such that no one person at the top can fully grasp the details of market and technological changes taking place. Usually, it is the employees who are in touch with customers and have first-hand information on market and technological changes. However, the top-down and single-handed approach of the command mode closes the feedback loop and reduces the chances of upward movement of ideas (Sheremata, 2000), and employees with a decreased sense of control over work are less likely to share their concerns surrounding the market and technological changes. Thus, a commander alone is difficult to have a sufficient grasp of new markets and technologies, but in tune with the current market and technological domain. Consequently, the efforts of employees are often channeled in the direction of the present market and technological trajectories rather than unknown ones. Thus, command mode channels organizational efforts towards the accumulation and deployment of ordinary capabilities and consequently firm efficiency. Stated formally:

H1a: Ordinary marketing capability mediates the relationship between command mode and firm efficiency.

H1b: Ordinary technological capability mediates the relationship between command mode and firm efficiency.

Planning mode. This mode acts as an integration mechanism for organizational activities (Kukalis, 1991; Miller and Cardinal, 1994). First, planning unifies diversified organizational activities in a firm under a single plan and helps detect any deviation from the plan (Lorange and Vancil, 1977). The process of achieving unity of efforts is conducive to ordinary capabilities that entail integrating dispersed information, ideas, and knowledge into collective actions, and such efforts are conducive to firm efficiency (Lawrence and Lorsch, 1967).

Second, planning allows a firm to estimate the timing of resource needs more accurately and slack, and coordinate organizational activities, and resource flows (Armstrong, 1982). This helps minimize the occurrence of bottlenecks that cause delay to day-to-day operations (Delmar and Shane, 2003), and hence optimize the coordination and integration required for ordinary capabilities and firm efficiency. Third, the planning mode encompasses clear decision rules for project selection; cash flows specification, and uncertainty and/or risk calibration (Ansoff, 1991; Teece, 2009). These predefined rules favor strategic expenditure on ordinary capabilities, as an investment in dynamic capabilities involves estimating future revenue streams, and tracking cost trajectories of uncertain and sometimes unspecified projects. Thus, planning mode helps build ordinary capabilities by removing bottlenecks, directing strategic expenditure, and marshaling system-level coordination towards accumulation and deployment of ordinary capabilities to achieve firm efficiency. Stated formally:

H2a: Ordinary marketing capability mediates the relationship between planning mode and firm efficiency.

H2b: Ordinary technological capability mediates the relationship between planning mode and firm efficiency.

Transactive mode. This mode symbolizes continuous small-scale changes to strategy (Chaffee, 1985; Grandori, 1984; Hart, 1992). The transactive mode encourages an ongoing dialogue between management and key organizational stakeholders (Hart, 1992), to (or “intending to”) refining current processes that link with the needs of current markets. Thus, the transactive mode is conducive to the refinement of ordinary capabilities through repetition of organizational activities (Benner and Tushman, 2003). Also, although planning can act as a coordination and integration mechanism required for ordinary capabilities, planning becomes insufficient in an uncertain environment (March and Simon, 1958;

Thompson, 1967). This has led to the prediction of the demise of planning (Fuller, 1998; Mintzberg, 1991). The transactive mode allows firms to coordinate through feedback and mutual adjustments (March and Simon, 1958; Thompson, 1967), based on new information from markets and organizational stakeholders, which in turn helps coordinate and integrate knowledge associated with ordinary capabilities. Thus, transactive mode accrues ordinary capabilities by stabilizing routines, and integrating and coordinating dispersed knowledge to achieve firm efficiency. Stated formally:

H3a: Ordinary marketing capability mediates the relationship between transactive mode and firm efficiency.

H3b: Ordinary technological capability mediates the relationship between transactive mode and firm efficiency.

Strategy Process, Dynamic Capabilities, and Firm Effectiveness

To recap, dynamic capabilities in this research are a class of capabilities that are required to create the resource base (Helfat *et al.*, 2007), and firm effectiveness is a measure of firm's growth (Auh and Menguc, 2005).

Firm effectiveness associated with growth within and beyond its existing market and technological boundaries (Auh and Menguc, 2005) usually requires firms to use dynamic capabilities to accumulate new resources and to change ordinary capabilities (Chmielewski and Paladino, 2007; Makadok, 2010; Zou, Fang, and Zhao, 2003) for three reasons. First, dynamic capabilities are associated with search outside the vicinity of a firm's technological boundaries (Levinthal and March, 1993), accruing new knowledge related to technology. This increases a firm's ability at evaluating and implementing new technologies (Zahra and George, 2002). Subsequently, the firm can rapidly identify emerging technological shifts, and engage in technological innovations (Rosenkopf and Nerkar, 2001). Second, dynamic capabilities build knowledge of altogether new markets or niches, enabling a firm to enter

markets that have not been served before, thereby propelling growth (Cohen and Levinthal, 1990). Third, dynamic capabilities improve firm effectiveness by developing new resources that render some of the previous resources obsolete (Conner, 1991). As a result, firms using newly accumulated resources can grow in markets or niches which were previously served by now defunct or obsolete resources. Thus, firms that are proficient in dynamic capabilities are able to gain effectiveness. Among the four strategy processes, the autonomous mode is conducive to firm effectiveness.

Autonomous mode. This mode is characterized by high strategic autonomy to allow employees to indulge in risk-taking and experimentation to address problems and pursue new opportunities (Burgelman, 1991). The autonomous mode provides a fertile ground for dynamic capabilities that involve discovering opportunities for new markets or new technological trajectories (He and Wong, 2004). This inherently involves much uncertainty and risk bearing, for example, what new technology will come to dominate the market, and how customers and competitors will respond (Ireland and Webb, 2007). Consequently, development of dynamic capabilities entails estimating future revenue streams and tracking cost trajectories of uncertain and sometimes unspecified projects. Risk-taking facilitates the accumulation of dynamic capabilities (Andriopoulos and Lewis, 2009; Claver, Llopis, Garcia and Molina, 1998; Mascitelli, 2000); it is through experimentation that new alternatives are explored (March, 1991) and much of new knowledge associated with dynamic capabilities is produced. Evidence from research on technological evolution clearly shows that accumulation of dynamic capabilities is marked by intense experimentation (Clark, 1985). Also, to allocate resources in this strategy, CEO and TMT do not cosset analytical procedures, which favor ordinary capabilities. Rather, they are willing to allocate resources to uncertain and unspecified projects, based on the initiatives and advice of middle managers (Burgelman, 2002). As a result, resource allocation associated with autonomous mode favors

dynamic capabilities. Thus, the autonomous mode leads to the development of dynamic capabilities through strategic autonomy, experimentation, risk-taking, and a regime of a non-analytical resource allocation, and consequently firm effectiveness. Stated formally:

H4a: Dynamic marketing capability mediates the relationship between autonomous mode and firm effectiveness.

H4b: Dynamic technological capability mediates the relationship between autonomous mode and firm effectiveness.

3.2.2 The Significance of the Research Model

This base model aims to examine the relationships between strategy processes, organizational capabilities, and firm performance. This model aims to contribute to strategy process research within the strategic management literature, in particular, how strategy processes can deploy and develop organizational capabilities and consequently improve firm performance, by addressing three research gaps. First, this model examines a combination of strategy processes and their effects on organizational capabilities and firm performance. In particular, this research focus on command, planning, transactive, and autonomous modes, which are closely aligned with prior research (Bailey, Johnson, and Daniels, 2000; Grandori, 1984; Hart, 1992; Mintzberg, 1973; Mintzberg and Waters, 1985; Shrivastava and Grant, 1985). Prior research often singles out one strategy process (e.g., the planning mode), and focuses on its various characteristics (e.g., Boyd and Reuning-Elliot, 1998; Grant, 2003; Rudd *et al.*, 2008). Andersen (2004) warns that such research has limitations as it does not consider potential effects of other strategy processes; picking one strategy process is to present a rather simplistic and naive view of the complex reality of firms where multiple strategy processes co-exist. The four strategy processes examined in this study reflect the complex strategy

processes within firms, as in reality firms often exhibit an assortment of strategy processes (Hart and Banbury, 1994).

Second, this model examines organizational capabilities along the capability hierarchy, namely zero-order ordinary capabilities and higher-order dynamic capabilities - two main classes of organizational capabilities posited by the RBV and DCV. Ordinary capabilities are required for a firm's current day-to-day operation (Winter, 2003), and dynamic capabilities for altering a firm's resource base by integrating, building, and reconfiguring internal and external competences to address rapidly changing environment (Eisenhardt and Martin, 2000; Teece, Pisano, and Shuen, 1997). The four strategy processes examined in this study differ in their rationality, and involvement of the different levels of the organizational hierarchy (Andersen, 2004; Atuahene-Gima and Li, 2004; Hart, 1992; Priem, Rasheed, and Kotulic, 1995), and as such differ significantly in their ensuing effects on ordinary and dynamic capabilities. However, to the best of our knowledge, no prior study exists to provide evidence on the effects of strategy processes on ordinary and dynamic capabilities, a research gap which this research aim to address.

Third, this model takes a closer look at ordinary and dynamic capabilities by focusing on marketing and technology - two vital business functions within high-tech firms (Song *et al.*, 2005) and also dual purpose capabilities with both ordinary and dynamic variants (Helfat and Winter, 2011). Strategy processes are considered a strategic resource - a potential source of economic value creation, and it is through organizational capabilities that strategy processes recognize and exploit resources to create value (Barney, 1991). Although Barney (1991) does not specify the type of organizational capabilities he refers to, Dierickx and Cool (1989) clearly argue the importance of marketing and technological capabilities by identifying the key dimensions of strategy processes as making appropriate choices about strategic expenditure with a view to accruing marketing and technological capabilities. Marketing and

technological capabilities in both ordinary and dynamic variants and their roles in translating strategy processes to firm performance warrant more research.

Overall, this model addresses the concern of the apparent wide gulf between strategy processes and associated outcomes (Maritan and Alessandri, 2007; Maritan and Schendel, 1997). Despite calls for more research to establish relationships among strategy process characteristics, process outcomes, and competitive outcomes to understand how competitive advantages develop (Maritan, 2009), the gulf remains. Thus, it is very germane for the growth of the strategic management field in general, and strategy process research in particular, that a more robust link between strategy processes and their associated outcomes is made taking into account the RBV and DCV. Without such a link, strategy process researchers may imperil the field (Chakravarthy and White, 2002). Practically, this study offers insights on how firms can adopt and manage effective strategy processes to build and deploy particular sets of organizational capabilities required to achieve the desired organizational outcomes.

3.3 STRATEGY PROCESSES AND ORGANIZATIONAL CAPABILITIES

Building on the base model (strategy processes, organizational capabilities, and firm performance), this model takes a closer look into the relationship between strategy processes and organizational capabilities, from the theoretical angle of organizational ambidexterity that entails simultaneous management of exploration and exploitation.

3.3.1 Exploration and Exploitation

Exploration includes “things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation,” whereas exploitation includes “such things as refinement, choice, production, efficiency, selection, implementation, execution” (March, 1991:71). Exploitation builds on organization’s existing knowledge base, and those

pursuing exploitation strategies follows its existing technological paths and leverages its existing skills and capabilities. In turn, exploration entails a shift away from an organization's current knowledge base and skills to new technical skills, market expertise, or external relationships (Lavie, Stettner, and Tushman, 2010). Whereas exploration activities are primarily carried out “through cognitive efforts aimed at generating the necessary range of new intuitions and ideas (variation) as well as selecting the most appropriate ones through evaluation and legitimization processes” (Zollo and Winter, 2002: 18), exploitation activities rely more on “behavioral mechanisms encompassing the replication of the new approaches in diverse contexts and their absorption into the existing sets of routines for the execution of that particular task” (Zollo and Winter, 2002: 18). Similar to exploration and exploitation classification, other have also distinguished between double-loop versus single-loop learning (Argyris and Schon, 1978), autonomous versus adaptive learning (Senge, 1990), and local search versus long jump (Levinthal, 1997).

Since exploration is a learning activity that leads to the addition of new resources, it follows that dynamic capabilities are explorative capabilities. Put differently; dynamic capabilities are the abilities of the firm to engage in exploration. Conversely, exploitation is a learning activity that involves the use of resources firm already possess. Thus, ordinary capabilities are exploitative capabilities that entail exploitation of firm's current resources (Danneels, 2012).

3.3.2 Organizational Ambidexterity

Ambidexterity as a firm's ability to simultaneously explore and exploit is considered an essential precondition for its short-term performance and long-term success (Tushman and O'Reilly, 1996; Birkinshaw, J., Raisch, Probst, and Tushman, 2009; Simsek *et al.*, 2009; Birkinshaw and Gupta, 2013). Research has broadly conferred that ambidexterity contributes

to superior firm performance (Markides and Charitou, 2004; Gibson and Birkinshaw, 2004; He and Wong, 2004; Lubatkin, Simsek, Ling, and Veiga, 2006; Cao, Gedajlovic, and Zhang, 2009; Wang and Rafiq, 2014).

Motivated by the performance implications, research has examined mechanisms or conditions that promote ambidexterity, such as structural separation (O'Reilly and Tushman, 2008), meta-routines (Adler, Goldoftas, and Levine, 1999), behavioral contexts (Gibson and Birkinshaw, 2004), organizational culture (Wang and Rafiq, 2014), and TMT behavioral integration (Smith and Tushman, 2005; Lubatkin *et al.*, 2006). Undoubtedly, these disparate organizational mechanisms provide insight on the antecedents of ambidexterity, but the strategy processes underpinning them remain under-researched. The processes of strategy formation, implementation, and change (Hutzschenreuter and Kleindienst, 2006) shape and direct firms' resource recognition, allocation, and utilization towards attaining competitive advantage. Effective strategy processes are aligned with the structural, cultural and behavioral contexts within a firm, as well as the environmental context outside a firm. An investigation into organizational ambidexterity at the strategic level provides an opportunity to understand the strategic underpinning of the various organizational antecedents in the existing literature, and hence to develop a strategic approach to ambidexterity (Raisch and Birkinshaw, 2008; Birkinshaw and Gupta, 2013). In particular, Raisch and Birkinshaw (2008) call for future research to focus on strategic ambidexterity, examining how strategic and organizational activities work together to implement ambidexterity.

Implementing strategic ambidexterity requires the alignment of functional and cross-functional activities with firms' strategy processes, but there is insufficient knowledge on how this can be achieved in practice. The only exception is Voss and Voss (2013), who differentiate functional ambidexterity (i.e. product exploration and exploitation; and market exploration and exploitation) from cross-functional ambidexterity (i.e. market exploration

and product exploitation; and market exploitation and product exploration), and from pure exploration (market exploration and product exploration) and pure exploitation (market exploitation and exploitation). Voss and Voss (2013) label these as 'strategic emphasis combinations,' but they have not explicitly examined the effect of strategy processes on functional and cross-functional ambidexterity. In other words, how strategic ambidexterity can be implemented through functional and cross-functional activities remains a vacuum area.

Figure 3.2: Research Model- Strategy Processes and Organizational Capabilities

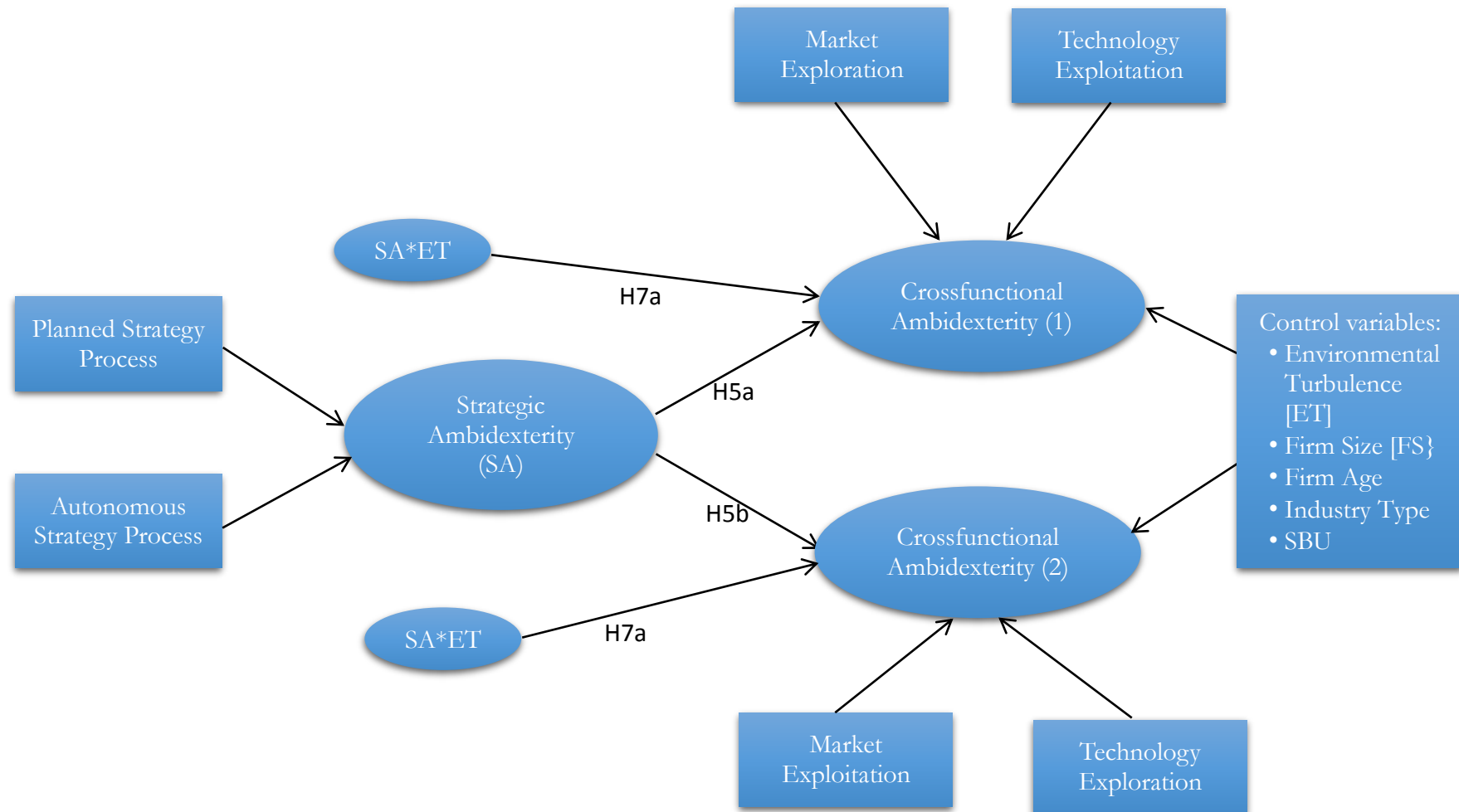
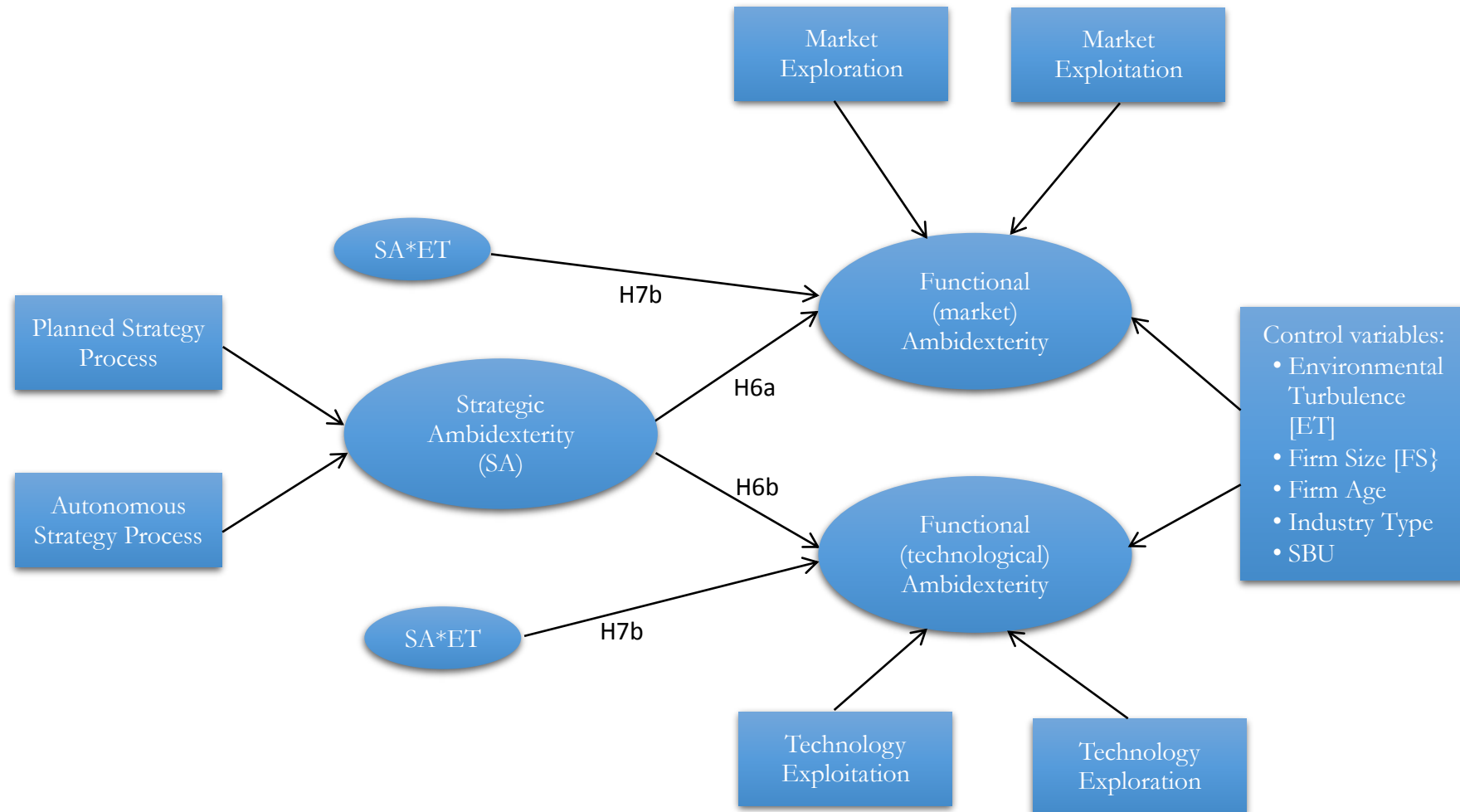


Figure 3.3: Research Model- Strategy Processes and Organizational Capabilities (2)



3.3.3 Theoretical Framework

Cross-functional Ambidexterity

Cross-functional ambidexterity is the simultaneous management of exploration and exploitation in different functional domains. Specifically, cross-functional ambidexterity in this research is the simultaneous management of (i) technological exploration and market exploitation (ii) technological exploitation and market exploration.

Early research posits that exploration and exploitation are inherently at odds with each other (Levinthal and March, 1993) due to a multitude of reasons. First, exploitation builds on a firm's existing market and technological knowledge, and its resource base, while exploration entails a shift towards the new market and technological expertise (Lavie, Stettner, and Tushman, 2010). Institutionalized learning (what has already been learned and embedded in the organization) in the form of existing knowledge may act as inertia against the acquisition and assimilation of new market and technological knowledge (Crossan *et al.*, 1999). Second, exploitation requires cognitive efforts aimed at generating new ideas (variation) and selecting, evaluating and legitimizing the most appropriate ones. Whereas exploration relies on behavioral mechanisms facilitating the assimilation of a new idea or knowledge into the existing sets of routines for the execution of that particular task and its replication in diverse contexts (Zollo and Winter, 2002). Therefore, exploitation and exploration are associated with specific organizational structures, systems or processes, which may favor one at the expense of other (Benner and Tushman, 2002, 2003; Duncan, 1976; Floyd and Lane, 2000; Ghemawat and Ricart I Costa, 1993; Sheremata, 2000). Third, compared to returns from exploitation, returns from exploration are 'systematically less certain, more remote in time and organizationally more distant from the locus of action and adaptation' (March, 1991, p.73). Managers who prefer more certain and proximate returns over less certain and distant returns may allocate resources in favor of exploitation, but

against exploration (March, 1991). The trade-off effect between exploration and exploitation means that they need to be structurally separated (e.g. Benner and Tushman, 2003; O'Reilly and Tushman, 2004) - in different business units or different business functions. Cross-functional ambidexterity reflects this approach: a firm can either exploit current technologies for attracting new customer markets (i.e. a market development growth strategy) or explore new technologies that target current customer markets (i.e. a technology development growth strategy).

Functional Ambidexterity

Functional ambidexterity is the simultaneous management of exploration and exploitation in same functions. Specifically, functional ambidexterity in this model is the simultaneous management of (i) technological exploration and technological exploitation (ii) market exploitation and market exploration.

Recent research recognizes that exploration and exploitation may complement each other under certain conditions, and can be simultaneously integrated into the same business unit or the same business function (Adler, Goldoftas, and Levine, 1999; Gibson and Birkinshaw, 2004; Wang and Rafiq, 2014). For instance, an organizational context that jointly emphasizes high performance (discipline and stretch) and social support (support and trust) (Ghoshal and Bartlett, 1994) encourages individuals to make integrative judgments as to how to best divide their time between the conflicting demands for alignment associated with exploitation and adaptability needed for exploration (Gibson and Birkinshaw, 2004). Such ambidexterity is facilitated by an organizational culture integrating organizational diversity (values and norms that encourage and tolerate differences) and shared vision (values and norms that promote organizational members' active involvement in developing and implementing organizational goals) (Wang and Rafiq, 2014). Organizational diversity and

shared vision together nurture the generation of a range of ideas for exploration and the implementation of selected ideas effectively for exploitation. Functional ambidexterity reflects this approach: technological ambidexterity entails a simultaneous exploration of new technological capabilities and exploitation of current technological capabilities, and market ambidexterity encompasses the simultaneous exploration of new customer markets and exploitation of current customer markets.

Strategic Ambidexterity

This model contends that organizational strategy processes underpin functional and cross-functional ambidexterity. Strategy processes, taking into account a firm's internal resources and capabilities and its external environment, encompass the processes through which strategic decisions are arrived at, implemented, and changed (Chakravarthy and Doz, 1992). Effective strategy processes are aligned with functional and cross-functional activities, including market and technological functions.

Strategic ambidexterity is the simultaneous management of two contradictory processes (Birkinshaw and Gupta, 2013) that help invest resources in both objective seeking and forward-looking visionary organizational actions to simultaneously compete and succeed in current and new technology and markets (Burgelman, 1991; 2002). Two processes can be understood as contradictory if they are distant apart on involvement and rationality continuum. Of the four processes identified earlier (command, transactive, planning, and autonomous), three (command, transactive and planning) were argued to be receptive to current technology and markets, and one (autonomous) was linked to new technology and markets. Looking at the pair-wise potential combination of contradictory processes (command-autonomous; transactive-autonomous; planning-autonomous), only one combination (planning-autonomous) seems viable enough for several reasons. First, it is

inconceivable that a strong commander of command mode who has taken total charge of strategy would allow strategic autonomy to her employees. There are several anecdotal pieces of evidence to this effect. For instance, late Michael Grove's (ex- CEO of Intel Corporation) dominant style of management akin to command mode virtually killed all the autonomous initiatives of Intel employees (Burgelman, 2001). Second, although transactive-autonomous modes can be combined together, they are not exactly completely contradictory in the sense that they both sit next to each other on involvement and rationality continuum. Third, it is only the planning-autonomous combination that is not only contradictory (they are distant apart on involvement and rationality continuum) but can be combined, as explained below. It follows, that the combination or simultaneous management of planning and autonomous constitute strategic ambidexterity.

A planned strategy process consists of formal analysis, such as environmental scanning, portfolio analysis, and industry and competitive analysis (Hart, 1992). TMT institutionalizes such formal analysis by setting detailed strategic plans, which are then implemented by middle managers. As the formal analysis is often based on the current market and technological capabilities, a planned strategy often directs resources to exploit such capabilities. Planning integrates dispersed information, ideas, and knowledge into collective action. It also unifies diversified actors in a firm under a single plan and helps detect any deviation from such a plan (Lorange and Vancil, 1977; Kukalis, 1991; Miller and Cardinal, 1994). This helps integrate actors and coordinate their actions for exploitation. Therefore, a planned strategy process "exploits initiatives that are within the scope of a company's current strategy and that extend it further in its current product-market environment" (Burgelman, 2002: 327).

Conversely, in an autonomous process, strategy emerges from initiatives by middle managers and lower-level employees who engage in gatekeeping, bootlegging and idea

generation activities to generate a stream of initiatives that diverge from existing strategies (Burgelman, 1983). Based on these autonomous initiatives, middle managers negotiate a change in strategies with TMT and act as mediators between employees and TMT. Top management's role is to retrospectively rationalize what has already taken place, rather than making comprehensive and analytical decisions for the future course of actions. An autonomous strategy process allows and even creates room for exploration in areas beyond an organization's current market and technological capabilities. It enables organizational members to indulge in risk-taking and experimentation to address emerging opportunities (Burgelman, 1991; Claver *et al.*, 1998; Mascitelli, 2000; Andriopoulos and Lewis, 2009). As such, an autonomous process “exploits initiatives that emerge through exploration outside of the scope of the current strategy and that provide the basis for entering into new product-market environments” (Burgelman, 2002: 327).

The respective roles of planned and autonomous strategies on exploitation and exploration are well recognized in the prior conceptual work, but their combined effect on organizational ambidexterity is under-researched in theoretical and empirical terms. In this study, this thesis defines strategic ambidexterity as the effective integration of planned and autonomous strategy processes, and delineate how strategic ambidexterity is implemented in functional and cross-functional levels below.

3.3.4 Hypotheses

Literature advocates the desirability of integrating planned and autonomous strategy processes simultaneously (Mintzberg, 1973; Anderson, 2004). An integrated approach to planned and autonomous strategy processes reflects a pattern of interaction between the roles performed by the top managers at one extreme, and employees at the other, and represents a highly specialized, tacit, and causally ambiguous resource set that may be

available to a firm (Hart and Banbury, 1994). Firms that calibrate both processes require a complex pattern of coordination between many players and diverse resources that are difficult to grasp and imitate. Consequently, these processes provide a firm with different approaches to resource allocation, which can be calibrated upon to influence its technology and market strategies. For instance, a planning process provides a comprehensive approach that facilitates a better understanding of the organization's competitive situation (Lorange and Vancil, 1977; Ansoff, 1991) towards resources allocation on the capitalizing current market and technological opportunities. An autonomous process reflects a decentralized strategy processes approach that helps organizational members to take initiatives that are outside of the firm's current competitive strategy, and to focus on the exploration of emerging markets and technologies (Burgelman 1991, 2002). Firms that can integrate both processes take not only comprehensive decisions based on current market and technological capabilities but also negotiate a room for maneuver to explore the future market and technological opportunities.

There are at least two ways in which a firm can combine planned and autonomous processes. First, a firm can manage different types of processes in different business functions, in particular, market and technology. For instance, Mintzberg (1973: 49-50) observes of a hotel business that "Where the operations were largely routinized and predictable, as in housekeeping and the front office, the planning mode was used. In marketing, where there was room for imagination and bolder action, the hotel tended to act in an entrepreneurial [autonomous] fashion". Clearly, different functions of a firm can employ planned and autonomous processes that best fit their particular requirements for exploration or exploitation. In other words, a firm may deploy a planned process in the technology domain, and an autonomous process in the market domain, or vice versa. In such cases, cross-functional ambidexterity can be achieved through a simultaneous integration of

technology exploitation and market exploration (a market development strategy), or technology exploration and market exploitation (a technology development strategy). Hence, this thesis hypothesizes the following:

H 5: Combination of planned and autonomous strategy processes will have a positive impact on cross-functional ambidexterity featuring (a) technology exploitation and market exploration, or (b) technology exploration and market exploitation.

A second way is to combine planned and autonomous strategy processes within the same business function, for example, within the market or technology functions. It has long been observed that distinct workgroups exist within a business function. For example, Omnitel Pronto Italia, a wireless communication provider grouped its technical staff in semi-independent teams which were responsible for activities over well-defined technical areas (Narduzzo, Rocco, and Warglien, 2000). Similarly, Appleyard, Hatch, and Mowery (2000) find that semiconductor companies are often required to manage technology exploration and exploitation simultaneously. They also find that high performers in the industry tend to partition exploratory technology teams with its staff and a leader under an autonomous strategy process where team members are encouraged to experiment and drive new ideas; at the same time, the rest of the technical staff is engaged in day-to-day activities governed by a very comprehensive (planned) strategy process. Such case-based anecdotal evidence suggests that ambidextrous firms are adept at deploying different strategy processes for different semi-independent teams within the same business function. Hence, this thesis hypothesizes the following:

H 6: a combination of planned and autonomous strategy processes will have a positive impact on functional ambidexterity featuring (a) technology exploitation and exploration, or (b) market exploration and exploitation.

Environmental turbulence, defined as ‘rapid market and technology changes that managers perceive as hostile and stressful conditions for their firm’ (Atuahene-Gima, 2005, p.66), puts constraints on the working of firms. It is suggested that turbulent environment requires a “more sophisticated level of analysis and information processing than does a stable or simple dynamic environment” (Hart and Banbury, 1994: 257). Such kind of environment necessitates a more complex strategy process that can cope with complicated information processing needs of a firm (often fulfilled by a planned strategy process), and a more emergent and dynamic strategy process that responds to future opportunities (often entailed in an autonomous strategy process). A planned strategy alone would put a firm at the risk of core rigidity (Leonard-Barton, 1992) or be trapped in its own success (Wang, Senaratne, and Rafiq, 2015) associated with pure exploitation. Whereas an autonomous strategy alone would increase the risks of a firm pursuing new technology or market without capitalizing on its current capabilities, or even fall into a failure trap associated with pure exploration (Gupta, Smith, and Shalley, 2006). Early evidence suggests that firms combining different strategy processes out-perform in the turbulent environment (Hart and Banbury, 1994). In contrast, stable environment is much simpler and does not put high information processing demands on a firm. As a result, combining planned and autonomous strategy processes may not be cost effective for firms in a stable environment, or even put a firm at a disadvantage due to over complicating strategy processes and decreased strategic and operational efficiency. Thus, the effect of strategic ambidexterity on functional and cross-functional ambidexterity

may be contingent upon a firm's external environment. Hence, this thesis hypothesizes the following:

H 7: As the turbulence in the environment increases, so does the effect of combined planned and autonomous strategies on (a) both types of cross-functional ambidexterity; and (b) both types of functional ambidexterity.

3.3.5 The Significance of the Research Model

This model contributes to the organizational ambidexterity literature in three ways. First, it defines strategic ambidexterity as a firm's ability to adopt both exploratory and exploitative strategy processes. And operationalize it as an integration of two generic strategy processes - planned (conducive to exploitation) and autonomous (conducive to exploration) (e.g., Bower, 1970; Bourgeois and Brodwin, 1984; Chaffee, 1985; Nonaka, 1988; Hart, 1991, 1992; Mintzberg, Ahlstrand, and Lampel, 1998; Bailey, Johnson, and Daniels, 2000; Burgelman, 2002). Prior study has not directly examined strategic ambidexterity, and as a result, strategic ambidexterity has been more of a management ideology without much guidance on its implementation. This model provides tangible solutions to implementing strategic ambidexterity. Second, building on Voss and Voss (2013), this thesis focus on functional and cross-functional ambidexterity with reference to the technology and market functions, as these are two basic functions within high-tech firms (Song *et al.*, 2005) and represent distinct dimensions for exploration and exploitation (O'Reilly and Tushman, 2008). In particular, this model defines functional ambidexterity as a combination of technology exploration and exploitation, or a combination of market exploration and exploitation; cross-functional ambidexterity as a combination of technology exploration and market exploitation, or a combination of technology exploitation and market exploration.

More importantly, this model extends Voss and Voss (2013) by explicitly examining the effect of strategic ambidexterity on functional and cross-functional ambidexterity, providing evidence on how strategic, functional and cross-functional activities can be aligned to implement ambidexterity. This response to the call for research examining organizational ambidexterity at multiple levels of the firm and across different domains (Raisch and Birkinshaw, 2008; Lavie, Stettner, and Tushman, 2010).

Finally, this model examines the relationship between strategic ambidexterity and functional and cross-functional ambidexterity in the context of the organizational environment, to draw the boundary conditions of organizational ambidexterity. This finding has implications on how managers can align strategic, functional and cross-functional ambidexterity, and implement it at different levels of the organizational and across different business functions.

3.4 ORGANIZATIONAL CAPABILITIES AND FIRM PERFORMANCE

This model further dissects the base model (strategy processes, organizational capabilities, and firm performance) by concentrating on the second half of it, that is, organizational capabilities and firm performance.

Although the distinction between the two types of capabilities (ordinary and dynamic) is often made in literature, considerable ambiguity exists in pinpointing the source of competitive advantage to either of the two capabilities. On the one hand are the authors who speak equivalently of the prowess of dynamic capabilities to generate competitive advantage, and are dismissive of ordinary capabilities competitive generating abilities (Teece, 2014). On the other hand, are skeptics who decry any higher status given to dynamic capabilities, and believe that dynamic capabilities may not always be a source of competitive advantage

(Eisenhardt and Martin, 2000). And in between are those who points out that ordinary capabilities could also be a source of superior profit (Day, 1994).

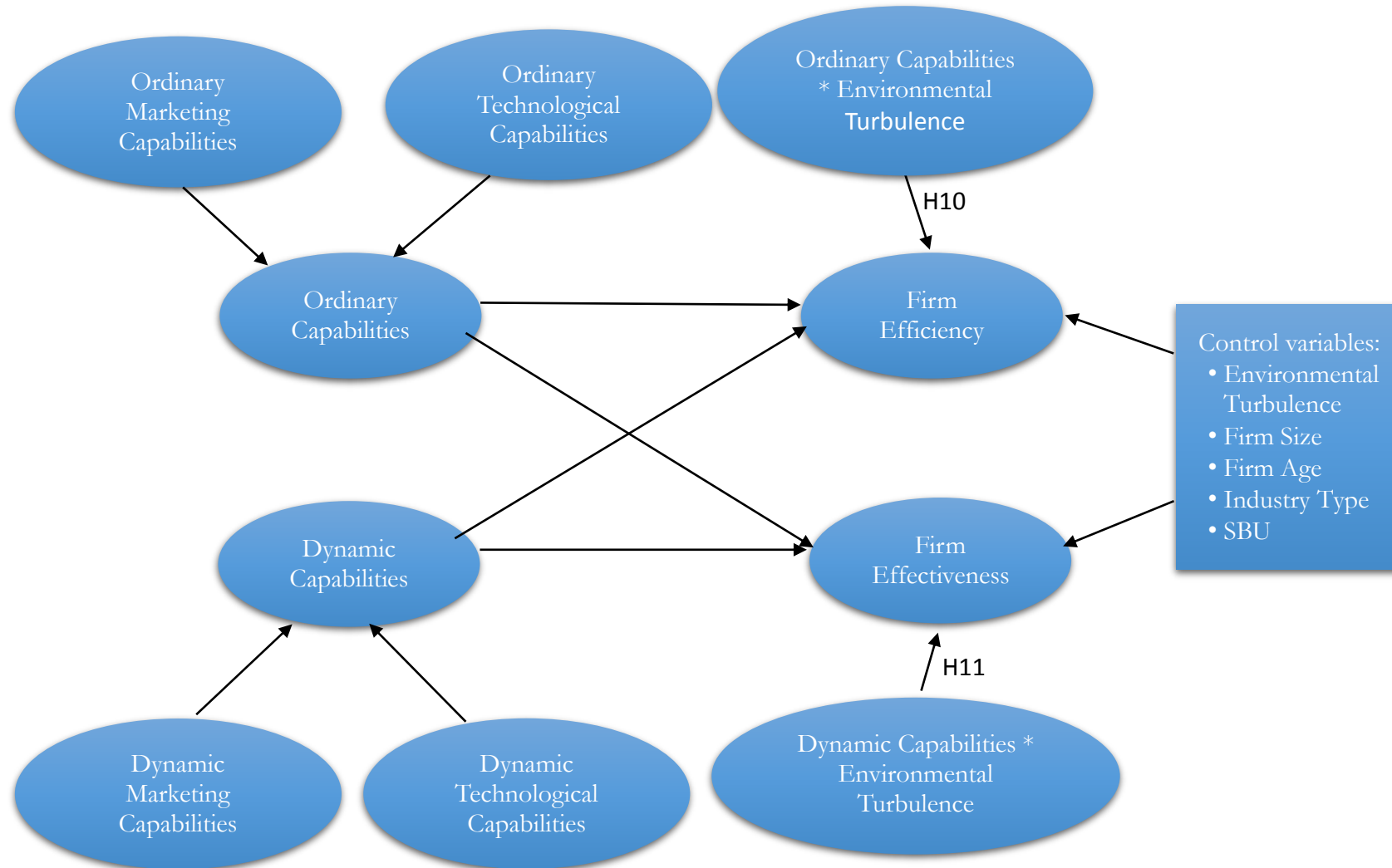
Taking an overview, of the extant literature on ordinary and dynamic capabilities, one can argue that both ordinary and dynamic capabilities could be a source of competitive advantage. However, out of the two (ordinary and dynamic) capabilities, which contributes more towards competitive advantage is not well articulated. By studying the differential economic payoff associated with ordinary and dynamic capabilities (Hoopes and Madsen, 2008; Drnevich and Kriauciunas, 2011) this part of the thesis fills this gap. Evidence for differential economic payoff would help managers strategize both capabilities in the right way by not over or under committing to one at the expense of other.

The debate also surrounds the boundary conditions of ordinary and dynamic capabilities. In particular, the business environment in which a firm operates conditions the effects of organizational capabilities on firm performance. Ordinary capabilities are considered relevant for a stable environment (Winter, 2003), while dynamic capabilities are more suited for a fast changing environment (Teece, Pisano, and Shuen, 1997). However, it is cautioned that dynamic capabilities may not always be very effective in a changing environment (Eisenhardt and Martin, 2000) and the effect of ordinary capabilities on firm performance cannot be underestimated even in a changing environment (Karna, Richter, and Riesenkampff, 2015). Thus, considerable ambiguity also exists on the role of the environment as a boundary condition, in particular, whether ordinary and dynamic capabilities have complementary or substitutive effects on firm performance.

Since this model concentrates on comparing and contrasting the contributions of the ordinary and dynamic capabilities, thus, in this model ordinary capabilities are the second order latent construct made up of ordinary technological and ordinary marketing capabilities. Similarly, dynamic capabilities are the second order latent construct made up of dynamic

technological and dynamic marketing capabilities. Combining ordinary (technological and marketing) capabilities together helps understand their generic exploitative behavior, and combining dynamic (technological and marketing) capabilities helps understand their generic explorative behavior.

Figure 3.4: Research Model- Organizational Capabilities and Firm Performance



3.4.1 Hypotheses

Organizational Capabilities and Differential Economic Payoff

Firm efficiency is “enhanced when there is a fit between the specific applications of broad technology and the products [or service] the firm sells [or provide]” (Miller, 2006: 616). In model one it was suggested that ordinary capabilities help drive firm efficiency. However, the fit between technology applied and product/service produced can be aided by dynamic capabilities also. First, dynamic capabilities can enable a firm to acquire new technological capabilities that enhance the final product and lower cost (Adner and Kapoor, 2015). For instance, in the semiconductor industry, the frequent accumulation of new technologies proved to be superior to the performance offered by the older technologies (Henderson and Clark, 1990). Second, dynamic capabilities can be used to acquire resources from new markets to improve operations in existing markets. For example, incumbents in the disk drive industry imported the disk technology initially applied in an emerging market segment to the mature market, resulting in reduced drive size and decreased overall costs as well as increased fit between technology applied and product produced (Christensen and Bower, 1996). Thus, dynamic capabilities may be able to drive firm efficiency on the back of improvement in existing operation provided by new resources.

Although both ordinary and dynamic capabilities may improve efficiency, the strength of their association with firm efficiency might be dissimilar. A firm needs to extract maximum value from its existing resource base to achieve efficiency. Dynamic capabilities acquire and build new resources that need to fit into the broader ecosystem of the firm - complementary resource endowment in which the current resources are embedded, to be able to improve firm efficiency (Adner and Kapoor, 2015). Consequently, they are less likely to have an immediate payoff and may take years for their effect to show up (Levinthal and March, 1993). In a worst case scenario, they may never be able to fit in the ecosystem (Adner and Kapoor,

2015). Conversely, ordinary capabilities are more tuned to current markets and technologies and can extract early and more certain returns from firms' current asset base (Levinthal and March, 1993). Thus, ordinary capabilities are more closely aligned than dynamic capabilities to firm efficiency. Therefore, this thesis proposes that:

H 8: Ordinary capabilities (as a second order construct consisting of ordinary marketing and ordinary technological capabilities) have a stronger positive effect on firm efficiency than dynamic capabilities do.

Firm effectiveness entails growth of a firm in either existing markets, related markets or altogether unrelated markets. A firm can grow by doing *more of the same thing* and/or *more of something different* (Drnevich and Kriauciunas, 2011). The former entails growth within its existing market and technological boundaries, in which ordinary capabilities are likely to excel; the latter entails growth beyond its existing market and technological domains, favoring dynamic capabilities about which model one speaks more. However, the effects of ordinary and dynamic capabilities on firm effectiveness may vary. Ordinary capabilities have a limited effect on firm effectiveness as they are most likely to propel growth in the current trajectory (Hill, Jones, and Schilling, 2014). Also, they cannot be used to enter new and unrelated markets, especially those that require the development of new resources (Adner and Levinthal, 2002). Conversely, dynamic capabilities embrace the emergence of new resources that help firms compete in new and unrelated markets - markets that could not be previously served by the focal firm through existing resources (Tripsas, 2008). Also, new resources can also be applied to penetrate and grow in existing or related markets. Hence, dynamic capabilities, unlike ordinary capabilities, can drive growth in all types of markets (c.f., Christensen and Rosenbloom, 1995), and are more closely aligned than ordinary capabilities to firm effectiveness. Therefore, this thesis proposes that:

H 9: Dynamic capabilities (as a second order construct consisting of dynamic marketing and dynamic technological capabilities) have a stronger positive effect on firm effectiveness than ordinary capabilities do.

The effects of ordinary and dynamic capabilities may be conditioned by the environment in which firms operate. Environmental turbulence featuring “rapid market and technological changes that managers perceive as hostile and stressful conditions for their firm” (Atuahene-Gima, 2005: 66) is particularly relevant in this study to frame the effect of internal marketing and technological capabilities within the context of external market and technological changes. Indian economy, post-independence, was for a variety of reasons kept closed. The tariffs were exceptionally high and were augmented by import barriers. Further, Indian firms showed little interest in exports, and foreign direct investment was unheard of. In short, the environment was anything but turbulent (Becker, 2004). However, things took a dramatic turn when Dr. Manmohan Singh, the Cambridge-Oxford educated economist, and the then finance minister of India, decided to open up Indian economy in 1991. Within a very short span, India dismantled the old system and adopted a purely market-driven system. This drastic shakeup led to a situation in which Indian firms were left on their own to compete with very best western firms. The rapid change in market conditions has created a hostile and stressful condition for Indian firms (Krishna and Mitra, 1998).

In a turbulent environment, the whole business ecosystem in which a firm is embedded undergoes changes: the external relationship a firm may have to its suppliers, buyers and its competitor’s changes with the increase in environmental turbulence (Teece, Pisano, and Shuen, 1997). This, in turn, changes the nature of current operations, which need to be modified to attune to the changing reality (Danneels, 2012). Ordinary capabilities have little flexibility as they are routinized and heavily patterned. Thus, firms cannot rely only on the continuity of past operations provided by ordinary capabilities (e.g., Leonard-Barton, 1992)

to maintain its efficiency. This suggests that an increase in environmental turbulence will weaken the relationship between ordinary capabilities and firm efficiency. Therefore, this thesis proposes that:

H 10: Environmental turbulence moderates the effect of ordinary capabilities on firm efficiency; as the environment becomes more turbulent, the effect of ordinary capabilities on firm efficiency weakens.

Although Indian high-tech firms initially started at the lower level of technology value chain and relied on their existing strength in ordinary capabilities, recently they have decided to rise to the higher end of this value chain. In fact, Indian high-tech firms have emerged as real competitors to their Western counterparts. This turnaround comes after the realization that turbulence in an environment regarding both market and technology change need to be managed by amassing skills in dynamic capabilities (Bloomberg, 2004). It is noted in academia as well that turbulent environment necessitates the deployment of dynamic capabilities (Ambrosini, Bowman, and Collier, 2009). When existing resources are becoming obsolete, old routines are dying, and rules of the game are being re-written, dynamic capabilities help a firm adjust to these changes by creating, extending, and modifying the current operations (Helfat *et al.*, 2007). Conversely, those who do not have dynamic capabilities find it hard to grow in the face of uncertainty posed by such turbulence. The empirical evidence (Drnevich and Kriauciunas, 2011; Zhou and Wu, 2012; Karna, Richter, and Riesenkauff, 2015) also supports this assertion, as the contributions of dynamic capabilities have been shown to increase with the change in environment. Thus, firms operating in a turbulent environment can grow more from using dynamic capabilities than in a stable environment (Helfat *et al.*, 2007). Therefore, this thesis proposes that:

H 11: Environmental turbulence moderates the effect of dynamic capabilities on firm effectiveness; as the environment becomes more turbulent, the effect of dynamic capabilities on firm effectiveness strengthens.

3.4.2 The Significance of the Research Model

This model intends to contribute to strategic management research and in particular the capabilities-based view of the firm in two ways. First, by theorizing and testing the differential competitive outcomes of ordinary and dynamic capabilities, it clarifies their respective roles in attaining competitive advantage - a main concern of the strategic management research. Dynamic capabilities are costly to produce and maintain (Wang and Ahmed, 2007; Ambrosini, Bowman, and Collier, 2009). Their contribution can offset their cost only if they have unique outcomes and/or their contribution replaces or surpasses that of ordinary capabilities under certain conditions. Understanding ordinary and dynamic capabilities' unique contributions is central to the theoretical debate within the capabilities-based view of the firm, as well as business practice so that firms can avoid over committing to one or the other.

Second, by testing the moderating effect of environmental turbulence on the effects of ordinary and dynamic capabilities on firm performance, this model provides much-needed evidence of the role of the environment that has attracted much conceptual debate but less empirical evidence. More importantly, it is pertinent to the discussion on the conditions under which ordinary and dynamic capabilities reach their limits, and hence the conditions under which they affect competitive outcomes. Previous studies have delineated some of the conditions (e.g. business environment) but resulted in inconclusive findings (Barreto, 2010; Drnevich and Kriauciunas, 2011; Wang, Senaratne, and Rafiq, 2015; Karna, Richter, and Riesenkampff, 2015). More research is needed to address the question of under what conditions ordinary and dynamic capabilities outperform each other.

Overall, this model responds to the call for research to clarify the roles and unique contributions of ordinary and dynamic capabilities (e.g., Easterby-Smith, Lyles, and Peteraf, 2009; Drnevich and Kriauciunas, 2011; Karna, Richter, and Riesenkauff, 2015). For managers, these findings have implications on how they can manage different organizational capabilities required to deliver desired organizational outcomes.

3.5 CONCLUSION

This chapter has constructed three research models, each of which is concerned with one aspect or other of strategy processes, organizational capabilities, and firm performance. The base model takes a broader look at these relationships. It brings organizational capabilities to the center stage of strategy processes and firm performance relationship. Previous works on strategy processes have found inconclusive evidence to support any direct link between strategy processes and firm performance (Hutzschenreuter and Kleindienst, 2006). In framing the base model, it is argued, that this is mainly because organizational capabilities have been overlooked. To this end, this model proposed organizational capabilities as a mediator between strategy processes and firm performance.

Although the base model does explain the linear relationship between the three variables, it is anonymous to any relationship that may exist between different types of strategy processes on the one hand, and also between the different class of capabilities on the other hand. The theoretical angle of organizational ambidexterity was employed, to understand these relationships in-depth. Although previous research establishes several antecedents of ambidexterity at capabilities level, a strategic antecedent has been missing so far (Raisch and Birkinshaw, 2008). The second model fills this deficiency, by linking ambidextrous management of two contrasting strategy processes (planning and autonomous) to the ambidextrous management of ordinary and dynamic capabilities in different functions.

Finally, although the base model does explain the relationship between organizational capabilities and firm performance, it does not take into account the strength of these relationships to ascertain which of the two (ordinary and dynamic) might be more important. Thus, theme three strengthens the base model by comparing and contrasting the contributions of the two capabilities (ordinary and dynamic) towards firm performance. Although, the linkage between organizational capabilities and firm performance has been well established both in conceptual and empirical literature, but little is known regarding the superiority of ordinary and dynamic capabilities concerning their contributions towards firm performance (Helfat and Winter, 2011). The last model fills this gap by comparing and contrasting the economic payoff of both (ordinary and dynamic) capabilities, and also delineating their boundary conditions.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 INTRODUCTION

This chapter describes the research methodology and methods used to collect the data. It presents the philosophical basis, approach, techniques and procedures for this research. The following section describes the research philosophy and the basis of the researcher ontological and epistemological positions, which influence the choice of method used for this research. Research methodology section discusses the suitability of quantitative methodology for this study. The sampling section is a detailed account of sampling, covering the choice of country, industry, size of companies and sample population. This section is followed by a section on survey data collection which describes the collection technique including the means and frequency of contact, content of the email, and constructing of the questionnaire. The last section is a detailed description of measures, their sources, and their robustness.

4.2 RESEARCH PHILOSOPHY

Research philosophy refers to the nature of knowledge and influences its development over time. It encompasses the ‘ontological’ and ‘epistemological’ consideration that affects the

overall design of research (Kothari, 2004; Saunders, Philip, and Adrian, 2011). My ontological position is more towards positivism, and epistemological position is more towards objectivism.

Ontology

It is the researcher position on the social 'nature' of reality. Philosophers, and by that extension, social scientists, prescribe to different, and at times, conflicting nature of social reality which inevitably influences their research design (Blaikie, 2010). The roots of current dominant ontological positions date back to ancient Greeks predating Socrates. Heraclitus, a renowned Greek philosopher, viewed reality as changeable and emergent, and that which is in constant flux. This position is best captured by a Heraclitean axiom: 'everything flows, and nothing abides.' Conversely, Parmenides widely viewed as a successor of Heraclitus believed in a more permanent and unchangeable nature of reality– that is in a reality that is relatively stable and unchanging (Partington, 2002).

In business and management research, the tension between Heraclitean and Parmenidean views on the nature of social reality is held between objectivism and subjectivism aspect of reality (Saunders, Philip, and Adrian, 2011). Objectivism is the position taken by the researcher that social entities exist in reality, and are external to social actors. This reality manifest itself through patterns in the observable phenomenon. The challenge for any researcher, who may profess this position, is to discover those patterns and adequately report them. For objectivist, the world is an empirical entity, made up of relatively absolute structures independent of the observer (Gill and Johnson, 2002). Conversely, for subjectivist, the reality is not independent of the observer, and therefore, researchers construct reality based on their biases.

My ontological position has been shaped by my experience of the world, specifically my training as a mechanical engineer (a discipline with a strongly prescriptive, positivist approach). However, I am also a trained MBA and have worked in management positions, which emphasizes on people-based approach to the organizational environment. Also, my spiritual understanding of the world is that the world is how I see it; meaning it is subjective and open to different interpretations. Considering ontology as a continuum ranging from objectivism at one extreme to subjectivism to the other, my position, largely due to my training as an engineer, is between center and objectivism.

Epistemology

It is researcher position on what constitutes *acceptable knowledge* in his or hers' chosen field. It reflects the process of verifiable knowledge production depending on the chosen research method (Kothari, 2004; Saunders, Philip, and Adrian, 2011). The epistemological position a researcher takes has the direct bearing on the methods he or she employs. For instance, influenced by Parmenidean stand on the unchangeable reality that is never in flux, researchers may posit that reality is unchangeable in space and time (Partington, 2002). Hence, it can be captured by concrete concepts, words, and symbols. Such an epistemology would inevitably orient the thought process of researcher towards outcomes and end-states (Kothari, 2004). Formally, this position is known as positivism that posits that human senses produce verifiable knowledge, which can be deducted by unbiased and trained observers (Saunders, Philip, and Adrian, 2011). Conversely, there are those who are influenced by Heraclitean concept of reality that is not fixable and is more emergent. Formally, this is known as interpretivism, which takes a position that theories are created by social scientist as a tool for understanding the world, and a definition of good theory is more a matter of judgment than proof (Kothari, 2004).

This distinction between the reality that is fixable in time and space, and the reality that is constantly emerging, is held in strategic management research between the process and content side of strategy (Helfat *et al.*, 2007). Strategy process research is concerned with understanding how organizational strategies are formulated and implemented over time and is based on a reality that is in constant flux (Chakravarthy and Doz, 1992). Strategy content research is defined as “research which examines the content of decisions regarding the goals, scope, and/or competitive strategies or one or more of their business unit” (Fahey and Christensen, 1986: 168) and is concerned with *outcomes* and *end-states*. Content research is based on the reality that is fixable in space and time. Although this research focuses on the processes as opposed to contents of strategy, the strategy process is operationalized as a category of concepts of strategy formulation and implementation. In this usage, “process refers to a category of concepts that is distinguished from other categories of concepts” ... “And, like these other categories, process concepts are operationalized as constructs, and measured as fixed entities (variables), the attributes of which can vary along numerical scales from low to high” (Van de Ven, 1992: 170). Thus, although the process is traditionally associated with flux and interpretivism, in this research, the way it is conceptualized it is more in line with positivism.

Conceptualizing epistemology as a continuum ranging from positivism on one end and interpretivism on the other end, my position is between center and positivism. Both the ontological and epistemological positions a researcher take inadvertently affect his or hers’ research methodology (quantitative versus qualitative).

4.3 RESEARCH METHODOLOGY

Research methodologies underpin the work and methods the researcher uses to collect and analyze data (Kothari, 2004). There are two broad research methodologies; quantitative and

qualitative (Bryman, 1984; 1988; Neuman, 1994). In quantitative methodology, a theory is proposed, and research is designed to test hypotheses that support the theory (Punch, 1998). The aim is the establishment of generalizable patterns of relationship between different variables. To this end, different variables are operationalized through survey scales, and quantitative data collected from a representative population. Various statistical techniques, ranging from simple regression to more sophisticated SEM, may be employed to analyze data and rigorously test the hypotheses (Neuman, 1994). Conversely, in a qualitative approach, the order is reversed, that is, data is collected first through interviews, and then the theory is developed from such data. The choice of research methodology is largely dictated by the underlying research philosophies of researchers (Bryman, 1984) and the kind of research question asked (Easterby-Smith and Prieto, 2008).

Quantitative methodology is entrenched in natural science and is more of a positivist approach to social phenomena (Bryman, 1984). Consistent with natural science approach, emphasis on this kind of research is on defining the concepts and establishing relationships between them, objectivity (Kothari, 2004). Through survey scale items, concepts are operationalized, and the non-permeable distance between observers and observed helps maintain the objectivity (Bryman, 1988). Since such questionnaire is open to external checks, the study can be replicated by employing the same questionnaire in another context (Neuman, 1994). This methodology is considered rigid in the sense that the emphasis is on *fixed* measurements. Conversely, qualitative methodology, consistent with the subjectivist philosophy, constructs a social world from the focal actor's point of view. There are less objectively laid boundaries between observer and observed, and the researcher is inevitably involved closely with his or her subject (Burns, 2000). Qualitative methodology is much more flexible than quantitative in that researcher is open to discovering even unanticipated findings

(Punch, 1998). Consequently, research plans may be altered in response to the changing nature of such research design (Saunders, Philip, and Adrian, 2011).

Consistent with my research philosophy which is rooted in positivism and objectivity, this research uses quantitative methodology. The quantitative methodology comes with its strengths and weaknesses. Strengths are that it helps establish relationships between variables with precision (Kothari, 2004), and the statistical techniques so applied allow for sophisticated analysis (Neuman, 1998). Thus, the results can be replicated with ease. However, there are certain weaknesses attached to quantitative methodology especially in social science (Bryman, 1988). The subjects in social science are usually humans, and humans have emotions unlike the subject (inert matter) in physical science (Burns, 2000). This often results in certain biases like social desirability bias in which subjects tend to answer the question to be seen as socially desirable to others, rather than giving answers that are always right (Reynold, 1982). Sometimes if taken too far, quantification can become an end rather than means for the research. This may lead to findings that are trivial and have little implication for the theory (Punch, 1998).

4.4 RESEARCH CONTEXT AND SAMPLING

4.4.1 Environment Context: Turbulence and High-tech

This research seeks to capture innovation related dynamic capabilities and explorative strategy processes such as autonomous. This kind of processes and capabilities need a favorable environmental context to breed (Teece, Pisano, and Shuen, 1997). An environment that features rapid market and technological changes are particularly relevant (Atuahene-Gima, 2005). In such environment, the ecosystem (external relationship a firm may have to its suppliers, buyers and its competitor's) changes rather rapidly and frequently (Teece,

Pisano, and Shuen, 1997). Such kind of environment open up new markets and necessitates exploration of new technologies. Thus, they would particularly provide useful context for the development of dynamic capabilities and autonomous processes. As organizations in such environment would find that they need dynamic capabilities to enter new markets or grasp new technologies (Drnevich and Kriauciunas, 2011; Zhou and Wu, 2012; Karna, Richter, and Riesenkauff, 2015). Also, they would need to provide autonomy to their lower level employees who are in better position to understand the change (Burgelman, 1991). In contrast, if the environment is relatively stable, both dynamic capabilities and autonomous processes may be inconsequential or even counter-productive (Teece, Pisano, and Shuen, 1997).

Stable industries are characterized by stability, punctured by infrequent major change (Tushman and Anderson, 1986). In contrast, high-tech industries are characterized by rapid change (Teece, 2014); exact kind of environment that has been argued above as conducive for dynamic capabilities and autonomous processes. Therefore, for firms that face dynamic markets such as those in the high-tech sector, the link between autonomous processes, dynamic capabilities and firm effectiveness should be clearer, as opposed to non-high-tech firms.

4.4.2 Environment Context: Indian

The studies on a high-tech sector that uses theoretical lenses of RBV, DCV and ambidexterity have traditionally been confined to developed economies (c.f., Newbert, 2007; Zahra, Sapienza, and Davidsson, 2006). However, the geographical ambit of high-tech sector has expanded, in recent years, to include some emerging Asian economies like China, Taiwan, Korea, and India. The empirical work using RBV and related lenses has responded to this development by focusing on some of these emerging economies (e.g. He and Wong, 2004;

Wang and Rafiq, 2014). However, barring few notable extensions (e.g., Venkatraman, Lee, and Iyer, 2007), India has been largely absent in strategic management research that seeks to understand the exploratory process and dynamic capabilities through RBV and related lenses. This is surprising considering the success of Indian high-tech firms merit some academic attention - International investors have shown remarkable faith in the blooming Indian technology sector as evident by the record investment in high-tech firms in recent years (Financial Times, 2015). Not only that, as discussed earlier in chapter 1, and further expanded below, the environment surrounding the Indian high-tech sector and the training of Indian managers provide near perfect conditions to implement market-based strategies. Thus, Indian high-tech sector provides a very rich context, outside of developed economies context, to expand RBV and related theories.

4.4.3 Indian High-Tech Sector

Origin

India's tryst with high-tech sector began with the formation of elite higher education institutes such as Indian Institute of Technology (IIT), Indian Institute of Science (IISc) and Indian Institute of Management (IIM) after its independence. Moreover, recently in its eleventh five-year plan, India has increased the spending on education sector manifold and has announced the funding of 30 new central universities, 5 new IISc, 15 new IITs and IIMs and 20 new Indian Institute of Information Technology (Dutz, 2007; Herstatt, Tiwari, and Ernst, 2008). Experts have repeatedly pointed out the establishment of these elite science, technology and management institutes as one of the foremost factors for India's emerging dominance in high-tech sector (Kumar, 2001).

Growth

Although the base work for the development of Indian high-tech sector was laid just after independence, several reasons become a catalyst for its phenomenal growth in the past decades. First is the role of returnee entrepreneurs. Returnee Entrepreneurs are those who return to their country of origin after spending considerable time working or studying in a foreign country (Lin, Lu, Liu, and Zhang, 2016). Returnee Entrepreneurship literature emphasizes the role of returnee entrepreneurs in the development of the high-tech sector in emerging economies (Liu *et al.*, 2010). Indian engineers and scientists that were educated in IITs and IIMs and moved to the USA for either further studies or work (Chacko, 2007), played a major role in the development and growth of high-tech sector there. This is reflected in their disproportionate presence in the TMT of the major USA based high-tech firms (The Times of India, 2014). Later, some of them chose to come back to India, after working for decades in the USA high-tech sector (Chacko, 2007; Kumar, 2013). With them, they brought a new style of management that was very much different from the traditional hierarchal management style followed in more traditional industries in India (Upadhyya and Vasavi, 2006).

Previous studies on international entrepreneurship have highlighted the contingent role of political and cultural barriers in the transfer of technological knowledge and management styles from developed to emerging economies (Liu *et al.*, 2010). In the case of Indian returnees, both culture and political barriers were weakened, supporting the transfer of knowledge and management style for several reasons. First, the technology sector in India tapped into the workforce that has been specifically created for it and has certain westernized social orientation. This workforce that comes from Indian middle class internalizes the notion that western work culture is superior and hence is very receptive to adapting and

responding to the western style of management (Upadhyaya and Vasavi, 2006); the kind of management that may have been brought to India by returnee entrepreneurs. Also, India also has the largest English-speaking talent pool in the world (NASSCOM-McKinsey Report, 2005) that facilitates the transfer of western style of management, especially from Anglo-Saxon world. Second, the technology sector grew in India without coming under the radar of the local government. As one of the top executives from technology sector explains that “It was a small item on the bottom of the fifth page, completely under the radar. That’s why it was able to grow without government interference” (Brown, 2013, para. 2). Lack of knowledge on the part of government meant that the political barrier to any knowledge transfer was considerably weakened.

To conclude, it is expected that the Indian high-tech sector would display traits that are similar to the market-based Western high-tech sector. This provides an exciting opportunity to test and extend the (RBV, DCV, and ambidexterity) theories on high-tech sector beyond the traditional market-based Western economies. However, the other side of the argument takes a more skeptical look at Indian high-tech firms and their perceived similarity to the high-tech sector in western economies. Consequently, the challenges the nascent Indian high-tech sector faces are discussed in detail later.

High-Tech Sector

Due to the hyper-competitive environment faced by the Indian economy in general and India’s emerging dominance in the certain high-tech sector in specific, this research will study India high-tech sector. Thus, the industries chosen should be high-tech and also should have a strong presence in India. - Some industries though may be identified hi-tech in a western context, however, may not be present in India or even if present, may not have sufficient population to have any meaningful statistical value. For instance, the Aircraft and

Spacecraft industry is identified as a hi-tech industry, but it has a negligible presence in India. 97% of aircraft and spacecraft market in India consist of imported product (Euromonitor, 2013). This brings us to the question of what exactly is the definition of high-tech industry which is accepted in the Indian context.

The most widely accepted definition of the high-tech sector comes from OECD. OECD (2001, 2007) has identified ten categories of industries that have a particularly strong link to science and technology. These industries include both knowledge-intensive service industries and industries that produce high-technology manufactured goods. Collectively, referred to as knowledge- and technology-intensive industries, they include five knowledge intensive service industries that incorporate high technology either in their services or in the delivery of their services are financial, business, and communications, education and health services. Also, five high technology manufacturing industries that spend a large proportion of their revenues on R&D and make products that contain technologies developed from R&D. These are aircraft and spacecraft, pharmaceuticals, computers and office machinery, semiconductors, and communications equipment, and scientific (medical, precision, and optical) instruments.

Based on this definition and the dynamics of trade in India, this thesis identifies the following three industries as high-tech in Indian context:

1. Information technology (IT) industry

IT industry in India comprises of software and information technology enabled services (ITES), which also includes business process outsourcing (BPO). IT industry has been widely credited for fuelling India's growth in the non-traditional sector. The contribution of IT and IETS industry to Indian GDP stands at 5.8%, and it is the major exporting sector and employs more than 2 million people (Goldberg, Khandelwal, Pavcnik, and Topalova, 2010).

2. Biotechnology industry

It is highly innovative and dynamic industry and is a key source of high-skill, high-tech jobs (Department of Business Innovation and Skills, 2011). India is not only among the top 12 biotech destinations in the world but also has the second-highest number of US Food and Drug Administration (USFDA) approved biotech manufacturing plants. The Indian biotech sector is valued at 11 billion dollars and has shown a remarkable growth rate of 20 percent (IBEF, 2016).

3. Electronics Systems Design and Manufacturing (ESDM) industry

The ESDM industry ranks high among the various industries that defied recession and contributed immensely to the Indian economy. The ESDM industry was expected to grow at a Compound Annual Growth Rate (CAGR) of 9.9 percent between 2011 and 2015 resulting in an industry size of \$94.2 billion by 2015 (ISA- Frost & Sullivan 2012). The ESDM industry in India comprises of four key segments: Electronic Products, Electronic Components, Semiconductor Design Services, and Electronics Manufacturing Services. All of which are part of the hi-tech sector as defined by OECD (1997). ESDM is a dynamic industry in India which depends on adoption of new technologies, catalyzing innovation, and entrepreneurship, enhancement of skills for much of its growth (ISA- Frost and Sullivan, 2012).

Challenges of Indian High-Tech Sector

Although the Indian high-tech sector, and especially the three industries identified above have shown exponential growth over the past several years, there are certain challenges associated with this sector in India. First, Indian high-tech firms initially got impetus by producing products and services that were considered less technologically challenged and

were outsourced mainly due to this reason by firms in developed economies (The Economist, 2013). It has been only recently that Indian players have started picking up more technologically challenged jobs (Kale and Little, 2007). Second, although India is ranked ahead of its peers when it comes to technology and creativity, it lacks institutional support and industry-university partnership that foster innovation in more developed economies (Ganesh, 2013). Third, some argue that the management style of high-tech firms is still developing, and the Indian workforce is not attuned to Western culture and norms (Arora et al., 2000). Thus, there is a certain appreciation of the fact that Indian high-tech sector might still be at the developing stage, and not market-based to an extent the high-tech sector of western economies is.

4.4.4 Organizational Context: Size of Firms

The strategy process typology chosen for this research necessitates the inclusion of firms of all size for several reasons. First, the strategy process typology in this research is constructed on the involvement of different hierarchies. As such this typology contains strategy processes ranging from command mode to autonomous mode. Command mode is mostly confined to small firms as it is dependent on a CEO, and it is not possible for a CEO to formulate strategy all by himself or herself in larger firms. Thus excluding small firms would limit the possibility of detecting any influence of command mode (Hart and Banbury, 1994). Second, medium to large sized firm require different perspectives and, barring few notable exceptions, cannot afford to depend on a single mode of strategy processes exclusively. Thus, since the purpose of this research is to study the combination of different modes, firms of all size are included.

4.4.5 Sampling

Efforts to create a sampling frame of target firms can be impeded when the majority of firms are privately held, and there is certain dynamism surrounding the industry such that new players are emerging (Kriauciunas, Parmigiani, and Rivera-Santos, 2011), as in the case of the Indian high-tech sector. Furthermore, unlike western economies, where detailed and dependable information on firms is often fairly available, such information is not readily available for emerging economies such as India. In such non-traditional contexts, obtaining a sampling frame requires creativity on the part of researchers, and they should consider databases, such as industry association lists or online and print directories (Kriauciunas, Parmigiani, and Rivera-Santos, 2011). This thesis made use of the trade association database of the IT&IETS, and ESDM Industry to identify a tentative sample population of firms,

NASSCOM: The National Association of Software and Services Companies (NASSCOM) is a trade association of Indian Information Technology (IT) sector. NASSCOM's membership has grown over the years since its establishment in 1988 and currently, stands at 1,636. Together these companies represent 95% of industry revenues (NASSCOM, 2014).

IESA: Indian Electronics and Semiconductor Association (IESA) is the premier trade body representing the Indian Electronic System Design and Manufacturing ESDM industry and has represented it since 2005. It has over 180 members which include both domestic and multinational enterprises (IESA, 2013).

ELCINA: Electronic Industries Association of India was established in 1967 as the first industry association supporting electronics hardware. It has been recently renamed Electronic Industries Association of India (EIAI), and it actively interacts with the policy makers to influence and advise them on policy and business environment issues. In recent years, it has also widened its horizons and broadened its activities to include the development

of the entire Electronics and IT Hardware sector. Electronic Industries Association of India now focuses on promoting the manufacture of Electronic Components, Industrial/professional Electronics, Defense/Strategic electronics, Electronic Manufacturing Services, and Other expanding areas in electronics such as Medical, Automobile, Electronic Design, Embedded Systems and more.

For the electronics and information technology sectors, a detailed list of associated members of NASSCOM, IESA, and ELSINA was available. These lists contained the email of a contact person (usually a senior manager) in each firm. However, for the biotechnology sector no such ready-made list was available for purchase, and instead, a list of companies that is publicly made available on Indian government website was made by the researcher. This included an email list of the contact person for each of these biotechnology firms, either by visiting their websites or calling them directly or both. The final and composite list consisted of 3,186 Indian high-tech firms.

4.5 SURVEY DATA COLLECTION

Qualtrics was used to design a web-based survey to collect detailed data on firms' capabilities, strategy processes, performance, and the environment. Following Dillman's (2007) total design method for mail and Internet survey, the survey was conducted in five phases (Table, 4.1): In the first phase, we emailed the contact persons (i.e. business owners or senior managers) in all the firms in our initial sample. The aim was to introduce the potential participants to the objectives and significance of the study, the research team behind the survey, the reason why their firms were part of the sample, the incentives to participants for being part of this study, our confidentiality policy, and the link to the web survey. This was followed up with four reminder emails to non-respondents.

Table 4.1: Timeline of Empirical Work

Date	Phase	Work
27/11/2015	First phase of data collection	To introduce the potential participants to the objectives and significance of the study. The reason why their firms were part of the sample The incentives to participants in the study. To introduce our confidentiality policy
16/12/2015	Second phase of data collection	To remind those who had not filled the survey that a survey link was sent to them earlier. To emphasize that if they have already started filling the survey and for some reason not completed it then they should know that they can return to the survey (on the computer they started) and re-start from where they left, saving their time and effort.
28/01/2015	Third phase of data collection	Special emphasis on how the findings of the survey could be directly beneficial to the respondents, and the high-tech sector in India.
25/02/2015	Fourth phase of data collection	Emphasis on the fact that many CEO's and other senior managers have responded and their response indicate an interesting pattern behind the success of technology companies in India. These trends should be of particular interest to the potential respondents.
25/03/2015	Final phase of data collection	Emphasis on that the study is drawing to a close, and this is the last contact that will be made with the senior managers. Last chance to fill the survey.
April 2015 to June 2015	Analyses	Analysis of the quality of data Analysis of the measurement model Analysis of the different structural models.

In total, 289 responses were received (9.07% of total), and after deducting unusable ones, 260 formed our final sample (an effective response rate of 8.16%). This response rate is comparable to that of similar studies involving senior managers (Ling, Lubatkin, Simsek, and Veiga, 2008). Respondents included top managers (e.g., CEOs, founders, owners, partners, chairmen, and managing directors) and senior managers in commercial, technical,

finance, and human resources (HR) functions. On average, respondents had served for 9.35 years in their respective firms and 18.67 years in the industries in which their firms primarily operated (Table 4.2). This provided evidence of the respondents' knowledge and competence to report about their firms and environments.

Table 4.2 : The Sample Profile

Firm composition (%)		Respondent composition (%)	
<i>Industry</i>		<i>Function</i>	
Electronics	26.54	Commercial function	10.00
IT	61.54	Technical function	12.08
Biotechnology	11.92	General/Strategic function*	70.83
		Other (Finance and HR) function	7.08
<i>Firm Size</i>		<i>Tenure in firm</i>	
<49 employees	28.85	<3 years	15.19
50-99 employees	16.92	3–5 years	27.85
100-249 employees	20.00	6–10 years	25.74
250-499 employees	10.38	11–15 years	13.50
500-999 employees	8.85	≥16 years	17.72
1,000-4,999 employees	10.00		
≥5,000 employees	5.00		
<i>Firm age</i>		<i>Tenure in Industry</i>	
< 5 years	17.31	≤6 years	11.02
5-9 years	20.00	6–10 years	14.83
10-15 years	22.69	11–15 years	17.80
16-29 years	31.54	16-29 years	41.10
≥ 30 years	8.46	≥30 years	15.25

* These include top managers like CEOs, founders, owners, partners, chairmen, and managing directors who have more general or strategic function in a firm

The differences between early and late respondents (the first third vs. the last third) response to key variables was analyzed to test non-response bias (Armstrong and Overton, 1977). In only one of the 41 variables used, any significant differences were found, ruling out non-response bias as a major concern. This was further confirmed by also examining for any

significant differences in firm age ($p > .05$) and size ($p > .05$) between non-responding and responding firms and no significant differences were found.

To control for common method bias, procedural and statistical methods were employed. First, in the emails and the front page of the survey, the respondents were assured that their responses were completely anonymous and confidential, and respondents were also encouraged to answer the questions as honestly as possible. According to Podsakoff, MacKenzie, Lee, and Podsakoff (2003), this assurance decreases respondents' tendency to be compliant or make responses that are socially desirable. Second, item ambiguity was reduced by carefully avoiding questions with double meanings and concepts that are vague, and also by keeping questions as simple as possible (Tourangeau, Rips, and Rasinski, 2000). Third, Harman's one-factor test (Podsakoff and Organ, 1986) was conducted, by including all the study variables in an exploratory factor analysis. The results showed there were 11 factors with eigenvalues greater than 1, accounting for a total of 68.33 percent of the variance; the first factor explained 26.99 percent of the variance, and the unrotated factor structure did not show any general factor. This suggests that common method bias was not a problem. Fourth, a more stringent test to test common method bias was performed by controlling for an unmeasured latent common variance factor (Mihalache, Jansen, Van Den Bosch, and Volberda, 2012; Podsakoff *et al.*, 2003). Consequently, a confirmatory factor analysis of the 41 variables used was performed, in which items were allowed to load both on their theoretical constructs as well as a latent common method variance factor. The model resulted in a poor fit, providing reassurance that common method bias was not a serious concern.

Lastly, to test for single respondent bias and to provide accuracy of our measures, a survey of a second respondent in a total of 26 firms (10% of the sample) was performed. The average (median) r_{WG} - the most common index of inter-rater agreement - of all the 11 constructs ranged from 0.60 to 0.90 (0.73 to 0.97), indicating adequate agreement (LeBreton

& Senter, 2008). Finally, the intraclass correlations, ICC (1) was calculated to test non-response bias. The obtained ICC (1) clearly exceeding Bliese's (1998) 0.1 cut-off for all the 11 constructs. Thus, both r_{WG} and ICC (1) results assured that single respondent bias was not a problem.

4.6 MEASURES

Existing validated measures were used in this study, when possible (Appendix 1). All items were concerned about strategic business units -SBUs (either an SBU within a firm or a firm with a single SBU) - the unit of analysis in this study. Respondents were given clear instructions to answer all the questions concerning the SBU for which they worked.

Strategy processes. Planning mode was measured using items from Bailey *et al.* (2000), to gauge the extent to which the strategy process is intentional, logical, sequential, analytic and deliberate. Command mode, taken from Bailey *et al.* (2000), measured the extent to which senior figures, such as CEOs, assert total control over strategy formation process, leaving little room for other players. The transactive mode was measured using items developed by Hart and Banbury (1994) to gauge to what extent strategy is driven by continuous small-scale mutual adjustments. Items for autonomous mode were adapted from Lumpkin, Cogliser, and Schneider (2009), to capture the extent to which strategy is driven by the autonomous initiatives of employees.

Organizational capabilities. Ordinary and dynamic marketing capabilities were adopted from Danneels (2012), to gauge firms' ability to serve its existing customers (ordinary), and firms' ability to identify and penetrate markets previously unserved (dynamic). Ordinary and dynamic technological capabilities were also based on Danneels (2012) to capture firms' ability to use existing technologies to produce a product/service for customers (ordinary) and firms' ability to identify and adapt new technologies (dynamic).

Firm performance. Firm performance was measured regarding efficiency and effectiveness, drawing on Auh and Menguc (2005). Efficiency included return on assets, income and sales, and profitability, while effectiveness captured growth in sales and market share about that of competitors.

Control variables. We controlled for firm size, firm age, industry type, SBU and environmental turbulence. Firm size was measured as the number of employees, given its high correlation with firm performance (Zhou and Li, 2012). Firm age was calculated as the natural logarithm of years since inception until 2015 since it can predict performance (Zhou and Wu, 2010). Industry types were controlled as the industry in which a firm operates could affect firm performance (Wang and Rafiq, 2014). SBU - whether an SBU that formed an independent firm or an SBU of a larger firm, was controlled to rule out its effect on firm performance. Finally, environmental turbulence was drawn from Atuahene-Gima (2005) to measure the pace of change in technology, customers and competitors, since it has been shown to affect performance (Atuahene-Gima, 2005). Moreover, the above variables were also controlled to test the effect of strategy processes on organizational capabilities, as they have also been proposed to affect capabilities apart from firm performance (Danneels, 2008).

Questionnaire Crafting

The administration of surveys to non-native English speaking countries necessitates translation of questionnaire to local language (Kriauciunas, Parmigiani, and Rivera-Santos, 2011). However, translating the questionnaire from English to Indian languages was not only unnecessary but also could have been counter-productive, as there are 29 states in India, each with their own distinct local language and script. English is the only language that has a Pan-Indian presence. Since Indians, especially those in the organized sector, speak and understand English well, thus translation of questionnaire was not felt necessary. This is consistent with

other similar surveys conducted in India (Anand, 2002; Collins, Uhlenbruck, and Rodriguez, 2008; Vissa and Chacar, 2009).

4.7 MEASUREMENT MODEL

An exploratory factor analysis of all the variables was performed first. Items were dropped to improve the consistency of the scales when necessary, and the expected pattern of 11 factors emerged: four strategy processes, four organizational capabilities, two performance dimensions, and environment dynamism. Each scale separate factor analysis showed they had a single eigenvalue greater than 1, proving their unidimensionality. Cronbach's alpha for each scale was found to be above the threshold limit of 0.7 (Nunnally, 1978; Table 4.4).

A confirmatory factor analysis on the 11 measurement models was performed, demonstrating a good fit (CFI, TLI, IFI and the RSMEA fit indices were: 0.93, 0.92, 0.93, 0.05, respectively; $\chi^2 = 1180.50$, $df = 718$). As shown in Table 4.3, the composite reliability of all the constructs exceeded 0.7 providing evidence of internal consistency (Fornell and Larcker, 1981). The average variance extracted (AVE) for each construct was above the threshold limit of 0.5 (Fornell and Larcker, 1981), proving the convergent validity of the model.

Further, both the average shared variance (ASV) and maximum shared variance (MSV) were less than the AVE of each construct, proving discriminant validity (Hair, Black, Babin, and Anderson, 2010). Finally, we performed a related test for discriminant validity recommended by Hair *et al.* (2010), and found that the square roots of the AVE along the diagonal of the correlation matrixes were greater than all other entries in the same row and column (Table 4.4).

Additionally, the discriminant validity of the three meta-constructs (i.e., at strategy processes, organizational capabilities, and firm performance), as opposed to the above

general model consisting of 11 constructs was also examined. The results suggested that four constructs of strategy processes were related but distinct to each other. So were the four constructs of organizational capabilities, and two constructs of firm performance. As a further measure of discriminant validity, we calculated the confidence interval (CI) around the correlation between the factors (plus or minus two standard errors) (Table 4.5). Discriminant validity is established if this interval does not include 1.0 (Gerbing and Anderson, 1988). The CI around the correlation between any of the factors of the same meta-construct did not include 1.0. Lastly, following Bagozzi, Yi, and Phillips (1991), to test if the four strategy processes, four types of organizational capabilities, and two dimensions of firm performance were indeed distinct, we conducted a chi-square difference test (Table 4.6). The resulting changes in chi-square values were all significantly different from zero ($p < 0.0001$, $p < 0.001$, $p < 0.01$) providing robust evidence of discriminant validity.

Table 4.3: Scale Items Measurement

Strategy processes		
	SFL	CR
Command mode		
Our strategy is closely associated with a particular individual. ^a	0.48	-
A senior figure's vision is our strategy.	0.91	7.18
The strategy we follow is directed by a vision of the future associated with the chief executive (or another senior figure).	0.80	7.47
Planning mode		
We evaluate potential strategic options against explicit strategic objectives. ^a	0.53	-
Our company's strategy is made explicit in the form of precise plans.	0.75	8.48
When we formulate a strategy it is planned in detail.	0.92	9.30
We have precise procedures for achieving strategic objectives.	0.90	9.21
We have well-defined planning procedures to search for solutions to strategic problems.	0.76	8.50
We meticulously assess many alternatives when deciding on a strategy.	0.70	9.34
Transactive mode		
Most people in this company have input into decisions that affect them. ^a	0.68	-

Strategy is made on an iterative basis, involving managers, staff and executives in an on-going dialogue.	0.75	9.64
Strategy formation in our company is ongoing, involving everyone in the process to some degree.	0.76	9.67
<hr/>		
Autonomous mode		
<hr/>		
The strategies we follow develop from the efforts of the individuals or groups that operate independently and outside the company's chain of command. ^a	0.52	-
In our company individuals and/or teams decide for themselves what business opportunities to pursue (rather than CEO and top managers provide the primary impetus for pursuing business opportunities).	0.82	7.81
In our company individuals and/or teams pursuing strategic objectives make decisions on their own without constantly referring to their supervisors (instead of having to obtain approval from their supervisors before making decisions).	0.85	7.80
<hr/>		
Organizational capabilities		
<hr/>		
Ordinary marketing capability		
<hr/>		
Advertising/promotion resources or skills. ^a	0.84	-
Brand reputation or company image.	0.70	12.20
Distribution channels or sales force.	0.86	15.47
<hr/>		
Ordinary technological capability		
<hr/>		
Engineering and/or scientific skills and resources. ^a	0.85	-
Technological expertise.	0.87	18.23
Technical skills and resources.	0.93	19.91
<hr/>		
Dynamic marketing capability		
<hr/>		
Setting up a new sales force. ^a	0.71	-
Assessing the potential of new markets.	0.75	10.82
Building relationships in new markets.	0.80	11.48
Setting up new distribution channels.	0.67	11.64
Researching new competitors and new customers.		
<hr/>		
Dynamic technological capability		
<hr/>		
Identifying promising new technologies. ^a	0.84	-
Learning about technology it has not used before.	0.85	15.91
Assessing the feasibility of new technologies.	0.86	16.21
Recruiting engineers and/or scientists in technical areas it is not familiar with.	0.44	7.11
<hr/>		
Firm performance		
<hr/>		
Firm efficiency		
<hr/>		
Return-on-sales (ROS) ^a	0.81	-
Return-on-assets (ROA)	0.88	16.74
Return-on-investment (ROI)	0.90	17.39
Profitability	0.86	16.21
<hr/>		

Firm effectiveness		
Growth in market share. ^a	0.85	-
Sales growth.	0.92	15.67
Environmental turbulence		
Changes in customers' needs are quite unpredictable. ^a	0.67	-
The actions of local and foreign competitors in our major markets change quite rapidly.	0.69	8.61
Technological changes in our industry are rapid and unpredictable.	0.70	9.82
The market competitive conditions are highly unpredictable.	0.89	10.49
Customers' product preferences change quite rapidly.	0.77	14.96

Notes: ^a Initial loading was fixed to 1 to set the scale of the construct.
SFL: Standardized factor loading. CR: Critical ratio.

Table 4.4: Descriptive Statistics

	A	B	C	D	E	F	G	H	I	J	K
Com (A)	.75										
Plan (B)	-.12	.77									
Tran (C)	-.15*	.55**	.73								
Aut (D)	.18**	.36**	.43**	.74							
OrdMar (E)	.04	.51**	.34**	.26**	.81						
OrdTech (F)	-.06	.32**	.26**	.14*	.36**	.89					
DynMar (G)	.08	.60**	.40**	.29**	.63**	.37**	.71				
DynTech (H)	.02	.36**	.36**	.18**	.32**	.50**	.45**	.77			
Effic (I)	-.05	.42**	.27**	.19**	.48**	.33**	.39**	.22**	.86		
Effect (J)	-.02	.44**	.19**	.15*	.49**	.36**	.49**	.30**	.60**	.89	
Env (K)	.11	.17**	.21**	.25**	.18**	.12*	.16**	.15*	.13*	.05	.77

Table 4.4 (continued)

Mean	SD	Alpha	CR	AVE	MSV	ASV
4.64	1.37	.76	.79	.57	.02	.01
5.08	1.13	.89	.90	.59	.40	.21
5.07	1.16	.76	.77	.53	.35	.17
3.61	1.41	.74	.78	.55	.26	.08
4.82	1.17	.83	.85	.65	.47	.22
5.79	0.99	.90	.92	.79	.29	.13
5.21	0.98	.83	.83	.50	.47	.25
5.59	1.03	.83	.84	.59	.31	.14
5.15	1.14	.92	.92	.74	.45	.17
5.06	1.22	.87	.88	.78	.45	.19
4.85	1.17	.87	.86	.59	.07	.03

Notes: Diagonal value in correlation matrix depicts square root of AVE.

Com: command mode; Plan: planning mode; Tran: transactive mode; Aut: autonomous mode. DynMar: dynamic marketing capability. DynTech: dynamic technological capability. OrdMar: ordinary marketing capability. OrdTech: ordinary technological capability. Effic: firm efficiency. Effect: firm effectiveness. Env: environmental turbulence.

SD: Standard deviation. CR: critical ration. AVE: average variance extracted. MSV: maximum shared variance. ASV: average shared variance.

*p<.05. **p<.01.

Table 4.5: Confidence Interval (CI) Test

Correlations among constructs in full model	Standard error	95% confidence interval	
Correlations between DynMar and OrdMar = 0.73	0.04	0.65	0.81
Correlations between DynMar and DynTech = 0.49	0.07	0.36	0.63
Correlations between DynMar and OrdTech = 0.41	0.06	0.29	0.54
Correlations between DynTech and OrdMar = 0.33	0.06	0.20	0.46
Correlations between OrdTech and OrdMar = 0.40	0.06	0.27	0.52
Correlations between DynTech and OrdTech = 0.54	0.06	0.41	0.66
Correlations among constructs in full model (Strategy)	Standard error	95% confidence interval	
Correlations between Planning and Transactive = 0.59	0.07	0.45	0.71
Correlations between Planning and Command = -0.07	0.07	-0.21	0.08
Correlations between Planning and Autonomous = 0.37	0.06	0.24	0.48
Correlations between Transactive and Command = -0.15	0.09	-0.30	0.05
Correlations between Transactive and Autonomous = 0.51	0.07	0.38	0.64
Correlations between Autonomous and Command = 0.10	0.08	-0.07	0.26
Correlations among constructs in full model	Standard error	95% confidence interval	
Correlations between Effic and Effect = 0.66	0.05	0.55	0.74

Notes: Com: command mode; Plan: planning mode; Tran: transactive mode; Aut: autonomous mode. DynMar: dynamic marketing capability. DynTech: dynamic technological capability. OrdMar: ordinary marketing capability. OrdTech: ordinary technological capability. Effic: firm efficiency. Effect: firm effectiveness.

Table 4.6: Chi-Square Test

Model (Capability)	Chi- square	p-value	Difference in chi-square from full model (difference in df)	p-value for chi-square difference test
1. Full model with φ OrdTech, DynTech = 1	212.57 (82)	p<.0001	18.13	p<.0001
2. Full model with φ OrdTech, OrdMar = 1	215.87 (82)	p<.0001	21.43	p<.0001
3. Full model with φ OrdTech, DynMar = 1	247.75 (82)	p<.0001	53.32	p<.0001
4. Full model with φ DynTech, OrdMar = 1	214.28 (82)	p<.0001	19.85	p<.0001
5. Full model with φ DynTech, DynMar = 1	227.63 (82)	p<.0001	33.20	p<.0001
6. Full model with φ DynMar, OrdMar = 1	203.75 (82)	p<.0001	9.32	p<.001
Model (Strategy)	Chi- square	p-value	Difference in chi-square from full model (difference in df)	p-value for chi-square difference test
1. Full model with φ Planning, Transactive = 1	248.09 (84)	p<.0001	40.40	p<.0001
2. Full model with φ Autonomous, Planning = 1	264.73 (84)	p<.0001	57.03	p<.0001
3. Full model with φ Planning, Command = 1	328.00 (84)	p<.0001	120.30	p<.0001
4. Full model with φ Transactive, Autonomous = 1	230.77 (84)	p<.0001	23.08	p<.0001
5. Full model with φ Transactive, Command = 1	307.62 (84)	p<.0001	99.92	p<.0001
6. Full model with φ Autonomous, Command = 1	262.56 (84)	p<.0001	54.87	p<.0001
Model (Performance)	Chi- square	p-value	Difference in chi-square from full model (difference in df)	p-value for chi-square difference test
1. Full model with φ Effic, Effect = 1	29.70 (8)	p<.0001	6.80	p<.01

Notes: Com: command mode; Plan: planning mode; Tran: transactive mode; Aut: autonomous mode. DynMar: dynamic marketing capability. DynTech: dynamic technological capability. OrdMar: ordinary marketing capability. OrdTech: ordinary technological capability. Effic: firm efficiency. Effect: firm effectiveness.

4.8 CONCLUSION

This chapter provides an overview of the research methodologies and methods employed in this research. Based on positivist philosophy a quantitative research methodology was chosen. Although quantitative methodology in social science has its limitations and that could lead to errors at times, it has its own merits also. Quantitative methodology is rigorous in nature and helps establish relationships between variables. It follows that the results so obtained could be verified through further replications.

A careful analysis of the constructs being used, and the theoretical angles applied to establish relationships between these constructs, revealed the suitability of a rapidly changing environmental context for this research. Based on this analysis, Indian high-tech sector was identified as the right context to test proposed hypotheses. However, the limitations of this chosen context were also identified -Indian high-tech firms have traditionally engaged in less technologically challenged works, and only recently have started moving up the value chain.

Finally, using web-based software, an online survey of senior managers yielded 260 usable responses. As the limitations of the quantitative research methodology were earlier noted, therefore, care was taken to avoid procedural mistakes that could lead to biases in results. To further check any biases that might have been inadvertently factored into the results, sophisticated analytical methods were employed, including a second survey of a different set of managers in the 260 firms. These tests assured that there would be no biases in the results so obtained.

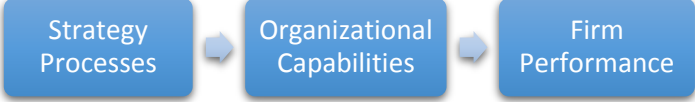

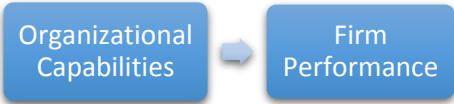
CHAPTER FIVE

ANALYSIS AND RESULTS

5.1 INTRODUCTION

The overall objective of this research is to establish relationships between strategy processes, organizational capabilities, and firm performance using the theoretical angles of RBV and DCV. To this end, 260 usable responses were collected from senior managers working in Indian high-tech sector. This chapter describes the various statistical tools and techniques used to analyze these responses. The following sections test the structural model that not only analyze the robustness of these models but also test the ensuing hypotheses. The first model which is the base model is tested using covariance-based SEM in AMOS, and the remaining two models are tested using partial least square (PLS) based SEM in SmartPLS software.

Table 5.1: Relationships, Statistical Techniques, and Software

Relationships	Statistical techniques	Software used
 <pre> graph LR A[Strategy Processes] --> B[Organizational Capabilities] B --> C[Firm Performance] </pre>	Co-variance based SEM	AMOS
 <pre> graph LR A[Strategy Processes] --> B[Organizational Capabilities] </pre>	PLS SEM	SmartPLS
 <pre> graph LR A[Organizational Capabilities] --> B[Firm Performance] </pre>	PLS SEM	SmartPLS

5.2 STRATEGY PROCESSES, ORGANIZATIONAL CAPABILITIES, AND FIRM PERFORMANCE

To analyze this particular model the covariance-based structural equation modeling (SEM) and the maximum likelihood (ML) procedure using AMOS 21.0 software (Arbuckle, 2012) was used. Three different approaches have been suggested for assessing specific (individual) and total (combined) mediation effects: product-of-coefficients approach, causal step approach, and distribution of the product strategy (Preachers and Hayes 2008). Recently there has been an overwhelming support (both conceptual and technical) for discarding the traditional causal four-step approach by Baron and Kenny (1986), as its simple step-wise regression analysis technique is deemed inadequate or incompatible with covariance-based SEM (Mathieu and Taylor, 2006; Preacher and Hayes 2008; Preacher, Rucker, and Hayes, 2007; Zhao, Lynch, and Chen, 2010). More importantly, it is certainly of little value in a multi-

mediator context as it “relies on a set of tests of individual a and b paths rather than testing the specific indirect effects, and yields no point of the estimate or SE of the mediation effect” (Preacher and Hayes, 2008: 882). Hence, we tested our mediation model using product-of-coefficients approach and distribution of the product strategy. The product-of-coefficients approach is a parametric approach in which Z-score of the indirect (mediation) effect is calculated (Zhao, Lynch, and Chen, 2010). The distribution of the product strategy is a non-parametric approach that entails bootstrapping the confidence intervals of the indirect effect.

An initial model (Model 1) with all four strategy processes as the independent variables, two performance dimensions as the dependent variables, and ordinary and dynamic marketing and technological capabilities as the mediating variables was estimated. Model 1 also included the control variables. Of the control variables, firm age had a positive effect on ordinary marketing capability, and firm size had a positive effect on dynamic technological capability and firm effectiveness. The fit indexes were satisfactory: $\chi^2(918) = 1508.80$; $\chi^2/df=1.64$; CFI=.91; TLI=.90; IFI=.91; RMSEA=.05.

An alternative model approach was used to assess if Model 1 was a better fit for the data than other theoretically plausible models. At least two alternate models were identified which may have some support from theory (i) Model 2 without mediation effects where capabilities and strategy processes were treated as independent variables affecting firm efficiency and effectiveness ($\chi^2= 1665.85$, $df = 926$); and (ii) Model 3 with a path from planning mode to dynamic marketing and technological capabilities ($\chi^2= 1496.65$, $df = 916$). The resulting chi-square difference test between Models 1 and 2 ($\Delta\chi^2 = 157.04$, $\Delta df = 8$, $p<.001$) was significant, indicating that the larger model (Model 1) of the two with a fewer degree of freedom can be preferred over Model 2. The chi-square difference test between Models 1 and 3 ($\Delta\chi^2 = 12.15$, $\Delta df = 2$, $p<.01$) was significant, suggesting the larger model (Model 3) may be preferred over Model 1. Based on the results of alternative models, we

decided to retain Model 3 ($\chi^2 (916) = 1496.65$; $\chi^2/df=1.63$; CFI=.91; TLI=.90; IFI=.91; RMSEA=.05).

For post hoc analysis, the total mediation effects of marketing and technological capabilities combined were tested. Technological capabilities need “leveraging through the process of combining with other capabilities” (Zou, Liu, and Ghauri, 2010: 100). Marketing and technological capabilities are often cited as complementary, and their integrative effects are noted. For example, the impact of marketing capability on innovative output is greatest for firms that have an equally strong technological capability (Dutta, Narasimhan, and Rajiv, 1999). Strong marketing and technological capabilities together reduce the deficiency of stand-alone technological or marketing capability and generate new applications from both (Dutta, Narasimhan, and Rajiv, 1999; Kogut and Zander, 1992; Song *et al.*, 2005; Teece, Pisano, and Shuen, 1997). Given their complementarity, the combined mediating effects of marketing and technological capabilities on the relationship between strategy processes and firm performance was tested.

The specific and total mediation effects were tested using a product-of-coefficients approach. The regression coefficients and standard error (SE) of specific and total mediation effects were obtained, and the Z-score was manually calculated. A Z-value above the threshold limit of 1.96 and significant at .05 level is sufficient to reject the null hypothesis that the mediation effect is zero. Further, the product-of-coefficients approach is a parametric approach which assumes a normal distribution of the product of two or more coefficients (Zhao, Lynch, and Chen, 2010). However, a total mediation effect is rarely normally distributed, and indeed positively skewed. To address the shortcomings of current methods, Shrout and Bolger's (2002) bootstrapping, a non-parametric approach that does not assume a normal distribution of product coefficients, was used. In particular, we performed the bootstrap using the recommended 2000 bootstrap sample (Preachers and

Hayes, 2008). Bootstrapping of confidence intervals of specific mediation effects is much more complex and requires special techniques to do so. Following Macho and Ledermann (2011) we used the Phantom model approach for bootstrapping of confidence intervals of specific mediation effects. For both total and specific mediation effects, we calculated the Bias-corrected 95% confidence interval to arrive at upper and lower intervals. If zero is not contained in the interval, then the mediation effect is deemed to be significant. The results of both product-of-coefficients approach and bootstrapping for both specific and total mediation effects reinforced each other, and hence testified to the robustness of the results (Table 5.2).

H2a hypothesized the mediation of ordinary marketing capability between planning and firm efficiency. The z-score of the product of the coefficient of this relationship was significant ($p < 0.5$). Also, zero was not contained in the upper and lower CIs of each of these relationships. Thus, H2a is supported. Similarly, H4a pertained to the mediation of dynamic marketing capability between an autonomous mode and firm effectiveness. The z-score of the product of the coefficient of this relationship was significant ($p < 0.5$). Also, zero was not contained in the upper and lower CIs of each of these relationships. Hence, H4a is supported.

H1b, H2b, and H3b pertained to the mediation of ordinary technological capability between command, planning, and transactive modes, and firm efficiency, respectively. The z-score of the product of the coefficient of all the three relationships was insignificant ($p > 0.5$). Also, zero was contained in the upper and lower CIs of each of these relationships. Thus, H1b, H2b, and H3b are not supported. Similarly, H1a and H3a pertained to the mediation of ordinary marketing capability between command and transactive modes, and firm efficiency, respectively. The z-score of the product of the coefficient of both the relationships was insignificant, and zero was also contained in the CIs of these relationships. Thus, H1a and H3a were not supported. H4a looked into the mediation of technological

capabilities between an autonomous mode and firm effectiveness. Both the product of coefficient and CIs method found that this relationship was insignificant. Hence, H4a is also not supported.

That command mode that symbolizes hierarchy and overt centralization is insignificant in Indian high-tech context is perplexing, to say the least. The general perception of the cultural orientation of Indian businesses is that hierarchy matters, and so does centralization (Upadhyaya and Vasavi, 2006). However, the results speak otherwise. The reason behind such surprising finding could be that high-tech firms in India have been compelled to move beyond the hierarchical boundaries to grow. As Garud, Kumaraswamy, and Sambamurthy (2006) explains about Infosys, an Indian IT major, “There was no advantage in hiring best-in-class people with learnability if they were stifled by the hierarchy. As the company grew in the 1990s, senior managers decentralized decision making”. The insignificance of hypotheses H1a and H1b, related to command mode, tells us that what is good for Infosys, seems to be good for most other technology-based firms in India.

The first type of posthoc analysis pertained to combined effects of technological and marketing capabilities, as opposed to hypothesized stand-alone effects. This posthoc analysis acknowledged the power of capabilities bundle over stand-alone capability. The second type of posthoc analysis reflected upon the dual nature of planning mode, and its power to influence dynamic capabilities as well, as opposed to influencing just ordinary capabilities, hypothesized earlier. The same procedure was applied as that used for hypothesized relationships -z score significance and CIs- to obtain results for posthoc analysis. The results of both types of posthoc analysis are summarized in Table 5.2. This table also summarizes the hypothesized results.

Table 5.2: Results – Strategy Processes, Organizational Capabilities, and Firm Performance

Specific mediation effects						Result
Hypothesized relationships						
	Point of Estimate	Product of Coefficient SE	Z	BC 95% CI		
				Lower	Upper	
Ordinary marketing capability mediates:						
H1a: Command mode → firm efficiency	0.04	0.03	1.85	-0.00	0.12	Not Supported
H2a: Planning mode → firm efficiency	0.25	0.10	3.28	0.10	0.49	Supported
H3a: Transactive mode → firm efficiency	0.06	0.05	1.85	-0.00	0.20	Not Supported
Ordinary technological capability mediates:						
H1b: Command mode → firm efficiency	0.00	0.01	0.11	-0.02	0.03	Not Supported
H2b: Planning mode → firm efficiency	0.04	0.03	1.69	-0.00	0.14	Not Supported
H3b: Transactive mode → firm efficiency	0.02	0.02	1.19	-0.01	0.09	Not Supported
Dynamic marketing capability mediates:						
H4a: Autonomous mode → firm effectiveness	0.20	0.47	3.00	0.01	1.11	Supported
Dynamic technological capability mediates:						
H4b: Autonomous mode → firm effectiveness	0.05	0.13	1.83	-0.00	0.33	Not Supported
Post hoc non-hypothesized relationships						
Dynamic marketing capability mediates:						
Planning mode → firm effectiveness	0.42	0.41	3.69	0.01	0.87	Significant Path
Dynamic technological capability						
Planning mode → firm effectiveness	0.09	0.11	2.11	0.00	0.28	Significant Path

Table 5.2 (continued)

Combined (total) mediation effects						Result
Post hoc non- hypothesized relationships						
	Point of Estimate	Product of Coefficient		BC 95% CI		
		SE	Z	Lower	Upper	
Ordinary marketing and technological capabilities together mediates:						
Command mode → firm efficiency	0.04	0.03	1.45	-0.01	0.13	Insignificant path
Planning mode → firm efficiency	0.30	0.11	2.88	0.13	0.58	Significant path
Transactive mode → firm efficiency	0.08	0.06	1.70	-0.00	0.24	Insignificant path
Dynamic marketing and technological capabilities together mediates:						
Autonomous mode → firm effectiveness	0.26	0.54	2.77	0.02	1.37	Significant path
Planning mode → firm effectiveness	0.51	0.49	3.23	0.02	1.04	Significant path

Notes: BC bias corrected. 2,000 bootstrap samples. Z-score >1.96 is significant. For specific mediation effects, the Z-score was calculated using the formula provided by MacKinnon and Dwyer (1993) and MacKinnon, Warsi, and Dwyer (1995), that is, $Z\text{-value} = a*b/\sqrt{(b^2*s_a^2 + a^2*s_b^2)}$. Where a is the regression coefficient for the relationship between the independent variable and the mediator, b is the regression coefficient for the relationship between the mediator and the dependent variable, Sa is the SE of the relationship between the independent variable and the mediator, and Sb is the SE of the relationship between the mediator and the dependent variable. For total mediation effect f, we first calculated asymptotic variance (var[f]) of a total mediation effect using methods described by Bollen (1989). The Z-value was subsequently calculated by employing the formula $Z\text{ value} = f/\sqrt{\text{var}[f]}$ (Preacher and Hayes, 2008).

Table 5.3: Hypotheses – Strategy Processes, Organizational Capabilities, and Firm

	Hypotheses	Results
H1a	Ordinary marketing capability mediates the relationship between command mode and firm efficiency.	Not supported
H1b	Ordinary technological capability mediates the relationship between command mode and firm efficiency.	Not supported
H2a	Ordinary marketing capability mediates the relationship between planning mode and firm efficiency.	Supported
H2b	Ordinary technological capability mediates the relationship between planning mode and firm efficiency.	Not supported
H3a	Ordinary marketing capability mediates the relationship between transactive mode and firm efficiency.	Not supported
H3b	Ordinary technological capability mediates the relationship between transactive mode and firm efficiency.	Not supported
H4a	Dynamic marketing capability mediates the relationship between autonomous mode and firm effectiveness.	Supported
H4b	Dynamic technological capability mediates the relationship between autonomous mode and firm effectiveness.	Not supported

Performance

5.3 STRATEGY PROCESSES AND ORGANIZATIONAL CAPABILITIES

This model further dissects the base model by zooming in on the relationship between strategy processes and organizational capabilities, using the ambidexterity angle. Cross-functional ambidexterities were made up of the combination of market exploitation (exploration) and technological exploration (exploitation). Functional-ambidexterities were made up of the combination of market exploitation and exploration, and technological exploration and exploitation – market and technological exploitation being the usage of ordinary marketing and technological capabilities, and market and technological exploration being the usage of dynamic marketing and technological capabilities. Further, strategic ambidexterity was made up of the combination of planned and autonomous strategy process

modes. The hypotheses in this model were constructed on the contingent effect of strategic ambidexterity on functional and cross-functional ambidexterities.

Second-Order Factors

Since this model used second-order formative factors, it was pertinent that the convergent validity of these orders are also tested before the structural model is analyzed. However, the convergent validity and item reliability of formative constructs cannot be assessed in the same way as reflective constructs due to the very nature of formative constructs (Hulland, 1999). Diamantopoulos and Winklhofer (2001) suggest an alternative method in the form of testing for multicollinearity among the items (first-order constructs in this case) that constitute formative constructs. Therefore, we tested for multicollinearity by calculating variance inflation factors (VIFs) on the first-order reflective constructs that constitute formative constructs. The VIF values for all first-order reflective constructs are well below the threshold criterion of 10, and thus there is no excessive multicollinearity between the first-order constructs. The low multicollinearity suggests that the first-order reflective constructs are rightly tapping into different dimensions of formative constructs (Petter, Straub, and Rai, 2007).

Structural Model

PLS structural equation modeling (SEM) using SmartPLS (Ringle, Wende and Will, 2005) was employed for analyzing this model. PLS has recently gained popularity in strategy and management research (e.g., Gruber, Heinemann, Brettel, and Hungeling, 2010; Ciabuschi, Dellestrand and Martín, 2011), especially in handling second-order constructs (Chin and Newsted, 1999). As it avoids both factor indeterminacy and inadmissible solutions (Fornell and Bookstein, 1982).

The PLS algorithm was first applied followed by the bootstrapping procedure with 1,000 subsamples to test for statistical significance. The best fit between the data and the model is presented in Figures 5.1 and 5.2. The coefficient of determination R^2 is used for evaluation purposes in PLS as there are no overall goodness-of-fit statistics for a PLS model (Hulland, 1999).

Figure 5.1 summarizes the results related to cross-functional ambidexterity (H5a and H5b). The model explained 34 percent of variations in cross-functional ambidexterity of market exploration-technology exploitation, and 30 percent of the variation in cross-functional ambidexterity of technology exploration-market exploitation. The variance explained in endogenous variables are in line with similar studies (Trichterborn, Knyphausen-Aufseß, and Schweizer, 2015). The path coefficient from strategic ambidexterity to market exploration-technology exploitation was significant and positive ($\beta=0.55$, $p<0.001$) providing support for Hypothesis 5a. The path coefficient from strategic ambidexterity to technology exploration-market exploitation was significant and positive ($\beta=0.53$, $p<0.001$), providing support for Hypothesis 5b.

Hypotheses 7a about the effect of environmental turbulence on the hypothesized relationships in H5a and 5b were tested using an interaction moderation analysis. Our results indicated that the interaction of strategic ambidexterity and environmental turbulence had no significant effect on cross-functional ambidexterity of technology exploration-market exploitation ($p>0.05$), and on market exploration-technology exploitation ($p>0.05$). Thus, Hypothesis 7a which predicts that strategic ambidexterity will contribute towards both types of cross-functional ambidexterity more in the turbulent environment was not supported.

Figure 5.1: Results – Strategy Processes and Organizational Capabilities (1)

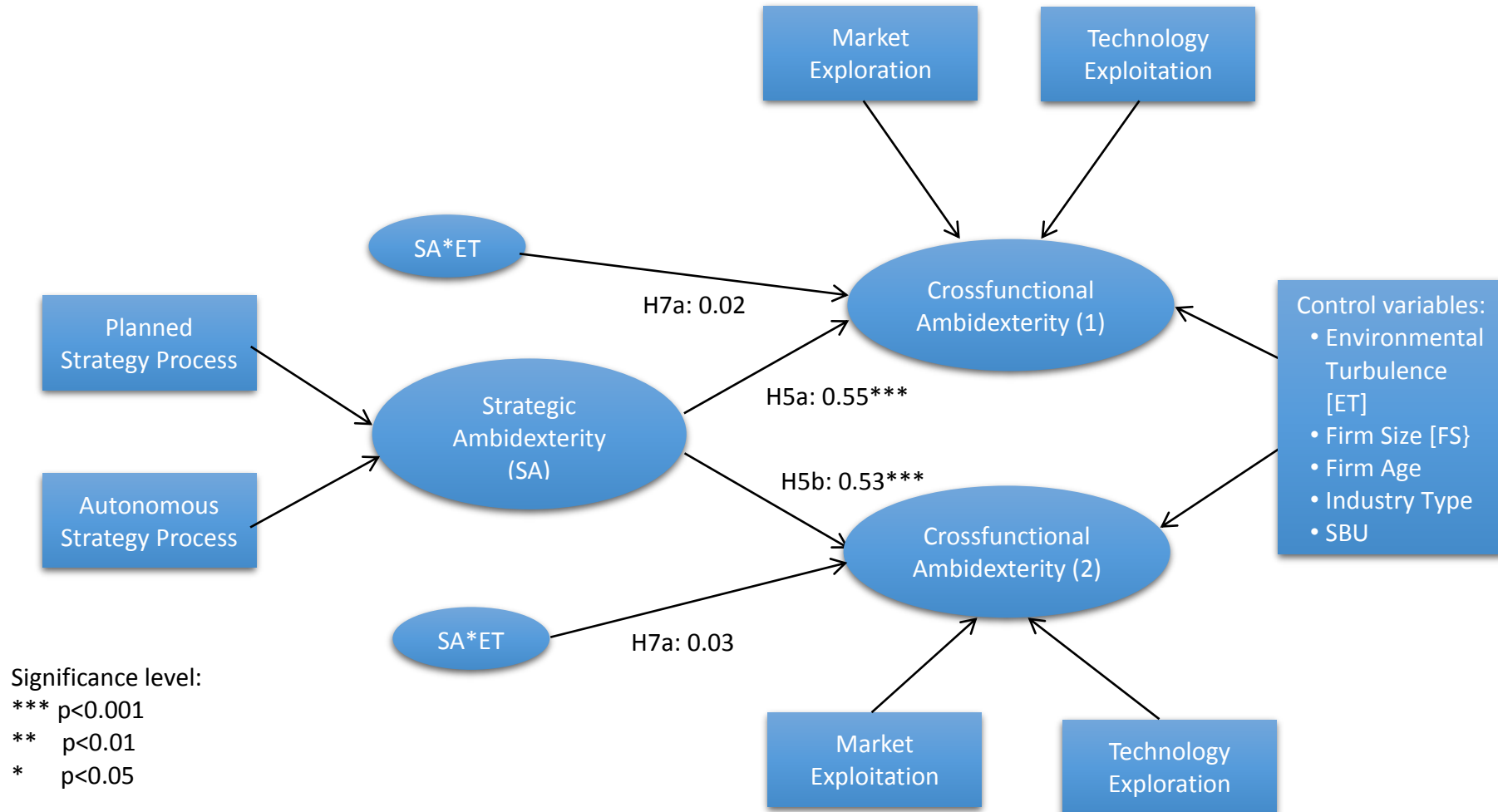


Figure 5.2 summarizes results related to functional ambidexterity (H6a and H6b). The model explained 40 percent of variations in functional (market) ambidexterity (market exploration-market exploitation), and 19 percent of variation in functional (technology) ambidexterity (technology exploration- technology exploitation). The variance explained in endogenous variables are in line with similar studies (Knyphausen-Aufseß, Z., and Schweizer, 2015). The path coefficient of strategic ambidexterity on market ambidexterity was significant and positive ($\beta=0.40$, $p<0.001$), providing support for Hypothesis 6a. The path coefficient of strategic ambidexterity on technology ambidexterity was also significant and positive ($\beta=0.61$, $p<0.001$), providing support for Hypothesis 6b.

Hypothesis 7b predict the moderating effect of environmental turbulence on the hypothesized relationships in H6a and 6b. Interaction moderation analysis revealed that the interaction of strategic ambidexterity and environmental turbulence had no significant effect on both types of functional ambidexterity: market ambidexterity ($p>0.05$) and technology ambidexterity ($p<0.05$). Thus Hypothesis 7b that predicts that with an increase in the turbulent environment the effect of combined processes on both types of functional ambidexterity will increase was not supported.

Figure 5.2: Results – Strategy Processes and Organizational Capabilities (2)

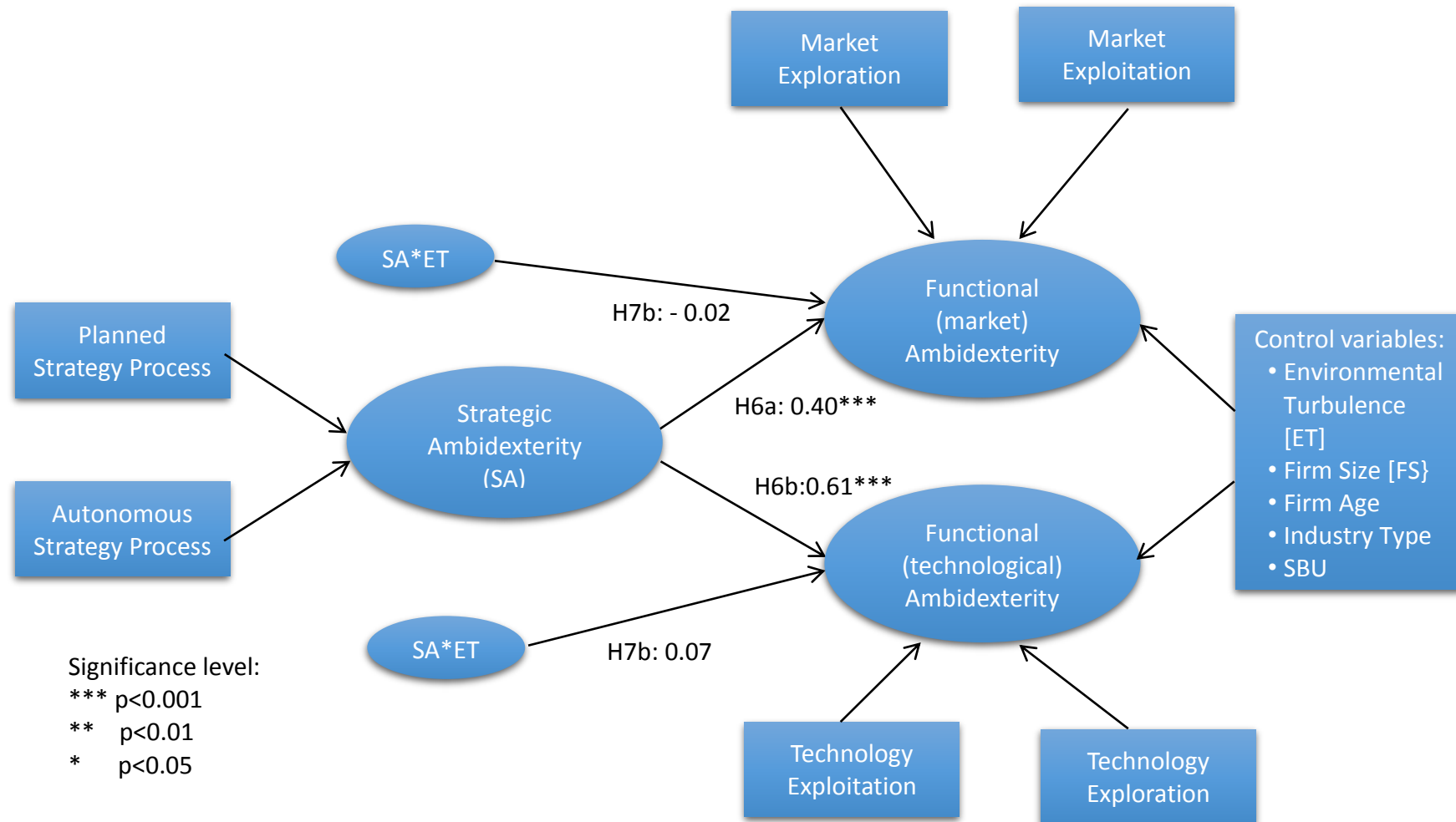


Table 5.4: Hypotheses – Strategy Processes and Organizational Capabilities

Hypotheses	Results
H5a Combination of planned and autonomous strategy processes will have a positive impact on cross-functional ambidexterity featuring technology exploitation and market exploration	Supported
H5b Combination of planned and autonomous strategy processes will have a positive impact on cross-functional ambidexterity featuring technology exploration and market exploitation	Supported
H6a Combination of planned and autonomous strategy processes will have a positive impact on functional ambidexterity featuring technology exploitation and exploration	Supported
H6b Combination of planned and autonomous strategy processes will have a positive impact on functional ambidexterity featuring market exploration and exploitation.	Supported
H7a As the turbulence in the environment increases, so does the effect of combined planned and autonomous strategies on both types of cross-functional ambidexterity	Not supported
H7b As the turbulence in the environment increases, so does the effect of combined planned and autonomous strategies on both types of functional ambidexterity.	Not supported

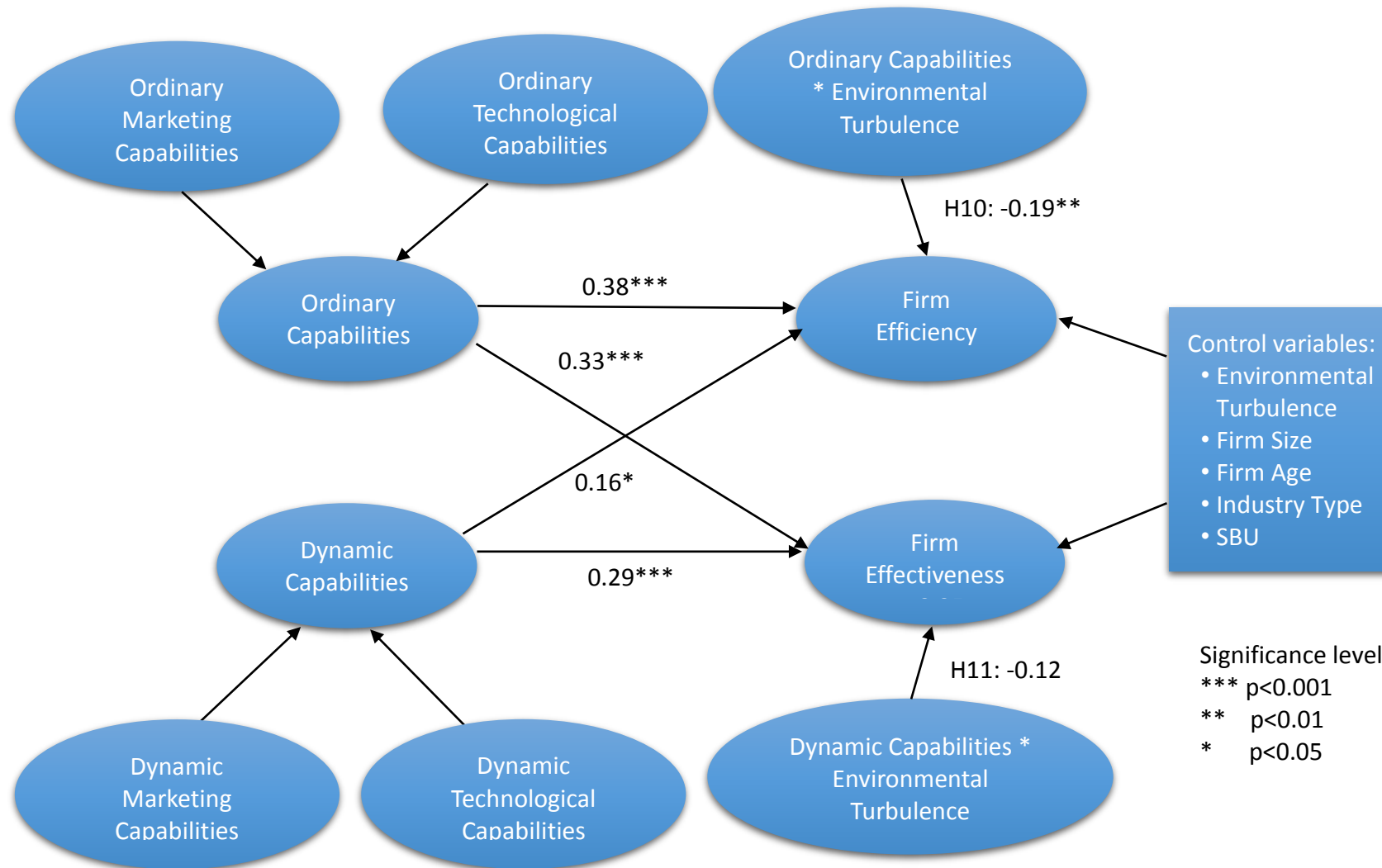
5.4 ORGANIZATIONAL CAPABILITIES AND FIRM PERFORMANCE

This model further dissects the base model by zooming in on the relationship between organizational capabilities and firm performance, using the RBV and DCV angles. Ordinary capabilities construct was made up of the combination of ordinary marketing and ordinary technological capabilities. Dynamic capabilities construct was made up of dynamic marketing and dynamic technological capabilities. The hypotheses in this model were constructed on the comparison theme – comparison between the two capabilities (ordinary and dynamic) contributions to firm performance.

As this mode involves second-order formative constructs of ordinary and dynamic capabilities PLS structural equation modeling (SEM) using SmartPLS (Ringle, Wende and

Will, 2005) was employed. PLS is better able to handle second-order formative constructs than covariance based structure equation modeling (Chin and Newsted, 1999; Fornell and Bookstein, 1982). The PLS algorithm was first applied followed by the bootstrapping procedure with 1,000 subsamples to test for statistical significance. The coefficient of determination R^2 is used for evaluation purposes as there are no overall goodness-of-fit statistics for a PLS model (Hulland, 1999). Figure 5.3 presents the best fit between the data and the model where 32.0% of the variance in firm efficiency, and 35.0% of the variance in firm efficiency were explained. The variances explained are in line with similar studies (Trichterborn, Knyphausen-Aufseß, and Schweizer, 2015).

Figure 5.3: Results – Organizational Capabilities and Firm Performance



Hypothesis 8 posits that ordinary capabilities have a stronger effect on firm efficiency than dynamic capabilities do. The path coefficient of ordinary capabilities (0.38, $p < 0.0000003$) was stronger than that of dynamic capabilities (0.16, $p < 0.03$) on firm efficiency. Paternoster *et al.*'s (1998) z test was used to identify a tentative sample population of firms. And it was found the path coefficients were indeed statistically different ($z = 2.23$, $p < 0.03$). Further, the bias-corrected confidence intervals (Cummings, 2009) around the path coefficients of ordinary and dynamic capabilities was calculated. The confidence intervals overlapped by less than 50%, providing further evidence that the path coefficients were significantly different from each other ($p < 0.05$). Hence, H8 is supported.

Hypothesis 9 posits that dynamic capabilities have a stronger effect on firm effectiveness than ordinary capabilities do. Contrary to the prediction, the path coefficient of ordinary capabilities (0.33, $p < 0.001$) was stronger than that of dynamic capabilities (0.29, $p < 0.001$) on firm effectiveness. Using Paternoster *et al.*, (1998) procedure, the path coefficients were found to be not statistically different ($z = 0.40$, $p > 0.7$). The confidence intervals did not overlap by less than 50%, showing that path coefficients were not significantly different from each other ($p > 0.05$). Hence, H9 is not supported.

Hypotheses 10 and 11 pertained to the moderating effects of environmental turbulence on the respective contributions of ordinary and dynamic capabilities on firm efficiency and effectiveness. The interaction term of ordinary capabilities and environmental turbulence was used to test the moderating effect and found a significant and negative effect on firm efficiency (-0.19 , $p < 0.002$). Hence, H10 is supported, as the environment becomes more turbulent, the effect of ordinary capabilities on firm efficiency decreases. However, the interaction of dynamic capabilities and environmental turbulence was significant but negative (-0.12 , $p < 0.03$), hence H11 is not supported.

Post-Hoc Analysis

Post hoc analysis (Table 5.5) entailed dividing environmental turbulence into three types: stable, moderate and turbulent. It was found that ordinary capabilities had significant and positive effects on both firm efficiency and effectiveness in all three types of environment, with the only exception of firm efficiency in a turbulent environment. Dynamic capabilities had a significant and positive effect only on firm effectiveness in a stable environment. Moreover, compared with dynamic capabilities, ordinary capabilities had statistically significant stronger effects on firm efficiency in stable and moderate environments.

Table 5.5: Post-Hoc Analysis – Organizational Capabilities and Firm Performance

<i>The effects of ordinary capabilities on:</i>			
	Stable environment	Moderate environment	Turbulent environment
Firm efficiency	Positive effect (0.62***)	Positive effect (0.43**)	Insignificant effect (0.12)
Firm effectiveness	Positive effect (0.36***)	Positive effect (0.39**)	Positive effect (0.33*)
<i>The effects of dynamic capabilities on:</i>			
	Stable environment	Moderate environment	Turbulent environment
Firm efficiency	Insignificant effect (0.08)	Insignificant effect (0.09)	Insignificant effect (0.21)
Firm effectiveness	Positive effect (0.40***)	Insignificant effect (0.20)	Insignificant effect (0.19)
<i>Comparing the effects of ordinary and dynamic capabilities on:</i>			
	Stable environment	Moderate environment	Turbulent environment
Firm efficiency	Ordinary capabilities superior	Ordinary capabilities superior	No distinction or superiority of any
Firm effectiveness	No distinction or superiority of any	No distinction or superiority of any	No distinction or superiority of any

Two-tailed significance levels *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Both Paternoster *et al.*'s (1998) z test and the more stringent bias-corrected confidence interval test were used to compare the effects of ordinary and dynamic capabilities.

Table 5.6: Hypotheses – Organizational Capabilities and Firm Performance

Hypotheses	Results
H8 Ordinary capabilities have a stronger positive effect on firm efficiency than dynamic capabilities do.	Supported
H9 Dynamic capabilities have a stronger positive effect on firm effectiveness than ordinary capabilities do.	Not supported
H10 Environmental turbulence moderates the effect of ordinary capabilities on firm efficiency; as the environment becomes more turbulent, the effect of ordinary capabilities on firm efficiency weakens.	Supported
H11 Environmental turbulence moderates the effect of dynamic capabilities on firm effectiveness; as the environment becomes more turbulent, the effect of dynamic capabilities on firm effectiveness strengthens.	Not supported

5.5 CONCLUSION

This chapter provided an overview of statistical techniques applied to test the hypotheses and post hoc analyses. To test the structural model about strategy processes, organizational capabilities, and firm performance, covariance-based SEM was used in AMOS. The fit indices of this model were satisfactory. H2a and H4a about planning and autonomous modes were found to be significant, and the post hoc analysis results further complemented these findings.

The second framework (strategy processes and organizational capabilities) was tested using PLS based SEM in SmartPLS. The coefficient of determination R^2 was found adequate providing for robustness of this model. H5a, H5b, H6a and H6b about the effect of strategic ambidexterity on functional and cross-functional ambidexterity were found to be significant. However, the hypotheses related to environment moderations were not significant and hence the boundary condition of this model were not predictable.

The last model (organizational capabilities and firm performance) was tested using PLS based SEM in SmartPLS, and the R^2 was found to be adequate for this model. H8 and H10

about the contributions and boundary conditions of ordinary capabilities were significant. H9 and H11 related to the effect and boundary conditions of dynamic capabilities were not significant. The results of post hoc analysis greatly enhanced the hypothesized findings.

CHAPTER SIX

DISCUSSION

6.1 INTRODUCTION

This thesis is aimed at examining the complex relationship between strategy processes, organizational capabilities, and firm performance. To this end, this research examined not only the base model containing all the three variables (strategy processes, organizational capabilities, and firm performance), but later also zoomed in on the complexities surrounding the strategy processes-organizational capabilities, and organizational capabilities-firm performance relationships in separate models. Each of these theoretical contributions is discussed in detail, in this chapter.

6.2 STRATEGY PROCESSES, ORGANIZATIONAL CAPABILITIES, AND FIRM PERFORMANCE

By looking into the general framework that links strategy processes, organizational capabilities and firm performance in a causal chain, this study contributes to the strategy process research within strategic management in four ways. First, it identifies the unique

The contribution of planning mode: it improves firm efficiency via ordinary capabilities (marketing capability alone or marketing and technological capabilities combined), and also firm effectiveness via dynamic capabilities (marketing capability or technological capability alone or marketing and technological capabilities combined). Thus, it earns the distinction of the only strategy, of the four studied, as having an ambidextrous property - able to handle contrasting ordinary and dynamic capabilities and to achieve both firm efficiency and effectiveness. Traditionally, planning has been considered by both practitioners and theorists as a strategy process that is directed towards firms' current resource trajectory, that is, ordinary capabilities (Andersen, 2004). Recently, a new thought process has emerged at least among theorists who argue that “as an organization gets better at strategic planning capability, there is the potential for turning the process toward the development of new operating capabilities and thus toward dynamic capability” (Wolf and Floyd, 2013: 18). Our findings not only support this latter view but also give an impetus to it. This reinforces the usefulness of planning mode, which is in stark contrast to the practitioner and scholarly views that have long predicted ‘the death of strategic planning’ (Conerly, 2014) and the replacement of planning with learning (Mintzberg, 1991). Contrary to these claims, planning has been quietly making a silent comeback (Grant, 2003). Our findings should further hasten this comeback.

Second, this thesis not only identifies the contribution of the autonomous mode to firm effectiveness via dynamic capabilities (marketing capability alone or marketing and technological capabilities combined) but also provide evidence that autonomous mode can work hand-in-hand with planning mode to improve firm performance. Since emergent strategies, such as the autonomous mode, have gained prominence, it has been the belief that they occupy a unique position within firms as they contribute towards exploration, while other (planning, command, and transactive) modes are geared towards exploitation

(Mintzberg, Ahlstrand, and Lampel, 1998). However, firms in our sample use autonomous mode as well as planning mode - a comprehensive and sequential strategy to manage dynamic capabilities in pursuance of firm effectiveness. There can be at least two explanations for this intriguing finding. First, this finding confers to the argument that dynamic capabilities have a complex nature and have both static and dynamic components (Schreyögg and Kliesch-Eberl, 2007), which in effect will require more than one way (planning and autonomous modes) of handling it. Second, planning and autonomous modes are associated with mechanistic and organic structures respectively (Slevin and Covin, 1997). Thus, firms may have a hybrid system to support both planning and autonomous modes, such as in the case of Samsung (Khanna, Song, and Lee, 2011) where the traditional Japanese management system adopted by a Korean firm has been adapted to embrace elements of the Western management system.

Third, these findings show that the command mode cannot deploy any of the ordinary capabilities leading up to firm efficiency. A plausible explanation is that as the complexity of capability or a combination of capabilities increases, so does the managerial expertise for handling them. However, command mode narrows channels of communication that reduces the managerial expertise needed to handle the complexity (Cardinal, 2001; Sheremata, 2000). Hence, even if commanders might believe in developing capabilities (Farkas and Wetlaufer, 1996), their reluctance to open strategy formation process to others somehow defeats their purpose as the command mode limits managerial expertise. Thus, despite a commander at the helm who might take total charge of strategy formulation, this strategy is inadequate to handle any of the capabilities in pursuance of firm efficiency in our research context.

Fourth, this thesis highlights the lack of ability of transactive mode to incrementally adjust ordinary capabilities in pursuance of firm efficiency. This is surprising, given that continuous small-scale changes symbolized by this strategy have been traditionally thought

of as an effective mode of strategic management (Chaffee, 1985; Grandori, 1984; Hart, 1992). To understand why such a strategy has virtually no effect in our sample of firms, we have to look into the literature on excessive strategic change (Zajac, Kraatz, and Bresser, 2000). There is always the danger that continuous small-scale changes may lead to ‘change for change’s sake’, and the firm may not be able to align the change with its capabilities (Zajac *et al.*, 2000). Adapting too readily, termed ‘opportunist adaption’ by Selznick (1957), may even negatively affect firm performance and damage firms’ capabilities (Hedberg, 1981; Rumelt, 1995).

6.3 STRATEGY PROCESSES AND ORGANIZATIONAL CAPABILITIES

By dwelling deeper into the strategy processes and organizational capabilities relationship through the theoretical angle of ambidexterity, this thesis provides valuable insight for ambidexterity research. Ambidexterity is an important lens through which firms' activities can be looked into (Tushman and O'Reilly, 1996; Gibson and Birkinshaw, 2004; Raisch *et al.*, 2009; Simsek *et al.*, 2009; O'Reilly and Tushman, 2013). Despite the excessive attention it has attracted (Birkinshaw and Gupta, 2013), the ambidexterity literature has accumulated evidence on disparate organizational mechanisms that enable different types of ambidexterity. However, the strategic underpinning of these organizational mechanisms has been relatively unexplored. Despite the call for future research on strategic ambidexterity (Raisch and Birkinshaw, 2008), there is a glaring gap on how to gauge a firm's strategic ambidexterity and how it can be aligned with organizational activities within and across business functions for strategic implementation. This study is an attempt in that direction.

This study contributes to the organizational ambidexterity literature in several ways. First, strategy processes as a critical factor for implementing organizational ambidexterity have never been studied till now. Prior literature has examined related issues, such as organizational structure (O'Reilly and Tushman, 2008), behavioral contexts (Gibson and

Birkinshaw, 2004), and organizational culture (Wang and Rafiq, 2014). However, these are just a tip of the iceberg, and the strategy processes underpinning such organizational contexts have been neglected. Whilst scholars generally acknowledge the importance of understanding ambidexterity from a strategic perspective (Raisch and Birkinshaw, 2008), the concept of strategic ambidexterity has been much of a management ideology, without much guidance on how it can be implemented. Recent work has attempted to examine how exploration and exploitation can be combined strategically (Voss and Voss, 2013), but the strategy processes have again been stripped out of the equation. This study brings strategy processes to the fore, and conceptualizes planned and autonomous strategy processes as two complementary aspects of strategic ambidexterity. Planned (deliberate) and autonomous (emergent) strategies have been widely studied (e.g., Bailey, Johnson, and Daniels, 2000; Bourgeois and Brodwin, 1984; Bower, 1970; Burgelman, 2002; Chaffee, 1985; Hart, 1991, 1992; Mintzberg, Ahlstrand, and Lampel, 1998), and practised by firms. However, it is the integration of the strategy processes to draw out their synergies that form strategic ambidexterity. Such integration enables a balanced approach to resource acquisition and allocation on exploratory and exploitative activities, and it is through the interacting planned and autonomous strategy processes that exploratory and exploitative knowledge is produced. Hence, our conceptualization of strategic ambidexterity addresses a key weakness of the cultural and contextual approach to ambidexterity that fails to identify the source of production of exploitative or explorative knowledge. As Kauppila (2010) observes, a key shortcoming of contextual and cultural based ambidexterity research is that it “does not really consider how a firm can simultaneously conduct radical forms of exploration and exploitation. It simply assumes that exploratory knowledge is produced somewhere and is available for use” (p.286).

Second, implementing ambidexterity is not easy due to the competing demands of exploration and exploitation (March, 1991; Smith and Tushman, 2005; Voss and Voss, 2013).

For example, it is suggested that firms have a favorable cultural and behavioral context that encourages individuals to make integrative judgments as to how to best divide their time between exploratory and exploitative activities (Gibson and Birkinshaw, 2004). Companies such as Google and Atlassian adopted this approach and set a 20% downtime policy to allow employees to explore new ideas, but are now both quietened for their policy due to not meeting the desired effects. In this study, strategic ambidexterity is linked to functional (market or technology) or cross-functional (market and technology) ambidexterity, to provide tangible solutions to strategically implementing ambidexterity. Exploration and exploitation can be co-produced in different work groups within the same (market or technology) function and across different (market and technology) functions. These work groups are governed by different strategy processes (planned or autonomous) and assessed by different performance criteria. For instance, work groups that are governed by the planned process will take comprehensive decisions, and have senior managers imprinted on these decisions, whereas the role of other members is limited to implementing those decisions (Appleyard, Hatch, and Mowery, 2000). Conversely, work groups that are governed through the autonomous process make spontaneous decisions in line with the emerging ideas from employees and opportunities arising from the market; the role of senior managers is limited to retrospectively rationalizing those decisions (Appleyard, Hatch, and Mowery, 2000). Such practice was previously noted as possible in anecdotal cases (Appleyard, Hatch, and Mowery, 2000; Narduzzo, Rocco, and Warglien, 2000), and our study provides robust evidence on such functional and cross-functional ambidexterity. A critical success factor of both functional and cross-functional ambidexterity is that firms need to maintain both “planned processes in which there is a significant role for senior management as well as evolutionary [autonomous] processes in which other members of the organization can influence strategy through their actions” (Rotemberg and Saloner, 2000: 694).

Third, this study also addresses the boundary conditions of aligning strategic, functional and cross-functional ambidexterity. It finds that strategic ambidexterity has a universal effect on functional and cross-functional ambidexterity in firms operating at different levels of environmental turbulence. This is contrary to previous research findings (e.g., Hart and Banbury, 1994) that suggest combined strategy processes contribute more towards firm performance in a changing environment. For instance, Nonaka (1988) argues that a combined process has value in an environment in which not only the intensity of information creation is high but also that there is a high pressure to respond to those changes quickly. There can be at least three different explanations for our somehow intriguing finding on the environmental turbulence effect. First, the sample of this study belongs to high-tech sectors where on an average the turbulence is more than that faced by firms in non-high-tech sectors.

In addition, the high-tech sectors studied here are situated in an Indian environment which is itself more turbulent compared to average growing economies. What it could mean is that there is no sharp contrast in terms of environment turbulence faced by firms in our sample; even those that are facing relatively less turbulent environment might be compelled to use both planned and autonomous strategy processes – a case which might not be true for non-high-tech firms and/or firms situated in economies that have an overall stable environment. Second, some have argued, and others have shown that a firm can combine more than two processes (e.g., Nonaka, 1988; Hart, 1992; Hart and Banbury, 1994). These researchers argue that although combining two strategy processes is difficult and its effectiveness depends on the pace of environmental change, but a more difficult task is to combine more than two processes, the fate of which is more dependent on environmental turbulence. Therefore, environmental turbulence may be a boundary condition for more complex processes than an integration of two strategy processes (Hart and Banbury, 1994).

A final explanation of these results could be that the effects of combined strategy processes are usually studied in terms of their direct contribution towards firms' financial performance (Nonaka, 1988; Hart and Banbury, 1994; Anderson, 2004). However, we extend this conversation by showing that combined strategy processes have more pronounced effects on functional and cross-functional ambidexterity - a potentially missing link in the understanding of Hart and Banbury's (1994) findings on the differential performance effects of combined strategy processes in a changing environment. What it could mean is that, while the effect of combined strategy processes on firm performance might be dependent on the pace of change in the environment, their more direct effects on intermediate activities (functional and cross-functional ambidexterities) might not be dependent on turbulence in the environment. In other words, once a firm has embraced an integrated approach to strategy processes, it has to first align its strategic ambidexterity with functional and cross-functional ambidexterity, irrespective of changes in the environment.

6.4 ORGANIZATIONAL CAPABILITIES AND FIRM PERFORMANCE

This model by looking deeper into the complex relationship between organizational capabilities and firm performance contributes in several ways. First, it contributes to the understanding of the distinctive effects of ordinary and dynamic capabilities, and their superiority over each other, on firm efficiency and effectiveness. Ordinary capabilities have overall stronger effects on firm efficiency, compared with dynamic capabilities. The findings that dynamic capabilities are distinct from ordinary capabilities but inferior to them resonate with the viewpoint that dynamic capabilities are very costly to accumulate and maintain (Zahra, Sapienza, and Davidsson, 2006; Wang and Ahmed, 2007; Ambrosini and Bowman, 2009). Although these scholars maintain that a firm's investment in dynamic capabilities can be justified on the grounds that their contributions to firm performance outweigh their costs,

our findings tell a different story: their contributions are undercut by the costs associated - at least this is the case in Indian high-tech firms. Overall, our findings suggest that it is ordinary capabilities but not dynamic capabilities that occupy a superior position in a firm's competitive advantage in Indian high-tech firms. This supports the view that ordinary capabilities are the basic building blocks for firm performance (Winter, 2003), or the *sine qua non* for firms' success (Karna, Richter, and Riesenkauff, 2015).

Second, it contributes to the understanding of how environment conditions influence the contributions of organizational capabilities. Despite a growing interest, considerable confusion exists in this regard. For instance, some scholars posit that a turbulent environment merits the need for dynamic capabilities and not ordinary capabilities (Teece, Pisano, and Shuen, 1997; Zahra, Sapienza, and Davidsson, 2006; Helfat *et al.*, 2007; Drnevich and Kriauciunas, 2011). However, others question this view on the grounds that dynamic capabilities, like ordinary capabilities, are not suited for a fast changing environment as they are constituted of routines and are path dependent (Eisenhardt and Martin, 2000; Schilke, 2014 (Schreyögg and Kliesch-Eberl, 2007). We find support for the later argument: the contributions of both ordinary and dynamic capabilities suffer from an increase in environmental turbulence. Our findings lend credence to Eisenhardt and Martin's (2000) view that in high-velocity markets, simple, highly experiential and fragile processes are needed as opposed to structured routines, and also to Winter's (2003) view that ad-hoc problem solving could be a substitute to routine-based dynamic capabilities for making changes to resource structure within firms.

6.5 CONCLUSION

In conclusion, studying strategy processes, organizational capabilities, and firm performance from the theoretical angle of RBV, DCV, and ambidexterity provides intriguing insights for

researchers. This thesis shows that strategy processes and organizational capabilities are multifaceted (typology of strategy processes, and technological and marketing capabilities) and multilevel (ordinary and dynamic) constructs, and provide new insights into how these multifaceted and multilevel constructs interact to produce competitive advantage.

CHAPTER SEVEN

CONCLUSION, LIMITATIONS, AND MANAGERIAL IMPLICATIONS

7.1 INTRODUCTION

In order to understand the complexities of strategy processes, organizational capabilities, and firm performance relationship, three relevant research questions have been raised in this thesis. In answering these questions, several specific contributions to the theory were made. To this end, these research questions, the corresponding hypotheses, and posthoc analyses are revisited (Table, 7.1). Doing so helps to summarize the results. Consequently, this chapter pulls together the specific findings to ascertain the overall contribution of this thesis and also looks into different types of limitations of this research. It is followed by a discussion on the generalizability of the results. Finally, this chapter, as well as this thesis, ends by providing managerial implications of this research.

Table 7.1: Research Questions and Answers

Themes and Research Questions	Summary of Hypotheses	Summary of Post-hoc analyses	Summary of Results
What is the relationship between strategy processes, organizational capabilities, and firm performance?	<ul style="list-style-type: none"> • Ordinary marketing and technological capabilities on their own each mediates the relationship between different (command, planning, and transactive) modes and firm efficiency. • Dynamic marketing and technological capabilities on their own mediates the relationship between autonomous mode and firm effectiveness. 	<ul style="list-style-type: none"> • Dynamic marketing and technological capabilities on their own mediates the relationship between planning mode and firm effectiveness. • Ordinary marketing and technological capabilities combined together mediates the relationship between different (command, planning, and transactive) modes and firm efficiency. • Dynamic marketing and technological capabilities combined together mediates the relationship between autonomous mode and firm effectiveness. 	<ul style="list-style-type: none"> • Transactive and command modes do not mediate the strategy process and firm performance relationship. • Planning and autonomous modes do mediate the strategy process and firm performance relationship. • Planning mode is a versatile mode that indirectly affects firm performance via both ordinary and dynamic capabilities.
How can firm align strategy processes and organizational capabilities from the ambidexterity perspective?	<ul style="list-style-type: none"> • The combination of planned and autonomous strategy processes will have a positive impact on different types of cross-functional ambidexterity. • The combination of planned and autonomous strategy 		<ul style="list-style-type: none"> • Combined planned, and autonomous processes do affect different types of ambidexterities. • However, these effects are not contingent upon turbulence in the environment.

processes will have a positive impact on different types of functional ambidexterity.

- The above relationships will be contingent upon turbulence in the environment. Such that as the turbulence in the environment increases so does the effect of combined planned and autonomous strategies.

How do ordinary and dynamic capabilities contribute to firm performance?

- Ordinary capabilities have a stronger positive effect on firm efficiency than dynamic capabilities do.
- Dynamic capabilities have a stronger positive effect on firm effectiveness than ordinary capabilities do.
- The above relationships are contingent upon the turbulence in firm's environment using linear moderation.
- Comparison of both (ordinary and dynamic) capabilities contributions towards firm performance in three demarcated environments; stable, moderate, and turbulent, using sub-group moderation.
- Ordinary capabilities make stronger contributions than dynamic capabilities.

7.2 OVERALL CONTRIBUTIONS

This thesis makes three broad contributions. First, it contributes by placing organizational capabilities at the center stage of the relationship between strategy processes and firm performance. Although different strategy processes affect firm performance in different ways (via marketing capability, technological capability, or their combination, in ordinary and dynamic variants), the support for the general pattern of strategy process, organizational capabilities, and firm performance found in this study is substantial. Strategy process research lacks sufficient evidence in support of its contribution to firm performance (Hutzschenreuter and Kleindienst, 2006), and the theory on the contributions of strategy processes is inadequate in prior research (Wolf and Floyd, 2013). This research used the RBV that has been overlooked by the strategy process research to theorize the mechanisms of economic value creation of strategy processes. Although the indirect effect of strategy processes on firm performance has been noted earlier (Barney, 1991; Grant, 1991), there is little theorization on the topic. By giving evidence of the intervening effects of organizational capabilities on the relationship between strategy processes and firm performance, this thesis positions the RBV as an important theoretical lens through which the important phenomenon of strategy processes can be studied and understood well.

Second, this study contributes to ambidexterity research as it has gained insights on how firms can align strategic, functional and cross-functional ambidexterity within the organizational and environmental contexts of Indian high-tech firms. The analysis of multidimensional ambidexterity in this thesis departs from prior literature that often focuses on a single dimension of ambidexterity (Raisch and Birkinshaw, 2008; Lavie, Stettner, and Tushman, 2010). Moreover, this study also reconciles the trade-off and the complementary approaches to exploration and exploitation. Prior literature often takes the 'either trade-off or complementary' approach to studying ambidexterity. Thus, this study recognizes that the

trade-off approach underpins the cross-functional ambidexterity, recognizing the different degrees of exploration and exploitation placed by the market and technology functions and that the different degrees of exploration and exploitation may co-exist in the same market or technology function. This viewpoint reflects the complex business reality.

Finally, this thesis contributes to the organizational capabilities literature within the strategic management research, by cautioning against overemphasis on dynamic capabilities and noting that ordinary capabilities might not be that ordinary when it comes to their contribution to firm performance. Prior literature has shown considerable ambiguity on the superiority of the two (ordinary and dynamic) capabilities vis-à-vis each other. On the one hand, are those who argue that it is the dynamic capabilities and not the ordinary capabilities that have a superior role to play in the creation of competitive advantage (Teece, 2014). And on the other hand, are those skeptics who conclude that dynamic capabilities do not hold any superior position in capabilities hierarchy (Eisenhardt and Martin, 2000). This research enters into this debate and provides convincing evidence for the later proposition that dynamic capabilities may not always be a source of competitive advantage.

7.3 LIMITATIONS AND FUTURE RESEARCH

This study has several methodological and contextual limitations, but provide several directions for future research.

7.3.1 Methodological Limitations

This research has three main methodological limitations: self-reported measures, cross-sectional data, and quantitative methodology. First, the measures are self-reported, given published data on Indian high-tech firms are rarely available. Although the use of self-report measures is fairly common within these literature streams (e.g., Newbert, 2007), the reliability

of such measures remains a concern. In this thesis, procedural and statistical methods maximize the validity of the measures, including the use of the second response from 10% of the sample firms. The systematic analysis results indicate that the use of self-reported data may not be a significant threat to the validity of our findings. Nonetheless, future research may wish to corroborate their data by surveying multiple respondents spanning all the major hierarchies within the firm and using multiple sources for measuring main constructs.

Second, the effect of dynamic capabilities is more pronounced in the long run (O'Reilly and Tushman, 2008), which cannot be tested in our cross-sectional data. Similarly, we can understand the relationships between strategy processes, organizational capabilities, and firm performance more by examining the lag effect of strategy processes on capabilities, and the lag effect of capabilities on firm performance (Preachers and Hayes, 2008). Thus, future research may collect longitudinal data to look at the long-term performance effects of ordinary and dynamic capabilities.

Third, although this thesis provides new insights into the relationship between strategy processes, organizational capabilities and firm performance, the findings raise several questions: Why are some firms able to combine the planned and autonomous strategy processes while others are not? Who within a firm figure out that certain capabilities will be managed through the autonomous process, and the rest through the planned process? Is it that the matching of work group or organizational capabilities and strategy processes is more precedence based, and automatic routine like procedure? These questions are important but are beyond the remit of this study. Future research may provide comprehensive insights on the inter-relatedness of strategy processes and organizational capabilities using exploratory, qualitative research design. Qualitative researchers may tease out more the complex association of strategy processes and organizational capabilities leading up to the superior firm performance.

7.3.2 Contextual Limitations

This study is pitched at the SBU level, including firms consisting of a single SBU where dynamic capabilities might be curtailed. Future studies may investigate how ordinary and dynamic capabilities are developed and maintained in different SBUs of the same firms. Second, this thesis uses the context of marketing and technological capabilities to represent organizational capabilities. While these capabilities are prominent in high-tech firms but it has to be acknowledged that other organizational capabilities may intervene between strategy processes and firm performance along with marketing and technological capabilities (Zhao, Lynch, and Chen, 2010). In other words, there might be other prominent organizational capabilities that might have been left out. Future research would benefit from including different sets of capabilities (along with technological and marketing).

7.4 GENERALIZABILITY OF THE RESULTS

Indian high-tech sector has been praised as well as criticized at the same time, presenting a complex and sometimes contrasting picture of it. On one side are the arguments that the management style of Indian high sector, due to its peculiar origin, is flexible, innovative, and market-driven (Upadhyaya and Vasavi, 2006). On other side are those who argue that Indian high-tech sector and its institutions are still in developing stage (The Economist, 2013), is influenced by traditional hierarchal Indian culture (Arora et al., 2001), and hence is less market driven. This begets the question whether the results are specific to the Indian context or are more generalizable to western market-based economies.

This thesis finds a pattern in data that is quite consistent with the predictions of the DCV and other innovation-based theories on high-tech sector. Specifically, the results of the base model, suggest strong support for autonomous mode. The autonomous mode allows for flexibility and is a very peculiar mode that is usually observed in dynamic environment

faced by high-tech firms. Moreover, so far, this kind of autonomy has been mostly observed in western settings (c.f. Lumpkin, Cogliser, and Schneider, 2009). However, this thesis finds that autonomous mode contributes strongly in the Indian context, as they do in more developed economies. Thus, this result suggests that the high-tech firms in the sample behave in a similar fashion as that would be expected of high-tech firms in western economies. Second, ambidexterity is considered a very high-tech phenomenon (Wang and Rafiq, 2014) usually associated with developed economies (c.f. O'Reilly and Tushman, 2013). Consequently, the second model of this thesis finds strong support for ambidexterity at both strategic and capability level. Again, this is very consistent with patterns observed in the high-tech sector in developed economies. Third, the last model, which compare and contrast ordinary and dynamic capabilities, show underrated results for dynamic capabilities. However, these results have more theoretical underpinning than geographical. There are strong theoretical arguments in the western literature that dynamic capabilities do not contribute to competitive advantage directly, rather they do so indirectly (Eisenhardt and Martin, 2000). Thus, this last result is also consistent with the patterns suggested for a high-tech firm in developed economies.

In short, the results of the three models tested in this thesis are very consistent with innovation theories developed initially in western journals to predict the behavior of market driven high-tech firms. There can be at least two different explanations for this. First, as suggested elsewhere, the Indian high-tech firms are more market-driven, and hence they display patterns that are consistent with theories originally conceived for market-driven economies. Second, the finding suggests that the innovation related capabilities, like DCV and autonomous process, transcends national boundaries, and innovative capabilities are more driven by firm culture than country culture (Tellis, Prabhu, and Chandy, 2009). In other words, firms that emphasize invention and innovation and are high-tech in operations share

similar cultural practices, geographical location notwithstanding. This is in line with other research in strategic management that compares and contrast high-tech firms in developed and emerging economies, in terms of the predictive power of innovation theories. For instance, Wang and Rafiq (2014) cross-cultural study, of contextual ambidexterity in high-tech firms of UK and China, finds that both Chinese and UK high-tech firms displayed exploration beyond existing trajectories, and the authors conclude that their finding “goes against some of the conventional stereotyping of innovative capabilities of UK and Chinese firms, i.e. UK firms are better at exploration compared with Chinese firms” (p.71). Indian high-tech firms started at the lower end of the innovation value chain, but have recently started moving up the ladder (The Economist, 2013; Kale and Little, 2007). The returnee entrepreneurs from the west (Chacko, 2007) and westernized orientation of employees (Upadhyaya and Vasavi, 2007) seem to have helped these firms adopt more flexible and innovative style of management. While Indian high-tech firms may still be away from becoming truly world class, but the findings suggest that they have arrived at the international stage and are more market-driven. It follows, the results produced here could be generalized beyond India and has ramifications for high-tech sector in western economies.

7.5 MANAGERIAL IMPLICATIONS

We have now entered an era in which firm’s internal knowledge-based assets, especially its capabilities have become the main source of differentiating it from its competitors. Gone are the days when strategizing meant positioning your firm in the favourable pockets of the industry – pocket in which it is easier to influence competitors. Now no favorable pockets exist, at least in the high-tech sector, and even if they do exist their existence is temporary. However, this much is widely known in academia and dispersed through it to practitioners. What this thesis adds to this common knowledge is the new knowledge on how a high-tech

firm could pick specific strategy processes and align them with specific capabilities to ensure a competitive advantage for itself.

If a high-tech firm wants to achieve better returns on its investment and increase its profitability, then it should concentrate more on its ability to serve its current markets and make better use of existing technologies. This ability to be proficient in current markets and technologies come itself from being very comprehensive while making major strategic decisions. Conversely, if a high-tech firm is focused on growth then it should be proficient in entering new markets, and sensing and seizing new technologies. This proficiency, in turn, comes from the autonomous initiative of lower level employees. Thus, the financial targets (profitability versus growth) would largely dictate the kind of capability (existing market/technology versus new market/technology) to enhance. Further, the kind of capability chosen would get impetus by engaging in the right strategy processes (planned versus autonomous).

In addition, based on its assessment, a high-tech firm could decide to concentrate on both its current market and technologies, as well new markets and technologies. In such cases, the firm has to up its game, and create a very complex culture in which detailed planning process is well appreciated, and so is the freedom given to lower level employees to engage in experimentation and risk taking. However, not all situations dictate a simultaneous focus on both current and new market and technologies. In such situations, a firm may face a dilemma of allocating resources to current or potential markets and technologies. Thus, managers should be aware that investing in current market and technologies is the better option for achieving profitability, and is no less option to achieve growth.

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APPENDIX 1: QUESTIONNAIRE

Strategy processes

We would now like to ask you about how strategy is developed in your company. Remember that there is no right answer, different companies have different ways of developing strategy. In general, how much do you disagree or agree with each of the following statements?

Construct	Items	Sources
Command mode	<ul style="list-style-type: none"> • Our strategy is closely associated with a particular individual. • A senior figure's vision is our strategy. • The strategy we follow is directed by a vision of the future associated with the chief executive (or another senior figure). 	Bailey <i>et al</i> (2000)
Planning mode	<ul style="list-style-type: none"> • We evaluate potential strategic options against explicit strategic objectives. • Our company's strategy is made explicit in the form of precise plans. • When we formulate a strategy it is planned in detail. • We have precise procedures for achieving strategic objectives. • We have well-defined planning procedures to search for solutions to strategic problems. • We meticulously assess many alternatives when deciding on a strategy. 	Bailey <i>et al</i> (2000)
Transactive mode	<ul style="list-style-type: none"> • Most people in this company have input into decisions that affect them. • Strategy is made on an iterative basis, involving managers, staff and executives in an on-going dialogue. • Strategy formation in our company is ongoing, involving everyone in the process to some degree. 	Hart and Banbury (1994)
Autonomous mode	<ul style="list-style-type: none"> • The strategies we follow develop from the efforts of the individuals or groups that operate independently and outside the company's chain of command. • In our company individuals and/or teams decide for themselves what business opportunities to pursue (rather than CEO and top managers provide the primary impetus for pursuing business opportunities). 	Lumpkin, Cogliser, and Schneider (2009)

- In our company individuals and/or teams pursuing strategic objectives make decisions on their own without constantly referring to their supervisors (instead of having to obtain approval from their supervisors before making decisions).

Ordinary capabilities

The following questions ask you to assess your company's resources and competences to support its current activities. Please rate your company's current resources and competences relative to its competitors (much worse- much better).

Construct	Items	Sources
Ordinary marketing capability	<ul style="list-style-type: none"> • Advertising/promotion resources or skills. • Brand reputation or company image. • Distribution channels or sales force. 	Danneels (2012)
Ordinary technological capability	<ul style="list-style-type: none"> • Engineering and/or scientific skills and resources. • Technological expertise. • Technical skills and resources 	Danneels (2012)

Dynamic capabilities

Different companies are good at different things. The following questions ask you to assess your company's skills in various areas, relative to your competitors. In general, how much do you disagree or agree with each of the following statements? Relative to our competitors, our company is good at

Construct	Items	Sources
Dynamic marketing capability	<ul style="list-style-type: none"> • Setting up a new sales force. • Assessing the potential of new markets. • Building relationships in new markets. • Setting up new distribution channels. • Researching new competitors and new customers. 	Danneels (2012)
Dynamic technological capability	<ul style="list-style-type: none"> • Identifying promising new technologies. • Learning about technology it has not used before. • Assessing the feasibility of new technologies. • Recruiting engineers and/or scientists in technical areas it is not familiar with. 	Danneels (2012)

Firm Performance

Please rate your company's performance relative to its competitors (much worse – much better) over the past 3 years.

Construct	Items	Sources
Firm efficiency	<ul style="list-style-type: none">• Return-on-sales (ROS)• Return-on-assets (ROA)• Return-on-investment (ROI)• Profitability	Auh and Menguc (2005)
Firm effectiveness	<ul style="list-style-type: none">• Growth in market share.• Sales growth.	Auh and Menguc (2005)

Environmental turbulence

In general, how much do you disagree or agree with each of the following statements characterizing the business environment or conditions in the primary markets your company currently serves?

Construct	Items	Sources
Environmental turbulence	<ul style="list-style-type: none">• Changes in customers' needs are quite unpredictable.• The actions of local and foreign competitors in our major markets change quite rapidly.• Technological changes in our industry are rapid and unpredictable.• The market competitive conditions are highly unpredictable.• Customers' product preferences change quite rapidly.	Atuahene-Gima (2005)

APPENDIX 2: ETHICS APPROVAL FORM



ROYAL HOLLOWAY, UNIVERSITY OF LONDON SIMPLIFIED ETHICAL APPROVAL FORM

For staff and student dissertations and research projects involving data collection from research participants (observations, interviews, questionnaires, group discussions, recordings, video etc).

This form should be discussed and completed jointly by both student and supervisor (and in the case of staff, with their immediate line manager) with each keeping a signed copy of the form.

If the proposed work involves human participants, and is judged by the supervisor/line manager potentially to give rise to ethical problems, ethical approval must be sought in advance. The supervisor will recommend whether the completed/signed form and any supporting material should be considered only by the Department's internal approval procedures or be referred to the College Ethics Committee.

To be completed by the applicant

(delete as appropriate)

- | | |
|--|----|
| 1. Will the study be <i>covert</i> in any way? | NO |
| 2. Will resulting data be used for purposes outside this study? | NO |
| 3. Are you working with a vulnerable population? | NO |
| 4. Is it possible that your study will cause distress or harm to participants? | NO |

If the answer to any of the above questions is 'YES' please supply relevant supporting materials and explanations.

The working title of my dissertation/project is:

Strategic Ambidexterity in Indian Hi-Tech firms

I am fully aware that the research carried out for my doctoral dissertation requires that I take due care of ethical issues.

I will ensure that consent is obtained from all participants which, saving exceptional cases, will be in writing.

For students: these issues have been discussed with my supervisor

For staff: these issues have been discussed with my line manager

Staff/Student Name (print below):

Signature:

Date:

Sameer Qaiyum

.....SQ.....

12/06/14

To be completed by the supervisor (students) or line manager (staff)

Issues of ethics, copyright and data protection have been considered where necessary as indicated in the attached material and appropriate measures have been recommended. All necessary materials have been seen and the Ethics Committee's *Notes for Guidance* have been consulted.

Please tick once box only:

- | | | |
|--|-------------------------------------|---|
| 1. No referral necessary | <input checked="" type="checkbox"/> |] |
| 2. Form to be referred to departmental ethical approval procedures | <input type="checkbox"/> |] |
| 3. An application must be made to College Ethics Committee | <input type="checkbox"/> |] |

(For 2. and 3. please append supporting documents as required e.g. research project proposal (questionnaires, consent forms).

Line Manager/Supervisor Name (print below):

Signature

Date:

Catherine Wang



12 June 2014