



Resilience capabilities in the face of environmental turbulence: the case of Hong Kong small to medium enterprises

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

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Declaration

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid, carried out by a third party is acknowledged; and, ethics procedures and guidelines have been followed.

Yiu Ha Chu

September 2015

This dissertation is dedicated to my family and in memory of my mum.

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Summary

This thesis adopts an explanatory sequential mixed-approach (Creswell & Plano Clark, 2011), incorporating both quantitative (Study 1) and qualitative (Study 2) research methods to examine the multidimensionality of resilience capabilities of SMEs in the face of turbulent environments (i.e., the GFC). Resilience capability is defined as comprising the dimensions of adaptability (e.g., Hamel & Välikangas, 2003; Riolli & Savick, 2003), agility (e.g., Christopher, 2004; Christopher & Peck, 2004; Sheffi, 2005a), anticipatory ability (e.g., Mallak, 1998a; Reinmoeller & van Baardwijk, 2005), and flexibility (e.g., Horne & Orr, 1998; Hu et al., 2008). Contingency theory underpins this research, which aims to contribute to the definitional, theoretical, and research debates on resilience capability.

Study 1 involves a survey of 177 Hong Kong-based SMEs and explores the interrelationship between resilience capabilities and firm performance, and the moderating impact of environmental turbulence on these relationships. It appears that no studies have tested these constructs concurrently. Extending the findings of Study 1, Study 2 utilizes an interview-based case study approach and demonstrates how relationships between dimensions are established pre-, during- and post-crisis phases.

The present thesis was undertaken for four main reasons. First, there is a dearth of empirically-based research which tests proposed conceptualizations and theories in real business settings. Conceptual and theoretical literature predominate (e.g., Hamel & Välikangas, 2003; Välikangas, 2004; Reinmoeller & van Baardwijk, 2005; Gibson & Tarrant, 2010; Gulati, 2010). Second, it appears that there is no agreed definition and inconsistencies are present in the operationalization of resilience (e.g., Ponomarov & Holcomb, 2009; Gibson & Tarrant, 2010). Third, there is an apparent lack of testing of the possible moderating effects of environmental turbulence on relationships between resilience capabilities and firm performance. Finally, academic enquiry concerning the precursors or antecedence of resilience capability development is surprisingly absent.

Study 1

Study 1 aims to examine interrelationships between resilience capabilities and firm performance and the moderating effects of turbulent environments on these relationships. Principal research questions addressed are: RQ1: What is the relative contribution or explanatory variance of resilience capabilities to firm performance during times of turbulence? RQ2: How does environmental turbulence moderate the relationship between resilience capabilities and firm performance?

Participants. 177 companies participated with 50.9% being senior managers and 49.1% being middle management of Hong Kong-based SMEs in manufacturing industry (29.2%) and service industry (70.8%). For the present thesis, SMEs are defined as *manufacturing enterprises with fewer than 100 employees in Hong Kong and non-manufacturing enterprises with fewer than 50 employees in Hong Kong (including firms engaged in construction; mining; quarrying; electricity and gas; import and export; wholesaling; retailing; catering; hotel; transport; warehouse; insurance; real estate; business service; community, social and personal service)* (Trade & Industry Department, HKSAR, 2012). Number of employees ranged from less than 5 employees (19.4%) to more than 20 (28.0%). Of these companies, 11.4% have been operating for less than 5 years, 13.2% for 5-10 years and 75.4% for more than 10 years. 61.6% of company's decisions are made at management level and 33.1% at both management and operational level.

Instrument. Items of the Resilience Capability Questionnaire (RCQ) were derived from pertinent studies relating to: *anticipatory ability* (Overby et al., 2006; Oktemgil & Greenley, 1997), *agility* (Tallon & Pinsonneault, 2011), *adaptability* (Oktemgil & Greenley, 1997), *flexibility* (Zhou & Wu, 2010); environmental turbulence (Jaworski & Kohli, 1993); and firm performance (Vorhies & Morgan, 2005). The RCQ comprises 52 close-ended items, measured on 7-point Likert scales, ranging from 1-*Not at all* to 7-*To a large extent* (Part 2 & 3), 1-*Much worse than our competitors* to 7-*Much better than our competitors* (Part 4).

Data Collection Procedures. The present procedures adopt a cross-sectional, self-report questionnaire administered in person to a random sample of SMEs located in Hong Kong. Of those 500 questionnaires distributed, 177 agreed to participate,

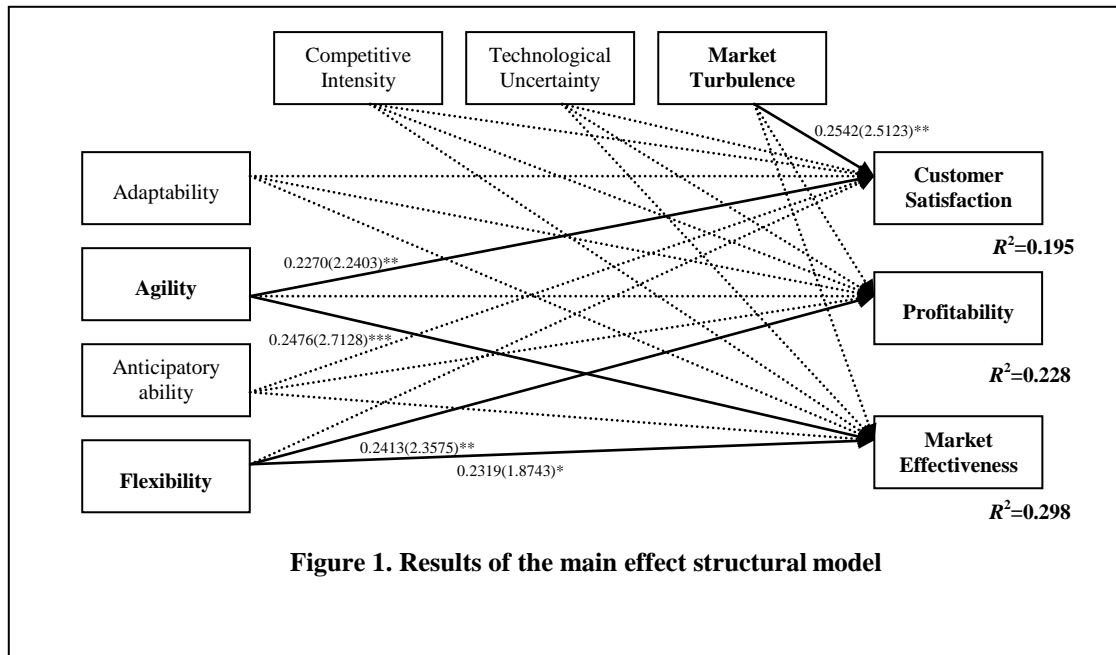
generating a response rate of 35.4%. In relation to the non-respondents, 33.4% were from manufacturing sector and 66.6% from services industry, with 26% having less than 5 employees, and 21.7% having more than 20 employees.

Statistical Procedures. Data analyses were carried out in four steps: data screening; and assessment of measurement models, main effects models, and moderating effect models (Henseler et al., 2009; Hair et al., 2011). Partial Least Squares (PLS) - a variance-based approach to Structural Equation Modelling (SEM) for explanations of the relationships and prediction of target constructs (Hair et al., 2014) was utilized for modelling purposes. SPSS 22.0 and SmartPLS 2.0 (Ringle et al., 2005) were used.

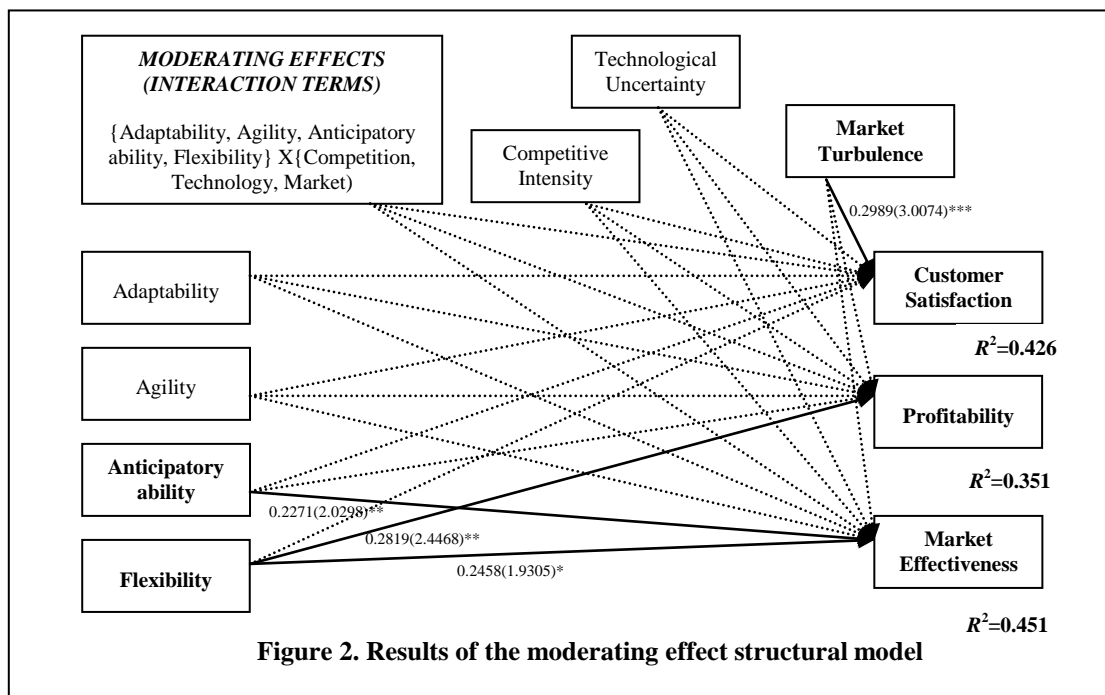
Results

Findings of Study 1 confirm that resilience capability plays an influential role in moderating the impact of turbulence on firm performance. Of particular note is the finding of significant increase in R^2 values of customer satisfaction, profitability, market effectiveness which changed significantly to 0.426 (versus 0.195), 0.351 (versus 0.228), and 0.451 (versus 0.298), respectively when moderating effects were examined (see Figures 1 & 2). These increments were relatively strong, suggesting that resilience capabilities intensify during times of turbulence, especially when the moderating effects were found to be non-significant. In other words, tests of moderating effects strengthen the relationships between resilience capabilities and firm performance.

A comparison of main effect and moderating effect models reveals that different resilience capability dimensions come to the fore during different times of environmental turbulence (e.g., Werner and Smith, 1982; Garmezy, 1985), intimating that firms adopt different resilience capability postures (e.g., flexibility versus agility) at different points in time in order to remain competitive.



Note. * $p < 0.1$, ** $p < 0.5$, *** $p < 0.01$. Values in parenthesis are t -values, solid lines indicate significant paths.



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As shown in Figures 1 and 2, flexibility resilience capability is associated consistently with firm performance (i.e., profitability, market effectiveness), particularly during times of turbulence (Swamidass & Newell, 1987). Although agility resilience capability is related positively to customer satisfaction and market effectiveness in stable environments (i.e., the main effect model), nonsignificant paths to customer satisfaction and market effectiveness were identified during turbulent times (i.e., the

moderating effect model). This finding suggests that the differential influence of agility resilience capability on firm performance is dependent upon the timing or speed of response to the extent and type of environment turbulence.

While anticipatory ability resilience capability shows a nonsignificant association with firm performance in relatively stable environments, this dimension comes to the fore in the face of turbulence, indicating that monitoring changes in and garnering information concerning economies, markets, competitors, and regulatory compliance is not only critical for survival, but also for being able to take advantage of opportunities and mitigate threats. This finding suggests that anticipatory ability resilience capability may have a complementary effect to other resilience capability dimensions (e.g., agility, flexibility) when SMEs strive to achieve positive firm performance. This evidence provides a possible explanation as to why not all resilience capability dimensions equally influence all measures of firm performance at one point in time or period.

Study 2

Study 2 aims to provide an in-depth examination of the ways in which firms utilize resilience capability in strategy development when dealing with turbulence times (i.e., the GFC), key precursors to resilience capability, and its relationship to firm performance. Four main research questions are addressed: RQ1: In what ways do SMEs utilize resilience capability, if any, during times of turbulence? RQ2: Do particular resilience capability dimensions predominate during different phases of turbulence? RQ3: In what ways do SMEs develop resilience capability to deal with threats and opportunities in turbulent environments? RQ4: How do resilience capability dimensions contribute, if any, to business performance during turbulent environments.

Data collection procedures. Face-to-face indepth semi-structured interviews were conducted with owners, CEO, or managers of four SMEs. A principal goal was to sample participant enterprises from a range of industries and backgrounds. Industries include construction/interior design; textiles manufacturing and trading; tools manufacturing and trading; and garment manufacturing.

Instrument. An interview protocol was developed based on the research questions identified from an in-depth literature review and findings emanating from Study 1. Data pertaining to the strategic responses to crises enabled the present investigator to identify differences and similarities in the ways in which companies utilized and the intensity of resilience capability responses across three phases of the relatively recent GFC: pre-, during, and post-crisis.

Participants: The unit of analysis is the firm. Representatives of the firms included two owners and two managers with tertiary educations were interviewed. Three participants had worked for over 14 years in their respective organizations and one had been employed for over 7 years.

Data analytic procedures. Interviews were transcribed by the present researcher. Adopting a four-stage approach, data analysis began with basic data coding, coding for patterns, within-case analysis, cross-case analysis, culminating in the development of causal network models (Miles & Huberman, 1994).

Findings

On the basis of the present four cases, patterns of differential resilience capability dimensions are evident across the three crisis phases. Table 1 summarizes and defines the ways in which resilience capability dimensions are expressed during the different crisis phases.

Table 1. Ways in which resilience capabilities are utilized, definitions, associated dimensions, phases of application, and related forms of organizational work in turbulent environments

Ways of utilizing resilience capability	Definition	Associated resilience capability dimensions	Phase of application	Related forms of organizational work
Defining	Defining the business operating model that confers a company's core values and vision	Anticipatory ability, flexibility	Pre-crisis	<ul style="list-style-type: none"> • Cultivating the development of organizational operating practices and procedures within and across the company through aligning internal elements to day-to-day routines • Defining and identifying target markets and market position
Founding	Establishing a blueprint for operating a business by founding a strategic vision and core value(s)	Anticipatory ability, flexibility	Pre-crisis	<ul style="list-style-type: none"> • Maintaining, preserving, and incorporating founding core values, organizational culture and direction as part of the business operating model
Planning	Having advance planning in place to support the development of strategic actions for future business threats and opportunities	Anticipatory ability, flexibility	Pre-, post-crisis	<ul style="list-style-type: none"> • Identifying and capitalizing on threats and opportunities by planning proactively and allocating resources to enhance organizational capabilities to manage present and future competition and events
Refining	Developing a new or refining an existing business model to address both internal and external challenges	Agility adaptability, supported by anticipatory ability, flexibility	During, post-crisis	<ul style="list-style-type: none"> • Carving out and shaping existing business models, processes, and procedures in response to the crises • Reforming and refocusing the company's strategic objectives and vision
Conforming	Adapting the refined business operating model	Adaptability, flexibility	Post-crisis	<ul style="list-style-type: none"> • Adapting the redefined business operating model and reconciling or bedding down adaptive responses and strategies for day-to-day operation routines

Note. Three phases of crisis: Pre-, during, post-crisis

It is noteworthy that resilience capability dimensions are expressed proactively and reactively (Miles & Snow, 1978) through the firms' adopted strategies to remain sustainable and thrive during turbulent environments (Figure 3). Anticipatory ability and flexibility dimensions predominate in the pre-crisis phase and help to define business models, processes, and procedures (defining); to support and conserve founding organizational core values, organizational culture, and structure (founding); or to mitigate threats and capture opportunities as they arise (planning). Adaptability and agility dimensions are predominant during the peak of the crisis and are

employed to enable firm to develop rapid responses (refining) either for mastering (McEwen, 2007) or mitigating the impact of crises based on a firm's strategic stance. In contrast, adaptability and flexibility dimensions are employed during the post-crisis phase for different strategic reasons (i.e., refining, planning, or conforming), depending upon organizational strategic objectives, the vision managers have for their firms, management leadership consideration (e.g., developing multi-skilled employees, promoting proactive culture, being design- & quality-oriented), and assessment of the crises. Consistent with the findings of Study 1, these observations support the view that resilience capability is a multidimensional phenomenon (Ponomarov & Holcomb, 2009; Gibson & Tarrant, 2010) as evidenced by the utilization and expression of multiple, and at times, different dimensions during the process of effective strategy development in the face of turbulence.

Findings also demonstrate that resilience capabilities are fostered by and associated with specific company characteristics (e.g., flat management structures, design- and quality-oriented cultures, and enterprises that hold core business values); CEO/owner qualities (e.g., design capability, leadership); marketing capabilities, (i.e., channel management, market information management, product/service development); dynamic capabilities (e.g., capacity to reallocate and redeploy available resources); and other organizational capabilities such as dynamic capabilities (DC), information technology (IT) and human resource capabilities (HR), irrespective of time of turbulence. It is worth noting that different resilience capability dimensions are associated with different strategies (e.g., growth strategies, cost reduction/saving strategies) promulgated to deal with threats and opportunities, resulting in specific indicators of performance. In other words, different performance outcomes are the result of firms utilizing particular resilience dimensions, and are dependent upon the organizational strategic responses to deal with dynamic environments.

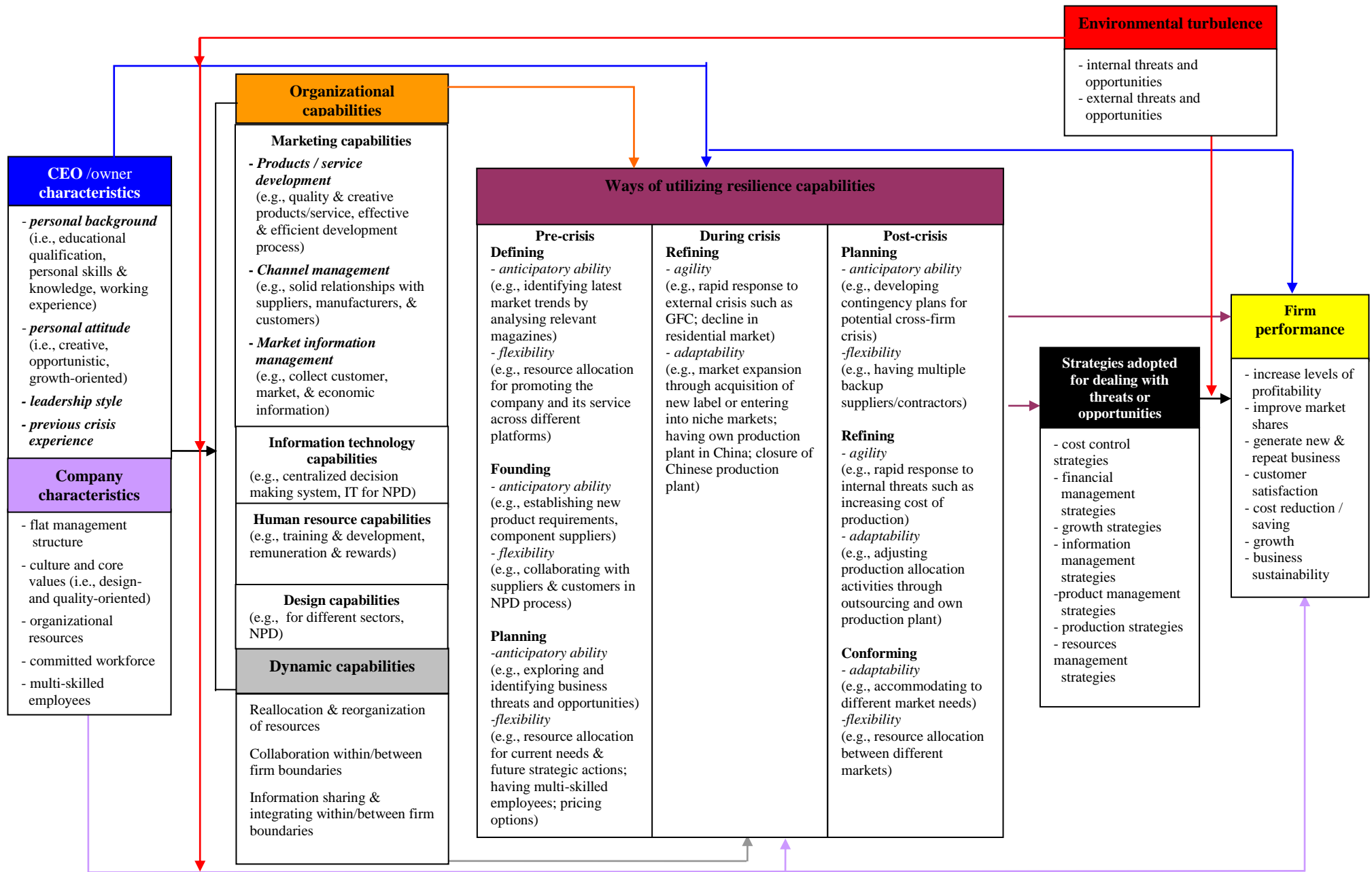


Figure 3. Causal network model derived from cross-case analyses

Conclusions

Findings of Study 1 demonstrate that resilience capabilities are associated favorably with firm performance (e.g., Hamal & Välikangas, 2003; Reinmoeller & van Baardwijk, 2005; Gulati et al., 2010; Lengnick-Hall et al., 2011). Resilience capabilities are in operation not only during the heat of turbulence (i.e., the structural moderating effect model), but also in relatively stable environmental conditions (i.e., the structural main effect model). Although not all dimensions are necessarily equally important in different competitive settings, resilience capabilities are significant predictors of SME performance in both stable and turbulent environments. In other words, resilience capabilities are time and context specific with different types of capabilities emerging at different times.

Study 2 extends the findings of Study 1 and demonstrates how relationships between variables are formed. Specifically, resilience capabilities are expressed through strategies developed for the purpose of dealing with threats and opportunities, key precursors, and associated business performance targets. Findings reveal that the intensity and influence of each dimension of resilience capability fluctuates, demonstrating a relative level of significance during different phases of turbulence be it pre-, during, or post-crisis. This evidence suggests that their application is associated with organizational strategic decisions including defining a business operating model, founding a blueprint for operating a business, refining an existing business model to address challenges, planning to support actions for future business threats and opportunities, and conforming a business model to maintain adaptive responses in turbulent environments. As discussed, resilience capabilities can be developed within or between firm boundaries before, during, or following a crisis and are associated with particular CEO/manager qualities, organizational structures, culture and core business values, capabilities, and resources.

This thesis provides a new paradigm and way of conceptualizing resilience as a multidimensional (Ponomarov & Holcomb, 2009; Gibson & Tarrant, 2010), higher order organizational capability, comprising four dimensions (i.e., adaptability, agility, anticipatory ability, flexibility) that are conceptually and empirically distinct from one another. Further, this thesis demonstrates the complementary effects of different resilience capability dimensions to one another as evidenced by the utilization and

expression of multiple, and at times, different, dimensions in the process of effective strategy development in the face of turbulence. Although it is one thing for a company to possess resilient qualities, it is the development and deployment of appropriate strategies that enables the expression of a company's resilience capabilities, depending upon strategic stance of an organization. Findings also reveal five different ways in which resilience capability dimensions are utilized during strategy development process (i.e., defining, founding, planning, refining, conforming) with differential emphasis on dimensions at different phases of turbulent environments, be it pre-, during, or post-crisis. In conclusion, the present thesis contributes to a deeper understanding of the concept of resilience capability at theoretical, methodological, and practical levels. At the theoretical level, the ontological nature of resilience capability, its relevant dimensions, and role in strategy development is clarified. At methodological level, findings demonstrate the impact of moderating effect of turbulent environments on relationships between resilience capability dimensions and firm performance. At a practical level, evidence suggests that resilience capability dimensions are expressed through organizational strategies that are employed either proactively or reactively at different times and in varying contexts.

Chapter 1

Introduction

Overview

This chapter begins with a statement of the background and purpose, and establishes the context for this thesis by discussing the business environments that companies are operating in today. Next, the rationale and research objectives are outlined, followed by a brief description of Studies 1 and 2. Chapter 1 concludes with an overview of the structure and content of this thesis.

Today, one of the biggest challenges for organizations and decision makers is to deal with, manage, and reduce the impact of increasingly turbulent environments. According to Deevy (1995, p. 6), *the challenge for organizations today is to develop a new organizational form; one with the capability for continuously responding to change*, suggesting that the old view of organizations being mechanical entities that can be fixed when broken is no longer sufficient in this seemingly unstable business environment. Accordingly, understanding the capabilities that enable business continuation is essential within organizational settings.

Turbulence can be in a form of stress, adversity, risk, crisis, challenge, disruption, or change in both internal and external environments. Exposure to turmoil is inevitable for firms regardless of their business boundaries. Increasingly unstable environments have raised the levels of concern of business, society, and governments, particularly in regard to the ability of organizations to anticipate and respond to turbulence positively and quickly (Braes & Brooks, 2010), within and across operating contexts. On the one hand, turbulence can have a positive effect on business, heralding new opportunities for novelty and innovation (Folke, 2006) for enterprises. On the other

hand, it can impact negatively, eliminating companies that are unable to respond effectively and efficiently.

In an investigation of the different types of strategies employed by firms and corporate performance during the global recession, Gulati et al. (2010) identified that 17% of the companies failed to survive, and of those that survived, 80% were not able to regain their pre-disruption levels. Only 9% of companies managed to thrive and outperform their counterparts. Similarly, the International Financial Corporation (IFC) stated that the 2007 global financial crisis (GFC) put firms and economies to the test regarding their ability to compete in local and global markets. As evidenced by the largest world trade decline in more than 70 years in 2009 (International Financial Corporation, 2011). These statistics highlight the pervasive and devastating impact of environmental turbulence, posing a challenge to firm survival and sustainability.

Although the global economy has recovered stronger than anticipated especially in major emerging economies such as China, the continued deeper than expected recession in the Euro Zone, and weaker pace of expansion in US has exacerbated the effects on growth in advanced economies, indicating that the road to global recovery remains uncertain (IMF, October 2013). These events demonstrate both the borderless nature of risk (Smith & Fischbacher, 2009) and the need for companies to develop appropriate capabilities in order to overcome their occurrence. In this light, it can be argued that the concept of resilience within the business context might provide a potential framework for successfully navigate turbulent environments (Hamel & Välikangas, 2003), superior performance (Beverly & Rodysill, 2007), business sustainability (Hamel & Välikangas, 2003) and organizational development (Burnard & Bhamra, 2011).

Resilience is a both multidisciplinary and multidimensional concept (Ponomarov & Holcomb, 2009; Gibson & Tarrant, 2010), and is researched and theorized in a wide range of disciplines including as ecology (e.g., Hollings, 1973, Walker et al., 2004), socio-ecology (e.g., Carpenter et al., 2001, Folke et al., 2010); psychology (e.g., Garmezy, 1971; Rutter, 1985); biology (e.g., McEwen, 2007, Southwick & Charney, 2013); and business (e.g., Hamel & Välikangas, 2003, Lengnick-Hall et al., 2011). Having a firm grounding within the field of ecology through the work of Holling

(1973, 1996) and Walker et al. (2002, 2004), the concept of resilience has been associated with the ability of a system to absorb or withstand disturbance (Holling, 1973), self renewal, and reorganization following a disturbance (Walker et al., 2002).

In business context, work on resilience has focused predominantly on individual and organizational responses to turbulence. Two differing but compatible perspectives have been adopted (Horne & Orr, 1998; Lengnick-Hall et al., 2011). One perspective draws from the fields of engineering and metallurgy (Sheffi, 2005a). That is, just as some metals are able to regain their original shape following a force, some companies have the capability to anticipate and manage risk in a proactive manner. Another perspective focuses on the dynamic relationship between systems (Horne & Orr, 1998), an ability to thrive by capitalizing on unexpected changes and challenges (Lengnick-Hall et al., 2011). It is worth noting that resilience capabilities vary across different times and contexts (Garmezy, 1985; Garmezy & Rutter, 1985; Werner & Smith, 1992; Gunderson & Holling, 2001) and can be employed proactively or reactively, depending on internal and/or external organizational contexts (Miles & Snow, 1978; Van de Ven et al., 2013).

Following an in-depth review of the literature across a number of disciplines, this thesis adopts the position that resilience can be defined as a multidimensional capability that is expressed through organizational strategies, comprising the characteristics of adaptability the characteristics of adaptability (e.g., Hamel & Välikangas, 2003; Rioli & Savicki, 2003; Starr et al., 2003; Erol et al., 2010), agility (e.g., Christopher, 2004; Christopher & Peck, 2004; Sheffi, 2005a; Sheffi & Rice, 2005), anticipatory ability (e.g., Mallak, 1998a; Rioli & Savicki, 2003; Reinmoeller & van Baardwijk, 2005; Vogus & Sutcliffe, 2007), and flexibility (e.g., Horne & Orr, 1998; Fiksel, 2003; Hu et al., 2008). The dimensions of which are articulated proactively or reactively (Miles & Snow, 1978) during different times and across different phases of turbulent environment (e.g., Werner & Smith, 1992; Gunderson & Holling, 2001). The resilience capability - strategy relationship can be regarded as being analogous to the association between genotype and phenotype. A genotype corresponds to the blueprint of hereditary information which is expressed through the phenotype of an organism. This distinction is fundamental to our understanding of survival and the evolution of traits. Similarly, this thesis argues that organizational

strategy is like a conduit through which resilience capability is expressed, virtually in the same way that an endowed genetic constitution is expressed through one's traits. Although the genotype is a major contributor of morphology or phenotype, it is not the sole ingredient. Environmental factors have a pervasive influence, in the same way that the environment impacts on firms.

Notwithstanding the contribution of the previous research in this area, the concept of resilience remains largely adumbrated (Nyström et al., 2008), given the limited body of knowledge (Bennett et al., 2005). Research on resilience in organizational settings focuses mainly on conceptual development particularly in relation to resilience principles (Mallak, 1998a; Gibson & Tarrant, 2010) characteristics or properties (Coutu, 2002; Fiksel, 2003; Dalziell & McManus, 2004; Seville et al., 2006), assessment (Horne & Orr, 1998; Mallak, 1998b; Starr et al., 2003; McManus et al., 2008), strategy (Reinmoeller & van Baardwijk, 2005; Gibson & Tarrant, 2010; Gulati et al., 2010), development model or framework (Paton et al., 2000; Riolli & Savicki, 2003; Sutcliffe & Vogus, 2003; Välikangas, 2004; Vogus & Sutcliffe, 2007; Gulati, 2010; Lengnick-Hall et al., 2011); and challenge (Hamel & Välikangas, 2003), revealing a dearth of theory-based empirical research of associations between resilience capabilities, environmental turbulence, and firm performance. Compounding these limitations are inconsistencies in definitions and operationalization of this construct. Aiming to contribute to the definitional, theoretical and research debates, this thesis utilizes and adopts an explanatory sequential mixed-approach underpinned by contingency theory by understanding how resilience capabilities are developed and utilized by Hong Kong-based small-to-medium enterprises (SMEs) for managing environmental turbulence.

Research Objectives

The current thesis involves two studies. Study 1 explores the interrelationships between resilience capabilities and firm performance, and the impact of environmental turbulence on these relationships. The two research objectives are:

***Research Objective 1:** What is the relative contribution of resilience capabilities to firm performance during times of turbulence?*

Research Objective 2: How does environmental turbulence moderate relationships between resilience capabilities and firm performance?

Extending the findings of Study 1, Study 2 involves an in-depth qualitative examination of the ways in which SMEs develop and utilize resilience capability in strategy development for dealing with threats and opportunities. The research objectives of Study 2 are:

Research Objective 1: How do SMEs utilize resilience capability in strategy development for dealing with threats and opportunities?

Research Objective 2: What are the key precursors to resilience capability and associated business performance?

SMEs are critical for the continued economic development of nations, fostering stability of income, employment opportunities, and growth. SMEs in Hong Kong serve as a backbone of business development because of their unique characteristics including high levels of flexibility, innovativeness, and creativity, and adaptability. According to the Trade and Industry Department, HKSAR Government (2014), there are approximately 314,000 SMEs in Hong Kong, constituting over 98% of business establishments and accounting for about 50% of the private sector workforce. Despite their strengths, SMEs have a relatively high failure rate which has been linked to high operating costs, fierce competition, and environmental turbulence. For this reason, government intervention through the enactment of policies plays a crucial role in new venture creation and their survival.

Hong Kong poses as a suitable setting for exploration. As a relatively small city, Hong Kong based SMEs have weathered the impact of the Asian Financial Crisis in 1998, 9-11 in 2001, SARs in 2003, the Global Financial Crisis (GFC) in 2008, and the earthquake and consequent tsunami, leading to the radiation leakage associated with the Japanese-Fukushima nuclear plant in 2011. According to Official Receiver's office (2010), the bankruptcy rate from 2004 to 2009 and from 2008 to 2009 increased by 50% with 10779 and 16157 registered business failures respectively.

As discussed briefly below, there are four main reasons for undertaking this thesis: A lack of empirical based research, no agreed definition and inconsistencies in operationalization of resilience, an apparent lack of testing of the possible moderating effects of environmental turbulence on relationships between resilience capabilities and firm performance, and limited research on precursors or antecedence of resilience capability development.

Dearth of empirical research. Extant literature reveals that the majority of research on organizational resilience remains conceptual and outcome focused (e.g., Coutu, 2002; Hamel & Välikangas, 2003; Välikangas, 2004; Reinmoeller & van Baardwijk, 2005; Gibson & Tarrant, 2010). The literature is predominately conceptual with limited research testing proposed conceptualization and theories. Theory needs to be tested in real business settings, and theoretical constructs need to be validated empirically. According to Masten and Obradović (2006), the testing of resilience concepts not only requires the development of models and methods, but also the development of new measures and strategies of analysis.

Definitional and operational confusion. Resilience theory is critical for our understanding of the dynamic behavior of enterprises in various contexts. A number of studies (e.g., Mallak, 1998a; Paton et al., 2000; Hamel & Välikangas, 2003) have employed this concept as a theoretical framework, however, concern regarding its definitional confusion (Ponomarov & Holcomb, 2009), and practical applicability has been raised (Bennett et al., 2005; Nystrom et al., 2008). That is, how to operationalize resilience theory has lagged behind theoretical developments owing to inconsistencies in definitions. For example, researchers have investigated this topic from the perspective of vulnerability (Dalziell & McManus, 2004; Sheffi & Rice, 2005; Seville et al., 2006), strategies used (Starr et al., 2003; Reinmoeller & van Baardwijk, 2005; Gulati, 2010), individual resilience (Horne & Orr, 1998; Mallak, 1998b; Lengnick-Hall et al., 2011), and organizational characteristics (e.g., structure, processes, practices) (Rioli & Savicki, 2003, Vogus & Sutcliffe, 2007). Despite these differences, there is an imperative to translate this theory into practice.

As noted earlier, a review of the literature highlights that resilience should be measured from a multi-dimensional perspective. Reinmoeller and van Baardwijk

(2005) considered resilience as comprising four dimensions: adaptability, anticipatory ability, flexibility, and knowledge. Similarly, Erol et al. (2009) defined resilience as a function of flexibility, agility, adaptability, and efficiency, the dimensions of which enable firms to perceive environmental change quickly, implement adaptive responses early, provide timely information, and promote fast decision-making ability. Despite the concept of organisational resilience being translated and derived from different perspectives which involve different constructs, there are common elements that facilitate the development of an overriding definition and operationalization of this construct.

Despite different definitions emerge from different disciplines, foci, theoretical conceptualizations, criticism has focused on variations in definitions. To address this issue of definitional discord, it is critical to understand whether resilience is a capability, a phenomenon, a process, or an outcome. Inconsistencies in definitions have also culminated in inconsistent findings and questions regarding designating resilience as a theoretical construct (Luthar et al., 2000). Thus, it is necessary to adopt a coherent and unambiguous definition in order to soundly operationalize this construct.

Relatively few tests of moderating effects. Despite the contribution of previous research (e.g., Hamel & Välikangas, 2003; Fiksel, 2003; Välikangas, 2004; Gibson & Tarrant, 2010; Gulati, 2010; Lengnick-Hall et al., 2011), the extent to which environmental turbulence influences links between resilience capabilities and firm performance is unclear. According to Roosa (2000), the interaction effects that test for moderation remain central to resilience research. Interaction effects examine whether variation in a DV as a consequence of IVs are a function of the changes in the moderator (Baron & Kenny, 1986). As an analogy, one can consider the gene-environment interactions (GxE) in relation to environmental risk influences. An individual might demonstrate resilience in response to one environmental hazard but not in another. In this light, it can be argued that it is important to explore interaction effects of different dimensions of resilience capability and turbulence on firm performance.

Limited research on precursors of resilience capability development. Finally, there appears to be limited academic enquiry concerning those attributes and capabilities that contribute to the formation of organizational resilience. In line with Kitching et al. (2009a), it is important to identify the strategy and the sources for achieving resilience capabilities as it may influence firm sustainability and their long-term firm performance. Braes and Brooks (2010), and Volberda (1996), on the other hand, suggested that the development of dynamic capabilities is an important precursor. According to a number of authors (e.g., McDaniel & Kolari, 1987; Conant et al., 1990), dynamic capabilities facilitate the development of flexibility and market orientation, the qualities of which can function as an adaptive link between increasing levels of uncertainty and performance. Miles and Cameron (1977), and Chakravarthy (1982) argued that firms have the capacity to build required levels of adaptive capability by investing in marketing activities. Similarly, Miles and Snow (1978) characterized or typologized strategies on the basis of increasingly adaptive types derived from different kinds of marketing activities. Accordingly, these views support claims that organizational capabilities contribute to the development of resilience prior to disruptive events.

Thesis Structure

The structure of this thesis proceeds as follows. Chapter 2 provides an extensive review of the literature and culminates in the establishment of a conceptual model of resilience capability. This model is underpinned by contingency theory. Chapter 2 begins with an overview of the relevant literature on and definitions of resilience across different academic disciplines. The literature on organizational resilience highlights key measures and outcomes. A description of organizational capabilities such as dynamic capability, marketing, information technology, and human resource capabilities is also provided.

Chapter 3 provides an in-depth discussion of the theoretical framework underpinning resilience capabilities which are regarded as comprising four dimensions: adaptability, agility, anticipatory ability, and flexibility. The chapter begins with a detailed discussion of each dimension including the background, definitions, frameworks, and their relationships with environmental turbulence and firm performance. Next, a discussion of the theory underlying this thesis and the

antecedents (i.e., dynamic, marketing, information technology, human resource capabilities) to resilience capabilities is provided. The chapter concludes with a proposed research model, involving the relationships between DC, MC, ITC, HRC, resilience capabilities, environmental turbulence, and firm performance.

Chapter 4 reports on Study 1 including a description of the present methodology and research paradigm. A justification for the application of a dialectical approach incorporating mixed method designs is also provided. Next, the Method section is described in detail including validation and instrument development, a profile description of participants, and data collection procedures are reported. The chapter concludes with a presentation and analysis of findings, a review of study limitations, and implications for future research.

Chapter 5 details Study 2, a series of four in-depth case studies. This chapter begins with a brief introduction, followed by a description of the methodology, comprising participants, instruments, and data collection and statistical procedures. Next, a within case analysis of these four companies is presented, including a detailed description and analysis of each firm's business background, business operating model, organizational and resilience capabilities, strategies employed in the face of turbulent environments, and associated firm performance. Based on the primary findings, a causal network model for each company is developed. The chapter concludes with a cross-case analysis, explaining and extending the findings emanating from Study 1. Study 2 advances the theoretical conceptualizations associated with resilience capabilities in SMEs. Limitations are also discussed.

Chapter 6 concludes the current thesis and provides a discussion of key theoretical, methodological, and practical implications to emerge from the findings of Studies 1 and 2.

Chapter 2

Literature Review

Overview

This chapter integrates conceptualizations promulgated across disciplines in order to develop a systematic understanding and definition of resilience in business settings. This chapter begins with a discussion of resilience concepts, followed by a review of the literature on resilience espoused by different disciplines, establishing the grounding for a multidimensional definition and measures of resilience. In terms of a theoretical conceptualization, resilience capability is taken as comprising four dimensions: adaptability, agility, anticipatory ability, and flexibility, and concludes with a proposed conceptual model involving resilience capabilities, environmental turbulence, and firm performance.

The business environment has become increasingly turbulent. Constant change necessitated the identification and development of new organizational capabilities critical for firm sustainability, particularly, in the context of emerging and interconnected business operating boundaries (Deevy, 1995; Hamel & Välikangas, 2003; Rice & Caniato, 2003). It has been argued that resilience is a distinctive organizational capability (Stoltz, 2004; Bergman et al., 2006; Ates & Bititci, 2011) that evolves over time across a range of conditions (Gibson & Tarrant, 2010); influences the effects of turbulent environments (Robinson, 2010); and strengthens during the process of dealing with threats and opportunities (Sutcliffe & Vogus, 2003). In resilient systems, changes create opportunity for novelty and innovation (Folke, 2006), importantly, leading to sustainability (Hamel & Välikangas, 2003) and organizational development (Burnard & Bhamra, 2011).

The concept of resilience was first introduced by Holling in 1973, providing a framework for describing the stability of an ecosystem and its response to

perturbation (Ives & Carpenter, 2007), establishing the groundwork for interdisciplinary study. The notion of resilience has been embraced across multidisciplinary fields, with some disciplines (e.g., ecological and psychological-based) paying more empirical attention to this topic than others (e.g., organizational-based). Specifically, in the business setting, work on resilience has been predominately conceptual. However, a diverse literature base has contributed to ambiguity in the conceptualization, operationalization and application of this concept (Bennett et al., 2005; Nyström et al., 2008).

Following section provides a brief discussion of resilience and its related concept, and an overview of this concept across various contexts, including ecology, socio-ecology, psychology, biology, and business studies. This review culminates in a discussion of the theoretical developments and operationalization of resilience.

Resilience and Related Concepts

The notion of resilience has been widely applied in studies of ecology, socio-ecology, psychology, and business. Thematic areas of exploration include: sustainability, risk, vulnerability, resistance. These topics are explored below.

Resilience Versus Sustainability

Companies need to become resilient to succeed and thrive in turbulent environment. In a business context, resilience can be defined as a measure of company's ability to rebound from adverse situations (e.g., Horne, 1997; Horne & Orr, 1998; Sutcliffe & Vogus, 2003) or adapt and create new capabilities and opportunities in adverse situations (e.g., Coutu, 2002; Hamel & Välikangas, 2003; Lengnick-Hall & Beck, 2003, 2005). These qualities enable firm to survive during downturns, then it is applicable to both definitions. However, resilience is not just about bouncing back from adversity, companies only focus on conserving original structures, processes, business models, or past successes does not guarantee protection from future unseen threats. In this case, resilience contributes less to long-term sustainability, but more to enabling a survive or obtain temporary relief from disruptions (Lengnick-Hall et al., 2011). Firms that can recognize that post disruptive environment are different (Alesch et al., 2001) and require continuous adaptation to keep abreast of changing environments through innovation, development, and growth, are more likely to

survive and stay the course. By the same token, in stable environments, resilience may not be as desired as compared with uncertain conditions (Carpenter et al., 2001) owing to the cost of developing and maintaining resilience capability.

Resilience Versus Vulnerability

Resilience and vulnerability are related and commonly used concepts in various scientific disciplines (Klein et al., 1998; Berkes, 2007). Vulnerability refers to risk and the likelihood of disruptions (Fiksel, 2003). Resilience, however, can be assessed in terms of vulnerability to a specific risk (Fiksel, 2003; Berkes, 2007), as might be the case in its application in psychology. Surpassing or surmounting critical events can culminate in positive outcomes in long run in the face of future adversity.

Reducing levels of vulnerability can increase levels of resilience and vice versa (Berkes, 2007). However, these two concepts are fundamentally different and lie at each extreme of a continuum. Just as the absence of dissatisfaction does not necessarily mean one is satisfied, resilience is not the flip-side of vulnerability. Within the context of organizational settings, simply mitigating negative effects provides only guidelines for future investments in areas for protection against predicted negative events. These events or threats can still be disruptive owing to a lowering of resilience due to previous disruptions. Thus, to be truly resilient, companies need to be prepared for adversity by improving their overall capabilities, that is, develop a capacity to continuously renew, reorganize, and reconstruct their business models and processes despite unpredictable business conditions and turbulent environment.

Resilience Versus Resistance

According to Gunderson and Pritchard (2002), the essence of sustainability is resilience, referring to an ability to resist disorders or external disturbance (Pimm, 1984; Tilman & Downing, 1994; Holling, 1996). Equating resistance with resilience is a typical example from engineering in which a highly controlled system is designed to resist and recover from a narrowly defined perturbation. Within this context, Walker et al. (2004, p.2) described resilience as a measure of *ease or difficulty of changing the system; how “resistant” it is to being changed*. From a psychobiological perspective, resistance is analogy to *immune response to fight off an infection*

(Karatsoreos & McEwen, 2011, p. 12), allowing an individual to withstand or adapt to adversity. The notion of resistance has also been applied in the design of engineered software and hardware systems amid disruptions. In the business world, companies operate as open, interconnected systems (Starr et al., 2003). Thus, highly resistant companies tend to be rigid, and less adaptable and flexible when dealing with changing environments (Miles & Snow, 1978). In other words, resistant companies are less resilient than their rivals. Although concepts like resistance and resilience have been used interchangeably or as part of their definitions, it is clear that discipline, context, and purpose are taken into consideration when arriving at a definition of what is resilience.

Definition and Scope of Resilience

It is argued that inconsistencies in definitions have culminated in inconsistent findings and questions regarding designating resilience as a theoretical construct (Luthar et al., 2000), particularly, when there is no agreed taxonomy of the situation or characteristics necessary to activate resilience (Luthans et al., 2006). According to Ponomarov and Holcomb (2009, p. 125), *even in a well-developed discipline, the existing definitions of resilience are often contradictory and confusing, and the unified theory of resilience is still under development*. While resilience is a both multidisciplinary and multidimensional construct (Ponomarov & Holcomb, 2009), this thesis adopts a cross-disciplinary perspective for developing a coherent and unambiguous definition to soundly operationalize this construct. A review of literature on resilience from different perspectives is provided in the following section. Tables 2.1 and 2.2 provide an overview of definitions and key features of resilience across the disciplines of ecology, socio-ecology, psychology, biology, and business, respectively. These definitions and features are described, subsequently.

Table 2.1. Definitions of resilience across disciplines

Author	Discipline	Construct	Definition
Holling (1973)	Ecology	Ecological / ecosystem resilience	An ability of a system to absorb/withstand disturbance prior to reaching a stable state with different structures and processes
Pimm (1984) and Tilman and Downing (1994)	Ecology	Engineering resilience	A capacity of a system to resist disturbance and the rate of return to a stable state after disturbance
Holling (1996)	Ecology	Engineering resilience	The rate of return of a system to a stable state following perturbation
Walker et al. (2004)	Ecology	Ecological resilience	Capacity of a system to absorb/withstand disturbance and reorganize itself while undergoing change and still maintaining the same function, structures, and identity.
Peterson et al. (1998)	Socio-ecology	Cross-scale resilience	An ability of a system to renew and reorganize itself after perturbation depends on the functional group within and across space and time scales
Carpenter et al. (2001)	Socio-ecology	Socio-ecological resilience	The magnitude of disturbance a socio-ecological system (SES) can tolerate prior to transiting into a different stable state with different processes
Folke et al. (2002)	Socio-ecology	Socio-ecological resilience	A capacity of a SES to change and adapt continuously while remaining within thresholds
Walker et al. (2002)	Socio-ecology	Socio-ecological resilience	An ability to maintain functioning for renewal and reorganization after perturbation
Masten (1994)	Psychology	Psychological resilience (Resilient qualities)	Successful adaptation despite risk and adversity
Rutter (1999, 2006)	Psychology	Psychological resilience (Resilient qualities)	Resistance to and the overcoming of psychological risk experience, stress, or adversity
Masten (2001); Masten et al. (1990)	Psychology	Psychological resilience (Process)	A psychological process capacity for successful adaptation and coping with adversity
Rutter (1999)	Psychology	Psychological resilience (Biological))	Variations in vulnerability to stress and adversity is a consequence of both genetic and environmental influences
Luthar et al. (2000)	Psychology	Psychological resilience (Process)	A dynamic developmental process of attaining positive adaptations and competence despite adversity
Richardson (2002)	Psychology	Psychological resilience (Theory)	Motivational forces drive individuals to self-actualization, altruism, wisdom, and harmony through resilience reintegration from disruption

Note. References in each discipline are arranged in chronological order.

Table continues...

Author	Discipline	Construct	Definition
Moffitt (2005), Moffitt et al. (2005)	Psychology	Psychological resilience (Biological))	The identification and contribution of gene-environmental interactions to behavioral outcomes
Southwick and Charney (2013)	Psychology	Psychological resilience (Resilient qualities)	Inborn traits and environmental factors that affect an ability to adapt to stress
Karatsoreos and McEwen (2011)	Biology	Biological resilience	An ability to return to baseline functioning after treatment or rehabilitation from stressful experiences
Southwick and Charney (2013)	Biology	Biological resilience	An ability to modulate and constructively harness stress responses
Mallak (1998a,b)	Business	Individual/ organizational resilience	Positive adaptive capabilities that differentiate the competition, and quick and effective responses to change
Horne and Orr (1998); Rioli & Savicki (2003)	Business	Individual/ organizational resilience	An ability to respond productively to significant change(s) without an extended period of regression
Coutu (2002)	Business	Individual/ organizational resilience	Acceptance of reality, a deep belief that life is meaningful, and an ability to improvise
Hamel and Välikangas (2003)	Business	Organizational resilience	An ability of firms to reinvent business models and strategies before circumstances change
Reinmoeller and van Baardwijk (2005)	Business	Organizational resilience	A capability to self-renew through innovation, over time
Sheffi (2005a,b,c)	Business	Organizational resilience	The ability and speed to return to normal performance levels after disruptions
McManus et al. (2007, 2008)	Business	Organizational resilience	An organization's overall situation awareness, management of keystone vulnerabilities, and adaptive capacity in an interconnected environment
Lengnick-Hall et al. (2011)	Business	Individual/ organizational resilience	An ability to absorb, develop situation-specific responses to, and engage in transformative activities to capitalize on disruptive surprises

Table 2.2. Key Features of ecological, socio-ecological, psychological, biological, and organizational perspectives of resilience

Context	Ecological		Socio-ecological		Psychological				Biological	Organizational	
Theoretical underpinning	Evolutionary theory		Evolutionary theory		Developmental theory				Developmental and evolutionary theory	Not specified	
Resilience	<i>Engineering resilience</i>	<i>Ecological resilience (i.e., adaptive cycle)</i>	<i>Socio-ecological resilience (i.e., complex adaptive systems)</i>	<i>Cross-scale resilience (i.e., Panarchy)</i>	<i>First wave - Resilient qualities</i>	<i>Second wave - Resilience process</i>	<i>Third wave - Resilience theory</i>	<i>Fourth wave - integrating biological underpinnings of resilience (G x E)</i>	<i>Biological resilience</i>	<i>Engineering perspective</i>	<i>Ecological perspective</i>
Definition	Rate of return of a system to a stable equilibrium following perturbation	A capacity of a system to absorb disturbance and to reorganise itself into a different domain during times of change	The magnitude of disturbance a socio-ecological system (SES) can absorb and extent to which it can change its structure and function	The ability of a system to renew and reorganize following perturbation depends on the functional group within and across spatial & temporal scales	The capacity of or presence of protective factors that enable individuals to deal with stressors and to rebound from adversity	A process of developing a capacity for positive adjustments despite adversity	The motivational forces that drive individuals to wisdom, altruism, self-actualization, and harmony through resilient reintegration as a result of disruption	The influence of gene (G) - environment (E) interactions in response to adverse condition	An ability to modulate and constructively harness a stress response	An Ability of firms to return to their original state following disturbance	An ability of firms to survive and thrive during times of turbulence through renewal, reinvention, and innovation
Driving research question(s)	What is the rate of return of a system following a disturbance?	What is the self-organized behavior of a system following a disturbance ?	How does the intervention of human activities (e.g., resource exploitation) affect the behavior of ecosystems?	How does cross-scale (spatial & temporal) relations affect the behavior of SESs?	What are the factors that enable an individual to deal with adverse situations?	How do individuals develop resilient qualities (positive adaptive capacity) despite difficulties?	What are the motivational forces associated with resilient reintegration?	What is the biological underpinning of resilience?	(a) What are the neurobiological factors that modulate resilience when coping with stress? (b) What is the role of stress in adaptive processes?	Why and what enables companies to survive or thrive in turbulent environments?	

Table continues...

Context	Ecological	Socio-ecological	Psychological			Biological	Organizational			
Theoretical underpinning	Evolutionary theory	Evolutionary theory	Developmental theory			Developmental and evolutionary theory	Not specified			
Principal theoretical aims	To explore the conceptual and practical utility of ecological theory and behavior of natural systems	To study the links between humans and nature	To identify resilient qualities and support systems for social and personal success	To understand the underlying mechanism for attaining capacity through disruption	To understand the motivation and drive to grow in adversity	To incorporate biological factors into existing theories of resiliency	To understand neurochemical responses to stress and the paradoxical effects of stress	To develop an operational model for resiliency evaluation and development		
Key characteristics	<ul style="list-style-type: none"> •recovery •single equilibrium •constancy •efficiency •predictable environment 	<ul style="list-style-type: none"> •robustness •multiple equilibrium •change •persistence •unpredictable environment 	<ul style="list-style-type: none"> •human ecosystem interactions & linked SESs are complex adaptive systems 	<ul style="list-style-type: none"> •panarchy (i.e., cross scale relations on multiple scales) 	<ul style="list-style-type: none"> •resilient qualities (e.g., high social skills, positive interactions) 	<ul style="list-style-type: none"> •resilience process model 	<ul style="list-style-type: none"> •self-actualization •spiritual source or innate self-righting mechanisms 	<ul style="list-style-type: none"> •specific (or a combination of) gene markers operate 	<ul style="list-style-type: none"> •allostasis and allostatic load, (i.e., short-term adaptation vs. long-term damaging effects) 	<ul style="list-style-type: none"> • adaptability • anticipatory/situation awareness • flexibility • redundancy (e.g., inventory, back-up systems) • agility • management of vulnerability • organizational characteristics (e.g., culture, structure) • resourcefulness
Drivers of resilience	<ul style="list-style-type: none"> •properties of species (i.e., ecological functional role and traits) •populations and diversity of species 	<ul style="list-style-type: none"> •species functional roles and traits •species diversity 	<ul style="list-style-type: none"> •biodiversity •diverse and overlapping species •ecological functions within and across multiple scales 	<ul style="list-style-type: none"> •personal traits •previous experience environmental, social & contextual factors 	Laws of disruption and reintegration	<ul style="list-style-type: none"> •cognitive capabilities •belief systems •external sources of motivation 	<ul style="list-style-type: none"> •system functional properties •biological markers & functions •emotional & cognitive ability •social & psychological experience 	<ul style="list-style-type: none"> •stress hormones & allostatic mediators •life style factors •early life experience •living & working environment •interpersonal relationships 	<ul style="list-style-type: none"> •renewal •reorganization •reinvention •learning •communication •culture •structure •processes •people 	

Table continues...

Context	Ecological		Socio-ecological			Psychological			Biological	Organizational
Theoretical underpinning	Evolutionary theory		Evolutionary theory			Developmental theory			Developmental and evolutionary theory	Not specified
Impact of resilience on performance	<ul style="list-style-type: none"> • maintains the efficiency of function 	<ul style="list-style-type: none"> • maintains the existence of function 	<ul style="list-style-type: none"> • maintains functioning, adaptations to human interventions, and transforms into different domains 	<ul style="list-style-type: none"> • leads to information creation & conservation • increases learning, & adaption • increases an ability to change 	<ul style="list-style-type: none"> • positive outcomes or successful life adaptations 	<ul style="list-style-type: none"> • positive outcomes or successful life adaptations • growth, knowledge & understanding of oneself 	<ul style="list-style-type: none"> • develops capability to deal with adversity through preventative & intervention strategies 	<ul style="list-style-type: none"> • develops an adaptive response through preventive intervention strategies that promote psychological well-being 	<ul style="list-style-type: none"> • adaptation • maintaining stability or re-establishing homeostasis in the face of challenges 	<ul style="list-style-type: none"> • surviving and thriving in turbulent environments
Key studies (by year of publication)	Holling (1996); Pimm (1984); Tilman & Downing, 1994	Holling (1973); Gunderson & Holling (2001); Walker et al. (2004, 2006)	Carpenter et al. (2001); Folke (2006); Folke et al. (2002, 2010); Gunderson (2000); Walker et al. (2002)	Carpenter et al., (2001); Gunderson & Holling (2001); Peterson et al. (1998);	Garnezy (1971, 1985); Garnezy & Rutter (1985, 2006); Kumpfer (1999); Luthans et al. (2006); Masten(1994, 2001); Rutter (1985, 1987, 1999, 2006); Seligman (2011); Southwick & Charney (2013); Werner (1995); Werner & Smith (1992)	Flach (1988, 1997); Kumpfer (1999); Luthar et al. (2000, 2006); Masten (2001); Masten & Obradovic (2006); Masten et al. (1990); Masten & Richardson (2002), Richardson et al. (1990); Rutter (1999)	Cicchetti & Curtis (2006); Kumpfer (1999); Masten & Obradovic (2006); Masten et al. (1990); Richardson (2002); Werner & Smith (1992)	Cicchetti & Blender (2006); Ciccehetti & Tucker (1994); Curtis & Cicchetti (2003); Huether (1996); Insel & Quirion (2005); Luthar et al. (2006); Nelson & Bloom (1997); Masten (2007); Masten & Obradovic (2006); Moffitt (2005); Mottiff et al. (2005); Rutter (1996, 2006); Rutter et al. (1999); Southwick & Charney (2013)	Heuther (1996); Karatsoreos & McEwen (2011); McEwen (2000, 2007); McEwen & Wingfield (2003); Southwick & Charney (2013);	Coutu (2002); Dalziell & McManus (2004); Fiskel (2003, 2006); Gibson & tarrant (2010); Gulati et al. (2010); Hamel & Välikangas (2003); Horne & Orr (1998); Horne (1997); Lengnick-Hall & Beck (2003, 2005); Lengnick-Hall et al. (2011); Mallak (1998a,b); McManus et al. (2007, 2008); Paton et al. (2000); Ponomarov and Holcomb (2009); Reinmoeller & van Baardwijkji (2005); Riolli & Savicki (2003); Seville et al. (2006); Sheffi (2005a,b,c); Starr et al. (2003); Sutcliffe & Vogus (2003);); Välikangas (2004);Vogus &Sutcliffe (2007)

Resilience in the Ecological Context

Resilience in ecological context addresses the nature of change in the structure and function of ecosystems over time (Handmer & Dovers, 1996; Walker et al., 2006), leading to different approaches to long-term resource planning and management (Holling, 1973). Drawing upon two different perspectives to reflect different aspects of stability, Holling (1973) viewed these different aspects based on the distinctions between efficiency and persistence, constancy and change, and predictability and unpredictability, the concept was further classified into engineering and ecological resilience (Gunderson, 2000; Walker et al., 2002).

Engineering resilience perspective focuses on efficiency, constancy, and predictability. Specifically, the conservation of existing structures, and the ecological function and traits of species play a significant role in providing stability, function, and resilience of ecosystems (Nyström et al., 2008). According to Holling (1996), engineering resilience refers to the rate of return of a system to a stable state following perturbation. Consistent with Pimm (1984), resilience is the capacity of the system to resist external disturbance and the rate at which it returns to equilibrium after disturbance. In essence, engineering resilience describes how far and quickly a system returns within a predictable environment (Ludwig et al., 1997).

Ecological resilience, on the other hand, adopts an evolutionary perspective with emphases on persistence, change, and unpredictability (Holling, 2009). That is, the future behavior cannot be predicted exactly owing to the uncertainty of environments. Holling (1973) defined ecological resilience as an ability of a system to absorb or withstand disturbance prior to reaching a stable state with different structures and processes (Holling, 1973). Thirty years later, Walker et al. (2004) defined resilience as the capacity of a system to absorb or withstand disturbance and reorganize itself while undergoing change and maintaining the same function, structure, and identity. The focus of ecological resilience is on self-organization and opportunities for innovation. In other words, an ecosystem can exist in alternative self-renewed states rather than fast recovering from an unpredictable disturbance(s).

To examine the self-organized behavior of a system, Holling (1986) introduced the notion of an adaptive cycle to describe the interaction between structures and

processes that leads to system development. Based on the theory of adaptive cycle, dynamic systems (e.g., ecosystems, communities, enterprises, countries, socio-ecological systems) do not move towards a stable condition (Holling, 1986). Instead, systems evolve through four phases of rapid growth and exploitation, conservation, collapse or release, and renewal or reorganization (Gunderson & Holling, 2001). Levels of resilience change throughout these phases, providing an alternative understanding of resilience (Gunderson & Holling, 2001).

Corollary

Both engineering and ecological resilience perspectives offer practical applications of the concept in business contexts at system levels, suggesting firms may possess or develop appropriate traits or capabilities of different levels in order to survive during different times of business cycles and environmental conditions.

Resilience in the Socio-Ecological Context

With its roots in ecology, the socio-ecological view of resilience involves complex adaptive systems related to interactions between people and a nature (Carpenter et al., 2001), systems interdependency (Folke et al., 2010) and a dynamic view of equilibrium (Gunderson, 2000). Specifically, the focus is on the adaptive capacity of a system through its ability to create novelty, learn (Carpenter et al., 2001), renew, regenerate, and reorganize (Bellwood et al, 2004) in response to disturbances or perturbations caused by human activity.

According to Carpenter et al. (2001), socio-ecologically resilience can be defined as the magnitude of disturbance that a socio-ecological system (SES) can tolerate prior to transiting into a different state with different processes. Folke et al. (2002) referred to the capacity of a SES to change and adapt continuously while remaining within thresholds. By comparison, Walker et al. (2002) linked sustainability with resilience. In other words, a SES ability to maintain functioning through renewal and re-organization following perturbation.

By way of contrast, Peterson et al. (1998) argued that ecosystems are not fixed objects in space, that is, all systems exist and function at multiple scales, time and social

organization. Thus, their ability to reorganize and renew after perturbation depends to a large extent on the states and dynamics of other scales such as each subsystem is nested in a larger subsystem. To address cross-scale relations, Gunderson and Holling (2001) introduced the concept of panarchy that builds upon the idea of adaptive cycles which reflect complex adaptive systems that are able to self-organize through diverse and overlapping ecological functions of species not only within a scale, but also those operating across different scales (Peterson et al., 1998). It is worth noting that this perspective holds that the development of resilience at one point in time can be at the expense of the development or expression of resilience at subsequent period. Moreover, resilience expressed at one spatial referent can be subsidized from broader scales (Carpenter et al., 2001).

Corollary

The concept of socio-ecological resilience is useful for explaining the complexity and interdependency among firms in business settings, particularly, the different roles of individual firm may affect the development and application of resilience within and across operating boundaries. Socio-ecological perspective also states that SESs develop on continuous basis, suggesting that firms in the business world evolve through renewal, reorganization, or transformation into fundamentally new system that enable them to adapt, innovate, and grow in changing environments.

Resilience in the Psychological Context

Based on development theory (Richardson, 2002), resilience in psychology is a multifaceted concept that has concentrated largely on psychological correlates of, and contributes to, this phenomenon (Curtis & Cicchetti, 2003). Perhaps surprisingly, this conceptualization emerged only in 1970s from the work with children whose mothers were diagnosed with schizophrenia (Garmezy, 1971). This research provided the groundwork for examining the quality and productive behavior of responses of individuals, groups, organizations, and system to significant changes (Van Breda, 2001).

According to Richardson (2002), psychological research theory of resilience can be classified into three phases. First phase relates to the identification of resilient qualities (i.e., presence of protective factors) that predict social and personal success. While the second phase describes the resilient development processes, the third phase concerns the resilience theory - the motivational forces underlying resilience building. The concept was later expanded to include the biological aspects underpinning resilience development (Curtis & Cicchetti, 2003; Masten, 2007). These three phases are elaborated upon, below.

First phase: The identification of resilient qualities

Conceptualization associated with first phase holds that resilience emerges as a consequence of exposure to adverse conditions or risk taking rather than risk avoidance (Rutter, 1985). Responses to such conditions can be either passive or active (Seligman, 2011). Resilience is regarded as being related to individual inborn traits (e.g., self-efficacy, self-esteem, optimism) or to environmental factors that affect one's ability to adapt (Southwick & Charney, 2013). Other authors suggest that resilience acts as a *buffer* (Rutter, 1987) or like compensatory factors that protect individuals during times of adversity and contribute to positive outcomes (Luthans et al., 2006). In line with this perspective, Masten (1994) defined resilience as a successful adaptation in the face of risk and adversity. While Rutter (1999, 2006) described resilience as resistance to and the overcoming of psychological risk, stress, or adversity, Kaplan et al. (1996, p.158) argued that resilience is *based on the presence of protective factors (personal, social, familial, and institutional safety nets)* that enable individuals to cope with life stress.

Notwithstanding, it appears that resilience is associated with context, time, age, gender, previous life experiences, cultural origin, and individual life circumstances (e.g., Garmezy, 1985; Garmezy & Rutter, 1985; Werner & Smith, 1992). Although levels of resilience fluctuate over time within specific domains, children identified as being resilient, have been shown to excel in critical contexts and show positive signs of adaptation in the long-term (Werner, 1995).

Second phase: The resilience development process

According to Richardson (2002), the debate concerning whether resilient qualities are either learnt or genetically constitutional has motivated the interest of researchers and practitioners to try and elucidate the developmental processes necessary for attaining these qualities (Luthar et al., 2006; Masten & Obradovic, 2006). Kumpfer (1999) concluded that individuals consciously and unconsciously modify their environment by transforming high-risk environments into protective situations. In this way, individuals created *resiliency factors through designing and encouraging resiliency building processes in their transaction* (Kumpfer, 1999, p. 210) with their environment. The process of which is essential for predicting outcomes by integrating diverse mechanisms before, during and after experiencing stress or adversity (Rutter, 1999). Within this light, Masten et al. (1990) and Masten (2001) defined resilience as a psychological process building capacity for successful adaptation and coping with adversity. Similarly, Luthar et al. (2000) described resilience as a dynamic developmental process necessary for attaining positive adaptation and competency despite adversity.

Based on the notions of disruption and reintegration (Flach, 1988, 1997), Richardson et al. (1990) modeled resilience development processes as a function of conscious and unconscious choices. Resilient integration refers to *the reintegrative or coping process that results in growth, knowledge, self-understanding, and increase strength of resilient qualities* while disruption is *an individual's intact world paradigm is changed and may result in perceived negative or positive outcomes* (Richardson, 2002, p. 310-311). Life involves repeatedly reintegrating behaviors, emotions, situations inter alia in response to both planned and reactive disruption (Richardson, 2002). The resilience model has been found to be useful in the field of prevention (Kumpfer, 1999), helping researchers and practitioners to understand how individuals *choose between resilient reintegration, reintegration back to the comfort zone, or reintegration with loss* (Richardson, 2002, p. 308).

Third phase: Resilience Theory

The third phase of research on resilience has helped to explain the underlying forces, mechanisms, or processes required for resilient reintegration. This phase has been classified as a spiritual source (Richardson, 2002), and as *an innate self-righting*

mechanism (Werner & Smith, 1992, p. 202). This phase has begged questions associated with what and from where do these motivational forces originate (Richardson, 2002). According to one view, the driving motivational forces can emanate from a number of external sources of energy or perceived energy (e.g., a surprise visit of a loved one); creative force (Richardson, 2002); and belief systems including the influence of beliefs in higher beings, cognitive capabilities (Richardson, 2002; Kumpfer, 1999) inter alia. In contrast, individual competence and resilience for preventing behavioral or emotional difficulties (Cicchetti & Curtis, 2006) can also be promoted and developed through *prevention, intervention, and policy* (Masten & Obradovic, 2006, p. 14).

Fourth phase: The integrated model of biological underpinnings of resilience

In view of the increasing attention paid to the rise of biology and genetics pertaining to human behavior (Rutter, 1999; Curtis & Cicchetti, 2003; Masten, 2007) and adaptive responses to stress (Southwick & Charney, 2013), researchers shifted their focus to the identification and contribution of the gene-environment interactions to the development of behavioral resilience (Moffitt, 2005; Moffitt et al., 2005, Cicchetti & Blender, 2006; Masten, 2007), and plasticity of adaptive functioning (Masten & Obradovic, 2006). Consistent with Curtis and Cicchetti (2003), resilience is regarded as a diverse biological process necessary for the regulation of emotion. Moreover, hypotheses concerning the potential involvement of genetic factors in the development of resilience (Luthar et al., 2006) has flagged the likelihood that measurable genetic polymorphisms moderate relationships between adverse conditions and behavioral outcome (Masten & Obradovic, 2006), further supporting the equifinality and multifinality nature of resilience (Cicchetti & Blender, 2006).

However, the biological role of the stress response does not support the survival of unfit individuals who are not able to react adequately and efficiently to challenges and environmental demands. Thus, the value of stress response as a trigger for adaptive modifications may differ among individuals with differences in adaptive potential and limitations (Huether, 1996). It is also argued that different biological domains are not independent, but rather, the functioning of one system affects the functional properties of other systems through influential bidirectional or non-recursive processes (Curtis & Cicchetti, 2003).

As well as the significant influence of biological factors on psychological processes; both social and psychological experiences are regarded as playing a substantial role in modulating gene expression and brain structure, functioning, and organization (Cicchetti & Tucker, 1994; Nelson & Bloom, 1997). For example, Insel and Quirion (2005) stated that previous adverse experiences can sometimes have a *steeling* effect on individuals; that is, strengthen resistance to later stress while new experiences open up opportunities for beneficial *turning-point* effects (Rutter, 1999). Yet, positive experiences in themselves do not necessarily have a protective effect, with both cognitive and affective processing of experiences likely to exert an influence on whether or not resilience development occurs (Rutter, 1999).

The biological underpinning of resilience concerns the interaction between genes (G) and environment (E). The findings of studies in this area provide five key implications for understanding the substantive effects of this interaction (Rutter, 2006) including: The resistance to environmental hazards are derived from exposure to controlled risk circumstances; protection can be derived from neutral or risky circumstances; protection can be derived from the individual coping strategies to stress or adversity, rather than external risks or protective factors; protection can emerge to following a risk experience; and resilience can be constrained by biological programming or the damaging consequences of stress or adversity on neural structures.

Corollary

Psychological resilience suggests that for organizations, resilience can be inborn or developed through interventions and the integration of diverse mechanism before, during, and after exposure to adversity. It is worth noting that, resilience fluctuates over time and varies across systems, contexts and circumstances, suggesting that firms develop resilience for strategies or responses to specific adversity at specific point in time in order to stay abreast of changing environmental conditions. Although resilience can be built through different means (equifinality) that may lead to diverse outcomes (multifinality), firms can modify their environment and transform adversity to favorable situations through developing and utilizing resilience qualities.

Resilience in the Biological Context

The brain and body constantly adapt to changing environments and the stress response is a key mechanism for adaptation (Karatsoreos & McEwen, 2011). From a short-term perspective, the stress response increases an individual's chances of survival in life-threatening situations. From an evolutionary perspective, however, the stress response serves to eliminate unfit genotypes (Heuther, 1996).

Within the biological context, resilience refers to an ability to modulate and constructively harness the stress response to both physical and mental health (Southwick & Charney, 2013) or *the ability of an organism to respond to stressors in the environment by means of the appropriate engagement and efficient termination of allostatic responses* (Karatsoreos & McEwen, 2011, 576). Specifically, an adaptive process of allostasis entails maintaining stability through changing, re-establishing homeostasis (McEwen, 2000), or actively adjusting to both predictable and unpredictable changes (McEwen & Wingfield, 2003).

Stress promotes adaptation, but prolonged stress results in *cumulative wear and tear on the body or poorly regulated allostatic responses* (allostatic load and overload). That is, short-term adaptation versus long-term damage (Karatsoreos & McEwen, 2011). The concept of allostasis and allostatic load facilitate an understanding of multiple interacting mediators (e.g., complementary and counteractive effects) by elucidating both behavioral and physiological mechanisms. Notwithstanding, so called *good stresses* can result in a sense of excitement and accomplishment in those individuals who are able to master (McEwen, 2007) rather than avoid them (Southwick & Charney, 2013). Thus, stress is not necessarily negative, rather be a trigger for switching *on* or *off* responsive behaviors associated with growth, self-esteem, self-efficacy, and resilience (Southwick & Charney, 2013).

Corollary

Stress can be both beneficial and detrimental, depending on one's interpretation and actions. Resilience is a consequence of exposure to challenges instead of avoidance. Although different types of resilience may have counteractive or complementary effects and can be deleterious as a consequence of multiple and prolonged turbulences, in the long-term,

it helps to eliminate those which are unable to respond efficiently and effectively in challenging conditions.

Resilience in the Business Context

Definition of resilience

The study of resilience in the business context has focused predominately on individual and organizational responses to environmental turbulence. Two differing (Horne & Orr, 1998; Lengnick-Hall et al., 2011) but compatible perspectives have been adopted (Horne & Orr, 1998). One perspective draws from the fields of engineering and metallurgy (Sheffi, 2005b), which concerns the ability of materials to regain their original shape following a force. For example, Sheffi (2005c), Sheffi and Rice (2005) and Hu et al. (2008) referred to resilience as the ability and speed of return to normal performance levels following disruptions, through reducing vulnerability, and building redundancy and flexibility. Christopher and Peck (2004) delineated resilience in relation to the flexibility and adaptability of a system to return to a previous state or move to a new and more desirable state after disturbance. Seville et al. (2006) and McManus et al. (2007, 2008) defined resilience as a function of an organization's overall awareness of situations, management of keystone vulnerabilities, adaptive capacity, and its inherent qualities to cope with, adapt to, and recover from a disaster event. An ability to anticipate unexpected events or risks requires both a proactive and preemptive analysis of uncertainties (Vogus & Sutcliffe, 2007). Similarly, Fiskel (2003, 2006) described resilience in terms of diversity, efficiency, adaptability and cohesion, the capacity to tolerate disturbances while retaining existing structures and functions through an alignment of strategies and business continuity planning (Starr et al., 2003).

Another perspective concentrates on the dynamic relationship involving business systems (Horne & Orr, 1998) that go beyond restoration, an ability to develop new capabilities, and to thrive by capitalizing on unexpected changes and challenges (Lengnick-Hall et al., 2011). Lengnick-Hall et al. (2011) referred resilience as an ability to absorb, develop situation-specific responses, and engage in transformative activities while capitalizing on disruptive surprises. Hamel and Välikangas (2003) adopted a transformation view, referring to organizational resilience as an ability of firms to reinvent their business models and strategies dynamically, and to anticipate

and adjust them continuously before circumstances intervene. Reinmoeller and van Baardwijk (2005) described resilience as a capability of firms to self-renew over time through innovation in order to sustain superior performance and outperform competitors. A goal of organizations is to create their future rather than defending their past (Hamel & Välikangas, 2003), suggesting that resilience is not a response for a onetime crisis or simply about bouncing back, rather the emphasis is on continuous anticipation and adjustment in order to influence the future (Southwick & Charney, 2013).

Despite the increasing interest in studying organizational resilience at a firm level, a number of researchers support the notion of the contributions of individuals to the formation of resilient organizations. For example, Mallak (1998a) stated that a resilient organization requires quick and effective response to change from individuals. Lengnick-Hall et al. (2011) pointed to the interaction between individuals and organization, and how the actions of individuals matter. Despite all companies possess a degree of internal resilience that embedded in people, processes and structure, Horne and Orr (1998) argued that a collection of resilient individuals or actions associated with resilience within a firm does not necessarily constitute organizational resilience. These authors argue that instead of focusing on the resilience of individuals, the collective actions of individuals that make up the response of a system should be emphasized.

Corollary

The two perspectives of organizational resilience demonstrate how different theories and ideas from different disciplines have been adopted and incorporated in the development of definitions of resilience. These perspectives elucidate the differing yet compatible views of resilience and help us to understand how firms position themselves, set objectives, and develop and implement strategic actions in turbulent environments.

While different definitions have been developed separately across different disciplines, foci, theoretical conceptualizations, criticism has focused on variations in definitions. To address the issue of definitional discord, it is critical to understand whether resilience is a capability, a phenomenon, a process, or an outcome and the

associated characteristics. Synthesizing interdisciplinary contributions, we argue that there are four important characteristics of resilience concept in business settings. First, resilience is a multidimensional capability that is expressed through proactive and reactive responses/strategy in order to thrive and grow in turbulent environments. Second, resilience capability can be in-born or developed within or across business operating boundaries. Third, resilience capability varies across time and contexts. Fourth, resilience can be developed through different means (equifinality) that leads to diverse outcomes (multifinality).

Despite the concept of organisational resilience being translated and derived from different perspectives which involve different constructs, there is an imperative to translate this theory into practice. This is particularly evidenced in business settings. In this light, the identification of common elements related to resilience among these research in business settings (Table 2.3) facilitates the development of an overriding definition and operationalization of this construct for this study.

Table 2.3. Conceptual research on organizational resilience

Author(s)	Type of research	Aim(s) of research	Theoretical underpinning	Definition of resilience	Operationalization of resilience	Conclusion
Mallak (1998a)	Conceptual Review of research on resilience across disciplines	To develop principles for implementing resilience in organizations	Not specified	Positive adaptive capabilities that differentiate the competition, enabling quick and effective responses to change	Identification of emerging themes of resilience based on research	Seven principles were identified that facilitate the implementation of resilience include perceiving experiences constructively, performing positive and proactive responses, ensuring adequate external resources, expanding decision-making boundaries, practicing bricolage, developing tolerance for uncertainty, and building virtual role systems
Fiksel (2003)	Conceptual	To develop systems with inherent resilience, based on broad-based systems thinking	Systems theory	A capacity of a system to tolerate disturbances while retaining its structure and functions	Fundamental properties of a system 1. <i>Diversity</i> (i.e., existence of multiple forms and behaviors) 2. <i>Efficiency</i> (i.e., performance with modest resource consumption) 3. <i>Adaptability</i> (i.e., flexibility to change in response to new pressure) 4. <i>Cohesion</i> i.e., existence of unifying forces or linkages)	Firms should go beyond their own boundaries to ensure long-term resilience by identifying system functions and boundaries, establishing system requirements, selecting appropriate technologies, developing a system design, evaluating and anticipating performance, and devising a practical means of system development
Hamel & Välikangas (2003)	Conceptual	To address the challenges that companies face when developing resilience	Not specified	A capacity of firms to dynamically reinvent business models and strategies, to continuously anticipate and adjust before circumstances intervene	Four challenges 1. <i>Cognitive challenge</i> (i.e., conquering denial) 2. <i>Strategic challenge</i> (i.e., valuing variety) 3. <i>Political challenge</i> (i.e., liberating resources) 4. <i>Ideological challenge</i> (i.e., embracing paradox)	Companies that can align strategically with their environment and reorganize resources quickly in the face of turbulent environments are able to change profoundly and rapidly

Note. References arranged in chronological order.

Table continues...

Author(s)	Types of research	Aim(s) of research	Theoretical underpinning	Definition of resilience	Operationalization of resilience	Conclusion
Rioli & Savicki (2003)	Conceptual	To develop an integrated model of stress and resilience by explaining factors related to resilience at individual and organizational levels	Not specified	A fundamental quality of individuals, groups, organizations, and systems as a whole to respond productively to significant change that disrupts the expected pattern of events without engaging in an extended period of regression (p. 31)	Model based on 1. <i>Work environment</i> 2. <i>Specific information system contexts</i> 3. <i>Intra- and extra-organizational factors</i> 4. <i>The cognitive appraisal processes</i> 5. <i>Impact of individual differences</i> 6. <i>Influence of social support</i> 7. <i>Influence of coping processes</i> 8. <i>Individual and organizational outcomes</i> 9. <i>Relevant variables associated with stress process</i> (Thong & Yap, 2000).	A resilience model that enables organizations to explore and capitalize on self-generating resilience in the face of crises through HR policies, and the creation of flexible and adaptable organizational culture and strategies
Starr et al. (2003)	Conceptual	To develop a framework for assessing an organization's resilience profile and risk management approach to enable companies to close the gap in their resiliency profile	Not specified	An ability and capacity to withstand systematic disruptions and adapt to changing risk through effective alignment of strategy, operations, management systems, governance structure, and decision-support capabilities	The Enterprise resilience (ER) audit procedure 1. <i>Enterprise topology and earnings-driver classification</i> (i.e., identifying key earning drivers & associated risks) 2. <i>Resilience profiling and baselining</i> (i.e., comparing resiliency profiles with an optimal level of resilience) 3. <i>Resilience strategy</i> (i.e., developing a new resilience program)	The ER audit helps senior management to link business strategy to resilience and business continuity planning by developing an integrated risk mitigation program based on company needs and actual earnings drivers

Table continues...

Author(s)	Types of research	Aim(s) of research	Theoretical underpinning	Definition of resilience	Operationalization of resilience	Conclusion
Sheffi (2005a,c)	Conceptual	To discuss how firms increase resilience based on supply chain principles	Not specified	An ability to return quickly to normal performance level following disruptions	Dimensions of resilience 1. <i>Redundancy (e.g., inventory includes safety stock of materials and finished goods)</i> 2. <i>Flexibility</i>	Companies can achieve resilience through: postponement, use of a small number of commodity parts, reduce time to market, use of multiple suppliers, build relationships with suppliers, establishment of collaborative relationships with trading partners, making components or interchangeable manufacturing facilities
Sutcliffe & Vogus (2003); Vogus & Sutcliffe (2007)	Conceptual Involving a review of literature on organizational resilience through mapping the beliefs, practices, processes, and structures that give rise to resilience	1. To develop a definition of resilience 2. To identify the affective, cognitive, relational, and structural mechanisms of resilience	Organization theory	A firm's capability to maintain positive adjustment under challenging conditions and emerging resourcefulness	Mechanisms of resilience 1. <i>Affective process</i> 2. <i>Cognitive process</i> 3. <i>Relational process</i> 4. <i>Structural process</i>	Resilience results from processes, structures, and practices that promote competence, flexibility, malleability, convertible, restorative efficacy, and mediate jolts and encourage growth

Table continues...

Author(s)	Types of research	Aim(s) of research	Theoretical underpinning	Definition of resilience	Operationalization of resilience	Conclusion
Dalziell & McManus (2004)	Conceptual	1. To discuss the challenges for evaluating resilience to major hazard events 2. To design resilient systems by focusing on system vulnerabilities and the ability of an organization to manage and minimize the impact of failures	Systems theory	An ability of a system to continue functioning at its fullest in the face of stress Resiliency is expressed as a function of vulnerability of a system and its adaptive capacity	Vulnerability, adaptive capacity, organizational structure, purpose and organizational objective, KPIs	Resilience can be enhanced by increasing adaptive capacity through redundancy, and an ability to evolve and adapt promptly to new situations
Välikangas (2004)	Conceptual	To identify steps associated with strategic planning processes for developing resilience	Not specified	An ability to reinforce strengths, resolve weaknesses, recover fast and cope with economic downturns and disruptive competition	Four steps to resiliency development 1. <i>Rethinking founding management principles</i> (e.g., decision-making process) 2. <i>Generating a range of strategic options</i> (e.g., experiential strategies or business models) 3. <i>Examining resource allocation</i> (e.g., funding for new venture opportunities) 4. <i>Effective corporate governance</i> (e.g., principles to safeguard against wrongdoing)	Leveraging resilience enables companies to remain competitive and sustainable, and to minimize economic and social costs associated with failure or decline

Table continues...

Author(s)	Types of research	Aim(s) of research	Theoretical underpinning	Definition of resilience	Operationalization of resilience	Conclusion
Paton et al. (2000)	Conceptual	To analyze resilience and vulnerability at personal level by adopting a risk management framework for complex relationships between variables, growth, and distress	Not specified	A process of self-righting, learned resourcefulness, and growth An ability to function psychologically greater than expected, based on individual capabilities and previous experiences	Vulnerability and resilience factors based on three components 1. <i>Dispositional vulnerability & resilience</i> (i.e., personal characteristics affect adjustment) 2. <i>Cognitive coherence & meaning</i> (i.e., individual sense of coherence and meaning e.g., through training) 3. <i>Environmental resilience</i> (i.e., organizational design and management development strategies)	Proposed risk management framework allowed the conceptualization of relationships between resilience and vulnerability at dispositional, cognitive, and environmental levels, and to develop mechanisms for recovery and growth by mitigating distress risk
Gibson and Tarrant (2010)	Conceptual 1. Proposed principles derived from identification of common themes emergent from different disciplines 2. Examination of different conceptual models	To provide insights about the complexity and multidimensional of organizational resilience based on different conceptualizations a. To identify principles underlying resilience (i.e., as outcome, dynamic, & multiple traits) b. To utilize these principles as a foundation for developing a conceptual framework c. To propose a strategic approach for building resilience	Not specified	An adaptive capacity and ability to understand and address internal and external environmental uncertainty	1. Three resiliency models i) <i>The integrated resilience functions model</i> ii) <i>The composite resilience model</i> ii) <i>The resilience triangle model</i> 2. Identification of the nature of resilience and aspects of organizations that contribute to the development of resilience	The models identified different and interrelated aspects of resilience. Resilience is associated with a range of strategies that enhance both hard (e.g., infrastructure) and soft (e.g., information & knowledge) organizational capabilities. Four strategic approaches to resilience building include: <i>resistance strategies</i> (i.e., improving the robustness of the firm to withstand volatility), <i>reliability strategies</i> (i.e., ensuring the availability of key functions, resources, information, & infrastructure), <i>redundancy strategies</i> (i.e., providing alternatives to daily operational approaches), and <i>flexibility strategies</i> (i.e., adapting to extreme circumstances and sudden shock)

Table continues...

Author(s)	Types of research	Aim(s) of research	Theoretical underpinning	Definition of resilience	Operationalization of resilience	Conclusion
Lengnick-Hall et al. (2011)	Conceptual	To implement strategic HRM to create competent employees in response to severe threats & business survival	Strategic human resource management (SHRM) theory and Resource based view of the firm (RBV)	An ability to absorb, develop situation-specific responses, and engage in transformative activities to capitalize on disruptive surprises that potentially threaten organizational survival	Developing the organizational cognitive, behavioral, and contextual capacity of resilience, based on HR policy: 1. <i>HR principles</i> 2. <i>Desired employee contributions</i> 3. <i>HR policies</i>	Resilience is a multi-level collective attribute integrated from capabilities, and actions of individuals and units within a firm Significant interrelationships between HR systems, resilience, associated strategic capabilities, and performance
Horne & Orr (1998)	Case study Comparing levels of importance and frequency of action of 7 resiliency streams within organizations and their application to HR	1) To describe how resiliency offers a practical response to change 2) To develop a framework for identifying attributes contributing to resilience	Systems theory	A fundamental quality of individuals, groups, organizations, and systems as a whole to respond productively to significant change that disrupts the expected pattern of events without engaging in an extended period of regression period (p. 31)	Seven streams assessing resiliency behavior 1. <i>Community</i> (i.e., organizational purpose, vision, mission, value in use) 2. <i>Competence</i> (i.e., skills of employees to meet changing environmental demands) 3. <i>Connections</i> (i.e., social support enabling responses under pressures) 4. <i>Commitment</i> (i.e. ability of organizations to work together during change) 5. <i>Communication</i> (i.e., sharing of information during change) 6. <i>Coordination</i> (i.e., system alignment for effective results) 7. <i>Consideration</i> (i.e., levels of understanding by organizational leaders)	Seven streams of resiliency behavior assessment enable firms to explore and identify resiliency factors embedded in people and processes, and to develop whole-systems based on competencies, commitments and connections in response to significant change Four HR implications: 1. Strategic planning 2. Organization alignment 3. Corporate culture awareness 4. Organizational learning

Table continues...

Author(s)	Types of research	Aim(s) of research	Theoretical underpinning	Definition of resilience	Operationalization of resilience	Conclusion
Reinmoeller & van Baardwijk (2005)	<p>Case study</p> <p>1) Examined the innovative initiatives of top 10 companies between 1982-2002 based on their annual reports and corporate documents.</p> <p>2) Extracted over 100 interview articles with CEOs or senior executives about innovative strategies linking these with the findings of annual reports</p>	To identify the innovation strategy(s) for sustaining performance over time and how companies manage innovation in order to become resilient	Not specified explicitly from the outset but drew on evolutionary theory in the conclusion section	A capability to self-renew through innovation over time in order to sustain superior performance and outperform competitors	<p>Four innovative strategies</p> <p>1. <i>Knowledge management</i> (i.e., using and leveraging existing knowledge e.g., employees' skills)</p> <p>2. <i>Exploration</i> (i.e., creating new, internal ideas and resources e.g., R&D)</p> <p>3. <i>Cooperation</i> (i.e., leveraging and exchanging resources across firms e.g., outsourcing)</p> <p>4. <i>Entrepreneurship</i> (i.e., creating new resources, ideas, and applications external to the firm e.g., develop new businesses)</p>	Organizations need to utilize multiple innovative strategies to develop resilience and to maximize the likelihood of successful adaptations to different contexts
Seville et al. (2006)	<p>Case study</p> <p>A 6-year research program involving 11 in-depth interviews with a cross-section of staff in each organization</p>	<p>1. To identify key elements of resilience development in the face of crises</p> <p>2. To develop strategies for resilience improvement within and across business sectors</p>	Not specified	An ability to survive and thrive while maintaining its core objectives in adversity	<p>Four resilience attributes</p> <p>1. Resilience ethos (e.g., culture of resilience embedded within organizations)</p> <p>2. Situation awareness (e.g., awareness of connectivity and interdependency)</p> <p>3. Management of keystone vulnerabilities (e.g., identifying vulnerabilities)</p> <p>4. Adaptive capacity</p>	<p>Firms should look beyond their own boundaries in order to become resilient as managing resilience requires collective effort of individuals within the company</p> <p>Key areas for resilience development:</p> <p>1. <i>Readiness / preparedness</i></p> <p>2. <i>Perceived vulnerability</i> based on a firm's organizational planning for hazard events</p> <p>3. <i>Investment prioritization, resource deployment, and legal and contractual environments</i></p>

Table continues..

Author(s)	Types of research	Aim(s) of research	Theoretical underpinning	Definition of resilience	Operationalization of resilience	Conclusion
McManus et al. (2008)	Case study A 6-year research project of 10 case studies were assessed based on 15 generic resiliency indicators relative to other case-study organizations	To develop the facilitated process for assessing and improving resilience	Not specified	Properties that enable the individual, community, or organization to cope with, adapt to, and recover from a disaster event	Three attributes of organizational resilience 1. <i>Situation awareness</i> (i.e., a measure of an organization's understanding and perception of its entire operating environment) 2. <i>Management of keystone vulnerabilities</i> (i.e., aspects of organizational, operational, managerial that have a potential negative impacts in a crisis situation) 3. <i>Adaptive capacity</i> (i.e., a measure of the culture and dynamics of an organization that enables timely and appropriate decision making)	The facilitated resilience management process helps firms to assess and improve organizational resilience, identifying companies' strengths and weaknesses so relevant strategies can be developed for improving organizational resilience in the face of crisis situations Areas for improving resilience levels are: awareness of stakeholder roles and responsibilities, hazard events, consequences, and recovery priorities (situation awareness); the degree of planning and its link to implementation (management of keystone vulnerabilities); silo mentality, communication and relationship with stakeholders, lack of flexible and creative decision making (i.e., adaptive capacity)
Gulati et al. (2010)	Case study Analysis of strategy selection or shifts in relation to performance (financial data) of 4700 companies pre- and post-three global recessions	To identify the strategies that companies use to survive and thrive in recession	Not specified	Not provided.	Classifying and identifying companies and their resilient responses based on strategic shifts and resource allocation between the prerecession and the recession years 1. <i>Number of employees</i> 2. <i>Cost of goods sold</i> 3. <i>R&D expenditures</i> 4. <i>Sales, general, administrative expenditure</i> 5. <i>Capital expenditure</i> 6. <i>Measurement of plant, property, and equipment stock</i>	Four types of companies were identified. Prevention-focused, promotion-focused, pragmatic-focused, with progressive-focused enterprises that remained close to customer needs were best performing

Table continues...

Author(s)	Types of research	Aim(s) of research	Theoretical underpinning	Definition of resilience	Operationalization of resilience	Conclusion
Mallak (1998b)	<p>Survey</p> <p>1. Measures pretested on graduate students (<i>n=50</i>)</p> <p>2. Large scale survey of nursing executive (<i>n=128</i>) at 168 acute care hospitals</p>	To develop and test the validity & reliability of measures of resilience	Not specified	Positive adaptive capabilities that enable employees to respond quickly and effectively to change while enduring minimal stress	<p>3 ways of assessing resilience</p> <p>1. <i>Bricolage</i> (i.e., an ability to work under pressure, fight/fight reactions to overwhelming situations, ability to access appropriate resources)</p> <p>2. <i>Attitude of wisdom</i> (i.e., past experiences, skepticism, curiosity, and reliance on single or multiple information sources)</p> <p>3. <i>Virtual role system</i> (i.e., understanding the role of individuals and others, ability to take on the role of others, and how overall vision provides role definition)</p>	Six factors identified enabling the design of interventions for creating a resilient workforce including: goal-directed solution-seeking, avoidance, critical understanding, role dependence, source reliance, and resource access

Operationalization of Resilience

As evident from a close examination of Table 2.3, much of the research work on resilience in the business and management fields (e.g., Hamel & Välikangas, 2003; Välikangas, 2004; Reinmoeller & van Baardwijk, 2005; Gibson & Tarrant, 2010; Gulati, 2010) were related to resilience principles (e.g., Gibson & Tarrant, 2010; Mallak, 1998a), characteristics or properties (e.g., ; Coutu, 2002; Fiksel, 2003, 2006; Dalziell & McManus, 2004; Seville et al., 2006; Hussels et al., 2014), assessment (e.g., Horne & Orr, 1998; Mallak, 1998b; Starr et al., 2003), strategy (e.g., Reinmoeller & van Baardwijk, 2005; Gulati et al., 2010), developmental models or framework (e.g., Paton et al., 2000; Riolli & Savicki, 2003; Sutcliffe & Vogus, 2003; Vogus & Sutcliffe, 2007; Gulati, 2010; Gulati et al., 2010; Lengnick-Hall et al., 2011); and challenges (Hamel & Välikangas, 2003).

Based on emerging themes of resilience from various disciplines such as ecology and engineering, Gibson and Tarrant (2010) identified six resilience principles, that is, *resilience is an outcome, resilience is not static trait, resilience is not a single trait, resilience is multidimensional, resilience exists over a range of conditions, resilience is founded upon good risk management*, providing insights concerning the complexity and multidimensional nature of interrelated aspects of organizational resilience. As a means of helping companies to differentiate themselves from competition through quick and effective responses to change, Mallak (1998a) developed a set of principles for resilience development including *perceiving experiences constructively, performing positive adaptive behaviors, ensuring adequate external resources, expanding decision making, practicing bricolage, developing tolerance for uncertainty, and building virtual role systems*.

In contrast, Fiksel (2003) adopted a broad-based system thinking approach addresses the interdependencies among firms when developing resilience capabilities based on four fundamental properties including *diversity, efficiency, adaptability, and cohesion*. Another systems-based approach aimed to enhance resilience by focusing on *situation awareness, management of keystone vulnerability, and adaptive capacity* (Dalziell & McManus, 2004; McManus et al., 2008). While these principles can help firms to develop organizational resilience, Mallak's (1998b) work with nursing executives

identified six factors that facilitate the design of interventions for resilience development including, *goal-directed solution-seeking, avoidance, critical understanding, role dependence, source reliance, and resource access.*

In an exploration and identification of areas for resilience development, Horne and Orr (1998) proposed a seven stream model of organizational resilience involving *community, competence, connections, commitment, communication, coordination, and consideration.* These streams are taken as being embedded in people and processes (e.g., corporate culture) within organizations. Similarly, Sutcliffe and Vogus (2003) suggested that organizational resilience provides firms with the capabilities to mediate the unexpected and encourage growth by assessing their processes, structures, and practices by promoting competence, flexibility, malleability, convertible, and restorative efficacy. Starr et al. (2003) proposed a so called enterprise resilience (ER) audit procedure to help senior management to link business strategy to resilience and business continuity planning. The ER audit assesses companies to develop an integrated risk mitigation program based on company needs and actual earning drivers. Alternatively, Gulati (2010) argued that building an outside-in oriented resilient organization enables business success in any environment. This framework focuses on customer-centricity, consisting of coordination (aligning activities, processes and information around customer axis), cooperation (aligning goals, attitudes, and behaviors that are customer-focused), clout (giving authority & empowerment to customer-facing individuals), capabilities (developing & cultivating the skills to cope with changing customer needs), and connections (developing external relationships & partnerships to stay focused and agile). For other authors, leveraging resilience capabilities enable firms to remain competitive. Sustainability can be achieved by rethinking founding management principles, generating a portfolio of strategic options, examining and allocating resources, and exercising effective corporate governance (Välikangas, 2004) or through redundancy and flexibility (Sheffi, 2005c).

McManus et al. (2008) developed a facilitated resilience management process for assessing an organization's overall resilience profile and for identifying a company's strengths and weaknesses so relevant strategies can be developed for improving organizational resilience in the face of crisis situations. Similarly, Paton et al. (2000)

proposed a risk management framework that enables the conceptualization of relationships between resilience and vulnerability at dispositional, cognitive, and environmental levels. This framework also provides ways in which enterprises could develop mechanisms for recovery and growth by mitigating distress risk.

Riolfi and Savicki (2003) developed an integrated resilience model to explain factors related to organizational resilience at both individual and organizational levels, enabling firms to explore and capitalize on self-generating resilience through the creation of a flexible and adaptable organizational culture and strategies, in the face of crises. Lengnick-Hall et al. (2011) suggested that organizational resilience can be developed through strategic HRM policies, practices, and activities. Their conceptual paper provides an understanding of the interrelationships between HR systems, organizational resilience, associated strategic capabilities, and competitive performance. Alternatively, Hussels et al. (2014) took an investor's view and identified four resilience attributes of entrepreneur in the entrepreneurial context, including 1) entrepreneur's ability to successfully (re)engage with investors; 2) (re)leverage their teams; 3) social capital in new ways and 4) their flexibility in changing their own role within their company.

Although the proposed models or frameworks facilitate an understanding of resilience, a number of researchers identified strategies that resilient companies adopted in the face of turbulence. For example, Gulati et al. (2010) classified four types of companies (i.e., *progressive-focused*, *prevention-focused*, *promotion-focused*, and *pragmatic-focused*) based on strategy shifts and resources allocation before and after recession. These authors concluded that progressive-focused companies significantly outperformed their counterparts because they maintained close ties to their customer needs. In an examination of the 1982-2002 annual reports of 10 Dutch companies, Reinmoeller and van Baardwijk (2005) identified four types of innovation strategies, *knowledge management*, *exploration*, *cooperation*, and *entrepreneurship*. These investigations concluded that companies needed to utilize multiple innovation strategies and to maintain a dynamic balance between all four strategies in order to maximize the likelihood of successful adaptation to different environmental conditions.

Gibson and Tarrant (2010) explained how *resistance strategies* (i.e., the robustness of a firm to withstand volatility), *reliability strategies* (i.e., ensuring the availability of key functions, resources information, & infrastructures), *redundancy strategies* (i.e., providing alternatives to daily operational approaches), and *flexibility strategies* (i.e., adapting to extreme circumstances & sudden shocks) enhance the hard- and soft-side of organizational capabilities, ultimately leading to effective resilience development. However, Hamel and Välikangas (2003) noted that strategies decay from time-to-time and firms that stick with their *old* business models tend to find it difficult to cope with the ever-changing business environment. In view of this, these authors suggested that firms needed to frequently and openly review their strategies in terms of four dimensions: *replication*, *supplantation*, *exhaustion*, and *evisceration* so as to encourage rapid and effective renewal in the face of crisis situations.

Notwithstanding, the task of building a resilient organization is more complicated than thought to be, as most firms do not have an ability to translate this capability into a tangible asset (McManus et al., 2008). Hamel and Välikangas (2003) argued that organizations aiming to become resilience needed to address four challenges: *the cognitive challenge* which refers to being free of denial, nostalgia and arrogance (i.e., being conscious of change and being willing to consider how such changes can affect current success); *the strategic challenge* highlights that resilience requires both alternatives and awareness (i.e., the ability of firms to create new options as compelling alternatives to decaying strategies); *the political challenge* which refers to diverting current resources from expired products and programs to those required of tomorrow; *the ideological challenge* which espouses to the position that optimizing an irrelevant business model will slowly deteriorate the future of a company.

The current review demonstrates that much of work on organizational resilience is predominately conceptual (e.g. Coutu, 2002; Hamel & Välikangas, 2003; Gibson & Tarrant, 2010; Lengnick-Hall et al., 2011) and case-study focused (e.g., Horne & Orr, 1998; Reinmoeller & van Baardwijk, 2005; McManus et al., 2008; Gulati et al., 2010; Hussels et al., 2014), revealing a dearth of and possible theory-based empirical research on associations between resilience capabilities, environmental turbulence, and firm performance. Conversely, there is a lack of consistency in the operationalization of organizational resilience as evidenced by the measures utilized

in these research. Some researcher investigated vulnerabilities, strategies used, or resources allocation, while others examined individual resilience collectively, or identified resilience based on organizational structure, processes, and practices. Though resilience can be developed and assessed from a wide-ranging aspects within an organization, a consistent measuring constructs is needed that can be applied to any aspect of an organization within and across contexts. Outcomes of resilience do vary, depending on the measures used.

Compounding these limitations are inconsistencies in definitions and operationalization of this construct, as well as lacking in theoretical underpinning these research. This observation indicates the development of resilience concept is still undergoing which requires further progress such as developing a consensus of definition and measures for resilience capability, examining the phenomenon empirically in different settings or testing theories as an explanation for the research questions.

Defining resilience can be difficult due to its multidimensional nature, yet, the current review of organizational resilience literature demonstrates that resilience capability should be measured based on four common dimensions, including adaptability, agility, anticipatory ability and flexibility as measures of resilience for this thesis.

In conclusion, the above review has certainly contributed to the theoretical building of organisational resilience in business contexts, specifically, the development of working definition and measuring construct for this thesis. Following an in-depth review of the literature across a number of disciplines, this thesis adopts the position that resilience capability can be defined as a multidimensional capability that is expressed through organizational strategies, comprising the characteristics of adaptability (e.g., Hamel & Välikangas, 2003; Riolli & Savicki, 2003; Starr et al., 2003; Erol et al., 2010), agility (e.g., Christopher, 2004; Christopher & Peck, 2004; Sheffi, 2005c; Sheffi & Rice, 2005), anticipatory ability (e.g., Mallak, 1998a; Riolli & Savicki, 2003; Reinmoeller & van Baardwijk, 2005; Vogus & Sutcliffe, 2007), and flexibility (e.g., Horne & Orr, 1998; Fiksel, 2003; Hu et al., 2008). These dimensions are articulated either proactively or reactively (Miles & Snow, 1978) to survive and thrive during different times and across different phases of turbulent environments

(e.g., Gunderson & Holling, 2001). Although resilience is something you realize you have after a disruption/event (Wildavsky, 1988; Coutu 2002), this thesis adopts the position that resilience capability can be developed and utilized during different phases of turbulence, especially when resilience capability might not be presently evident or realized prior to a critical event (Somers, 2009). Table 2.4. summarizes the key concepts based on resilience literature in business settings.

Table 2.4. Key concepts of resilience based on literature

Author(s)	Key resilience concepts	Context
Horne & Orr (1998); Rioli & Savicki (2003)	Adaptability (e.g., competence-skills of employee to meet changing environmental demands), flexibility (e.g., commitment-reengineering)	Employees/HRM; Information system management
Mallak (1998a)	Adaptability (e.g., perform positive adaptive behaviors), agility (e.g., expand decision-making boundaries), flexibility (e.g., ensure adequate external resources)	Employees
Fiksel (2003)	Flexibility (e.g., diversity - existence of multiple forms and behaviors), adaptability (e.g., adaptability - change in response to new pressures)	Environmental science technology
Hamel & Välikangas (2003)	Adaptability (e.g., reinvent business models/strategies), agility (e.g., renewal before circumstances change), anticipatory ability (e.g., awareness of changes), flexibility (e.g., liberate resources, value variety)	Organizational management
Starr et al. (2003)	Adaptability (e.g., adjust to continually new risks & opportunities), anticipatory ability (e.g., uncover and identify changing risks)	Organizational management (strategies), senior executives
Christopher (2004)	Agility (e.g., rapid response to changed conditions), responsiveness	Supply chain management
Christopher & Peck (2004)	Adaptability (e.g., move to new state), flexibility (e.g., states different from original); agility (e.g., rapidly reorganize)	Supply chain management
Delziell & McManus (2004); McManus et al. (2008)	Anticipatory ability (i.e., situation awareness-ability to forecast potential opportunities and risks); management of keystone vulnerability, adaptive capacity or adaptability (e.g., effective decisions in daily operation and in crises); agility (e.g., timely decision)	Natural hazard management, individuals
Reinmoeller & van Baardwijk (2005)	Adaptability (e.g., exploration - creating resources external to firm), anticipatory ability (e.g., using existing knowledge), flexibility (e.g., leveraging and exchanging resources across firms)	Organizational management (strategies)
Sheffi (2005c); Sheffi & Rice (2005)	Agility (e.g., speed to return to normal performance level), flexibility (e.g., resources allocation and reallocation), inventory redundancy - flexibility (e.g., safety stock of material, and finished goods)	Supply chain management
Gallopin (2006)	Adaptability (e.g., adjust to continually new risks & opportunities), anticipatory ability (e.g., uncover changing risks)	Organizational management
Seville et al. (2006)	Management of vulnerability, situation awareness, adaptive capacity	Crisis events, organizational management
Vogus & Sutcliffe (2007)	Anticipatory ability (e.g., proactive and preemptive analysis of uncertainties), adaptability (e.g., positive adjustment), flexibility (e.g., resources allocation)	Organizational management

Note. References arranged in chronological order

Table continues...

Author(s)	Key resilience concepts	Context
Hu et al. (2008)	Flexibility (e.g., building in redundancy)	Manufacturing, management
Madni & Jackson (2009)	Absorptive ability, adaptability , anticipatory ability , learning, restorability, system attributes	Systems engineering management
Erol et al. (2010)	Flexibility , adaptability , agility , efficiency	Organizational management
Gibson & Tarrant (2010)	Adaptability (e.g., adaptive capacity to address uncertainty), flexibility (e.g., provide alternatives to daily operation)	Organizational management (strategies)
Gulati et al. (2010)	Prevention-focused (defensive moves), promotion-focused (offensive), pragmatic-focused (defensive & offensive), progressive-focused (optimally defensive & offensive)	Organizational management (strategies)
Lengnick-Hall et al. (2011)	Absorptive ability, adaptability (e.g., transformative activities)	Employees/HRM

Perhaps, SMEs possess some of these survival characteristics through their exposure to a higher level of environmental turbulence than experienced by large organizations. The relative strength of small firms is argued to be in terms of behavioral characteristics such as flexibility, adaptability and innovation (Vossen, 1998). In view of this, background and definition of SME will be discussed, below.

Small To Medium Enterprises (SMEs)

Background and definition

All large firms emerge from small entities and it is long recognized that a number of today's SMES will metamorphose into tomorrow's major corporations (Davis et al., 1985; Simpson et al., 2011). Fundamental dissimilarities underlying SMEs primarily relate to scarce resources such as time, capital, and human resources (Hill, 2001; Stokes, 2002); lack of specific expertise or skills (Gilmore et al., 2001) for strategic decision making (Huang & Brown, 1999); lack informal management information systems to manage diverse and multiple information sources (Reijonen & Komppula, 2007); limited market information or sources (Gilmore et al., 2001); and lack of formal planning (Ingirige et al., 2008). Of these limitations, resource scarcity is considered to be the key threat or inhibitor to the development of resilience. Resource constraints pose both directly and indirectly limitation on SMEs *to plan, respond and recover* in extreme events (Ingirige et al., 2008, p. 583).

Despite these limitations, fundamental competitive factors of SMEs rest on their intangible resources and capabilities (Aragon-Sanchez & Sanchez-Marin, 2005). Specifically, small firms tend to be more innovative, creative, (O'Shea, 1998; McCartan-Quinn & Carson, 2003; Moriarty et al., 2008); flexible (Evans & Moutinho, 1999; Aragon-Sanchez & Sanchez-Marin, 2005), entrepreneurial (Tonge et al., 1998), and faster at adapting and responding to changes (Aragon-Sanchez & Sanchez-Marin, 2005) than their larger counterparts. For example, SMEs implement a number of management practices such as subcontracting, hiring temporary or part-time employees to promote flexibility (Ruigrok et al., 1999). Likewise, informal management systems and decision making processes (Storey, 1994), and flexible and flat organizational structure (Gupta & Cawthorn, 1996; Hudson et al., 2001; Qian & Li, 2003) enable rapid responses to the changing needs of customers; start-up close to markets; quick decision making (Rogers, 1990; Moriarty et al., 2008); fast learning capacity and rapid adaptation to routines and strategies (Vossen, 1998); and high tolerance for uncertainty, ambiguity, and changes in the business environment (de Vries & Shields, 2006).

Despite being less likely to possess ownership advantage when competing with larger firms and having limited market impact, start-ups and small firms are likely to grow more rapidly than older and larger enterprises (Hart, 2000; O'Dwyer et al., 2009), contributing significantly to economic development through employment creation (Bridge et al., 1998); innovation (O'Shea, 1998; Das & He, 2006); and future growth prospects in many economies worldwide (Knight, 2000). For example, Brooksbank et al. (2003) who reported that high performing medium-sized firms plan proactively and allocate resources to enhance organizational capabilities as a way of managing intense future competition.

Defining what are SMEs is not only difficult but has also tended to be arbitrary (Stanworth & Curran, 1981). There is no definitional consensus of what precisely constitutes a SME (Storey, 1994; Deros et al., 2006; Jafari et al., 2007). As a case in point, according to Bates and Nucci (1989), the rate of small firm discontinuance is *highly dependent upon the definition of what is or is not a small business* (p. 2). Thus, a lack of a clear and uniformly accepted definition of what comprises an SME adumbrates any assessment of performance of the SME sector. Researchers define

SMEs tapping into a wide range of dimensions such as size, number of employees, sales volume, asset size, type of customers, and capital requirements (Ibrahim & Goodwin, 1986). While the definition of a SME varies from country to country, number of employees and sales volume are the typical criteria employed in literature (Sum et al., 2004). Most APEC member economies also use number of employees as the criterion for defining SMEs, as it is simple, clear, and easy to understand. Other possible criteria such as turnover, profit, or gross output are less stable and more sensitive to price fluctuations.

In line with this review, the definition developed by the Trade and Industry Department is adopted for this thesis in which SMEs are defined as *manufacturing enterprises with fewer than 100 employees in Hong Kong and non-manufacturing enterprises with fewer than 50 employees in Hong Kong (including firms engaged in construction; mining; quarrying; electricity and gas; import and export; wholesaling; retailing; catering; hotel; transport; warehouse; insurance; real estate; business service; community, social and personal service)* (Trade & Industry Department, HKSAR, 2012).

Organizations frequently must cope with anomalous events, referred to as crises, that create high levels of uncertainty and are potential threats to the viability of an organization. Particularly, SMEs are more susceptible to environmental changes than large companies and their responses to threats and opportunities are different, given their characteristics (Sadler-Smith et al., 2003). Although entrepreneur personal characteristics such as leadership, personal background, previous experience with crisis situations, objectives for business (Pleitner, 1989; Walsh & Kirchoff, 1998) and beliefs advocate (Beyer, 1981) play an important part on the growth of small firms (Storey, 1994). Developing a host of other capabilities such as those pertaining to marketing (e.g., Conant et al., 1990; Vorhies & Morgan, 2005; Morgan et al., 2009; Vorhies et al., 2009), information technology (e.g., Bharadwaj, 2000; Kyobe, 2004; Zhang et al., 2008); human resource management (e.g., Hornsby & Kuratko, 2003; Zheng et al., 2009) have shown to contribute to positive firm performance such as customer satisfaction (Vorhies & Morgan, 2005); organizational effectiveness (Vorhies, 1998); innovation (Lefebvre & Lefebvre, 1992), business efficiency (Grant, 1991), and competitiveness (Nieto & Fernández, 2005). Consistent with Chaston and

Mangles (1997), performance and firm growth is a reflection of the internal capabilities inherent within an organization, specifically, the relationships between organizational capabilities and external environment have significant influence on business strategy and performance (Henderson & Mitchell, 1997). The ensuing section reviews the pertinent literature on organizational marketing, information technology, and human resource capabilities.

Organizational Capabilities

From the resource-based theory perspective, firms are viewed as a unique bundle of resources and capabilities (e.g., Wernerfelt, 1984; Barney, 1991), that enables firms to develop competitive advantages and execute value-creating strategies (Barney, 1991) in order to outperform their competitors (Peteraf, 1993). Resources are both tangible and intangible assets or inputs of an organization (Helfat & Peteraf, 2003). Capabilities involve the intangible bundles of skills and knowledge firms deploy on their resources (input) to *effect a desired end* (output) (Amit & Schoemaker, 1993, p.35). Although firms need resources to take advantage of their capabilities, merely possessing resources does not contribute to sustained performance. Rather it is the application of resources (i.e., capabilities) that causes interfirm performance differences (Grant, 1991), particularly in rapidly changing environments. To address the dynamic nature of business conditions, scholars have expanded the RBV into dynamic markets to explain how and why certain firms achieve competitive advantage in markets with rapid and unpredictable change (e.g., Teece et al., 1997; Eisenhardt & Martin, 2000). Consequently, identification of relevant resources and capabilities that enable organizations to prepare for, and respond to extreme events, is an imperative (Hamel & Välikangas, 2003), particularly in the SME sector.

Dynamic Capability (DC)

Building upon RBV, dynamic capabilities (DC) can help to explain the differential performance among firms in dynamic environments (Zott, 2003). This theory focuses on *the deployment of resources through integration, building and reconfiguring internal and external competences to address rapidly changing environments* (Teece et al., 1997, p. 516) that can become sources of sustained competitive advantage. Zollo and Winter (2002) defined dynamic capabilities as learnt and stable patterns of collective activity that enable firms to improve effectiveness through generating and

modifying their operating routines. By way of contrast, Eisenhardt and Martin (2000) described dynamic capabilities as a set of identifiable and specific organizational processes embedded in firms. These processes can be viewed as antecedent organisational and strategic routines that firms use to transform their resource base in pursuit of the development of new value-creating strategies (Grant, 1996b; Pisano, 1994). For example, dynamic capabilities utilized for integrating resources can include cross-functional processes such as new product developments, and customer relationship management (Fang & Zhou, 2009) in which varied skills and functional backgrounds are combined to create revenue-generating products and services (e.g., Clark & Fujimoto, 1991; McKelvie & Davidsson, 2009).

Similarly, dynamic capabilities can also be observed in strategic decision making processes in which various business, functional, and personal expertise are pooled together for making organizational strategic actions (Eisenhardt, 1989a). In terms of reorganization of resources, dynamic capabilities can be found in transfer processes (e.g., knowledge brokering) (Hargadon & Sutton, 1997), and resource allocation routines (e.g., distributing scarce resources) (Burgelman, 1994). Exploration of dynamic capabilities is also evident in the areas of knowledge creation routines (e.g., building new thinking) (Helfat, 1997); collaboration within and between firms to generate new and synergistic resource configurations (Eisenhardt & Galunic, 2000); alliances and acquisitions (e.g., acquiring new resources from external businesses); pre-requisition routines (i.e., assessing organizational culture & vision) (Eisenhardt & Martin, 2000); post-acquisition integration (e.g., speed of integration of resources and capabilities of merged firms) (e.g., Zollo, 1998; Eisenhardt & Martin, 2000); experience accumulation; and knowledge articulation and knowledge codification (Macher & Mowery, 2009).

Marketing Capabilities (MC)

The increasing complexity of business environment demands firms to develop marketing capabilities that incorporate both anticipatory and experimental elements into their market learning capabilities (Day, 2011). These enhanced marketing capabilities can be adaptive (McKee et al., 1989; Day, 2011) and boundary-spanning function (McKee et al., 1989), enabling firms to adjust their strategies to accelerating market changes (Day, 2011). Similarly, firms that maintain marketing activities (e.g.,

increasing sales & advertising, production breadth, geographic coverage) as part of their core business tend to sustain profitability in both so called good and bad times (Pearce II & Michael, 1997) through exploiting market opportunities and trends in the market (Fox-Wolfgramm et al., 1998). Notwithstanding, a well developed set of marketing capabilities is essential to undertake basic marketing activities such as information gathering on market demands, segmentation, and selection of target markets (a market planning activity); development of new services to meet targeted segment needs (via product development activities); pricing services/products, and communication of service benefits offered to target markets (Day, 1994).

Marketing capabilities can be defined as an integrative process designed to utilize a firm's skills and knowledge together with their resources to understand market-related needs. Such capabilities enable firms to add value to their good and service relative to the competition (Day, 1994; Vorhies, 1998; Dutta et al., 1999; Vorhies & Morgan, 2005; Song et al., 2005 & 2007). Marketing capabilities can be identified as two interrelated aspects including capabilities related to individual *marketing mix* processes, such as channel management, pricing, product development and management, marketing communications, and selling (Vorhies & Morgan, 2005), and capabilities concerned with the processes of developing and executing marketing strategy (Morgan et al., 2003). Similarly, Day (1994) categorized marketing capabilities as three processes that focus on market sensing and customer-linking capabilities. These three processes include: *outside-in* (e.g., research of customers & competitors, relationships with suppliers & customers); *inside-out* (e.g., cost control, human resource management activities); and *spanning* involving an integration of outside-in and inside-out processes (e.g., new product developments).

Hooley et al. (1999) opposed a hierarchical model of marketing capabilities consisting of *marketing culture* (i.e., orientation & stance), *marketing strategy* (i.e., segmentation, targeting, & positioning) and *marketing operations* (i.e., outside-in, inside-out, & spanning process). In contrast, Vorhies and Morgan (2005) identified eight distinct marketing capabilities for benchmarking performance: *product development*, *pricing*, *channel management*, *marketing communications*, *selling*, *market information management*, *marketing planning*, and *marketing implementation*. These marketing capabilities were further classified into two types namely:

specialized marketing capabilities (e.g., product development) and *architectural marketing capabilities* (e.g., market information management) (Vorhies et al., 2009). Similarly, Grant (1996a) presented a hierarchical framework of marketing capabilities suggesting that specialized capabilities can be viewed as lower-level capabilities. However, architectural capabilities were treated as higher-level capabilities, claiming that their development of which required the implementation of lower-level capabilities.

Extant theory suggests that the establishment of marketing capabilities leads to performance improvements (Conant et al., 1990; Brooksbank et al., 2003; Vorhies & Morgan, 2005; Vorhies et al., 2009). For example, firms with higher levels of product development and marketing implementation capabilities demonstrate higher levels of performance than those not possessing these vital values (Slater & Narver, 1993). Yet, enumerating all marketing capabilities are impossible as they vary from business-to-business operating under different market conditions (Day, 1994), business lifecycles (Carson & Gilmore, 2000), and across variant strategic types (Conant et al., 1990; Walker et al., 2003; Olson et al., 2005).

According to Reijonen and Komppula (2008), small firms are unlikely to have the required competence when it comes to collecting information on customers and competitors, and the dissemination, analysis, and utilization of such information. Among all marketing activities, Carson et al. (1998), and McCartan-Quinn and Carson (2003) noted that small firms not only find it difficult to price their products and services but also to forecast future demand for their goods and services (Smith et al., 1996). Other problems included having a limited customer base, an over dependency on the owner/managers' marketing skills, being reactive rather than proactive when it comes to marketing (LaBarbera & Rosenber, 1989), possessing sales training deficiencies (McCartan-Quinn & Carson, 2003) and not having the capabilities to identify marketing opportunities (Stokes & Fitchew, 1997).

Notwithstanding, SMEs can have the capacity to be flexible and are capable of adapting and implementing creative change when compared to the traditional marketing frameworks that tend to be implemented by large organizations (Hill, 2001). Hogarth-Scott et al. (1996) suggested that entrepreneurs adopted stylistic

communication processes with customers and when it comes to promoting their products and services. Moreover, Stokes (2000) highlighted that selling was a prominent approach adopted by SMEs to improve customers' knowledge of the firm and its products (Marcati et al., 2008). More recently, the Internet has been adopted as a popular marketing tools (Chaffey et al., 2000), enabling SMEs to compete effectively with larger companies on the same ground (Hsieh & Lin, 1998). While word-of-mouth (WOM) is suitable for SMEs with limited resources (Hogarth-Scott et al., 1996), networking using personal contacts is also used to gain a competitive advantage (Gilmore et al., 2001; Hill & Tiu Wright, 2001; Simpson et al., 2006), to maximize marketing opportunities, to generate sales, and to develop good relationships with clients, in order to ensure sustainability (Gilmore et al., 2001).

Information Technology Capabilities (ITC)

Information technology (IT) (from word processing, to the internet, to e-business) has been increasingly recognized as a strategic tool to manage information for today's competitive business environments. Particularly, when information has become an invisible asset, helping firms to attune to changes in the environment (Barney et al., 2001). Time-based competition has placed pressure on companies to accelerate critical business processes that enable them to *make decisions fast, change direction nimbly, and figure out when to enter and exit markets* (Meyer, 2001, p.24). Consistent with Stalk (1990), the importance of time as a competitive tool has been recognized for some time. Yet, IT investment per se does not guarantee enhanced organizational performance (Wu et al., 2006) unless firms can effectively leverage IT investments by developing superior IT capability (Santhanam & Hartono, 2003) and aligning IT to organizational business strategy (Chan & Reich, 2007).

IT capability is a complex (Bharadwaj et al., 1999) and multidimensional construct (Zhang & Tansuhaj, 2007) of which can be conceptualized as *technological* (e.g., Sabherwal & Kirs, 1994; Zhou & Wu, 2010), *managerial* (Sambamurthy & Zmud, 1992) or both (Bhatt & Grover, 2005). For example, Sambamurthy and Zmud (1997) defined IT capability as a firm's ability to obtain, deploy, combine, and reconfigure IT resources to support and enhance business strategies and processes. Bharadwaj (2000) described IT capability as a firm's ability to mobilize and deploy tangible and intangible IT resources (e.g., physical IT infrastructure, technical & managerial IT

skills, knowledge) in combination with other organizational resources and capabilities. While Bhatt and Grover (2005) classified IT capabilities into *value capabilities* (i.e., IT infrastructure), *competitive capabilities* (i.e., IT business experience, relationship infrastructure), and *dynamic capabilities* (i.e., intensity of organizational learning), Zhang and Tansuhaj (2007) proposed an IT capabilities model consisting of *IT architecture*, *IT infrastructure*, *human IT resource*, and *IT relationship resource*.

Extant literature shows that IT activities and capabilities can support business strategy (Chan & Reich, 2007) and improve business performance (Kyobe, 2004; Wade & Hulland, 2004) through the achievement of competitive advantage (Bharadwaj, 2000; Santhanam & Hartono, 2003; Bhatt & Grover, 2005). Although SMEs might lag behind their larger counterparts, IT adoption is no longer exclusive to big business. Research demonstrates that 66% of small businesses use the internet, 77% report that their website is essential, and up to 61% of owners/managers state that IT plays an important role in the performance of their firm (Greenspan, 2002). In line with Storey and Cressy (1995), speed of adoption of new technology (e.g. new software system) is often greater in SMEs than in large firms.

Clearly, IT capabilities can ensure the long-term survival by helping SMEs to overcome their size disadvantage (Oviatt & McDougall, 1995); providing access to external information (Morse et al., 2007); identifying new market opportunities (Davis & Harveston, 2000); enabling managers to effectively manage their customer base, and share knowledge efficiently (Levy et al., 2003); and by offering products/services closer to customers (Ives & Mason, 1990). However, any benefits derived through IT capability depend upon different strategic typologies (DeSarbo et al., 2005) and organizational business life cycles (Lester & Tran, 2008), in other words, IT capabilities are firm specific as different types of IT capabilities are utilized for different functions and purposes across different companies.

Human Resource Capabilities (HRC)

Firms must possess superior human resource capabilities and processes to survive and thrive in dynamic environments (Khandekar & Sharma, 2005). Specifically, developing knowledgeable and skilled employees through linking HRM policies and

practices, and business strategies to firm performance, enable firms to learn and capitalize on new opportunities (Ulrich & Lake, 1990); foster employee satisfaction (Khandekar & Sharma, 2005); improve organizational effectiveness (Analoui, 2002); and ultimately, increase organizational success (Kakabadse & Kakabadse, 2000).

According to Khandekar and Sharma (2005), *human resource capabilities are defined as the routines embedded in the tacit and implicit knowledge of members of an organization functioning to acquire, develop, nurture, deploy, and re-deploy human resources through HRM practices in a dynamic competitive environment* (p. 632). Similarly, Wright et al. (1998) described human resource capabilities as the embedded collective knowledge of employees developed over time, and used to manage employees' talent and behaviors to meet organizational objectives and create value. In contrast, Karami et al. (2008) identified human resource capabilities as consisting of skilled human resources, innovative human resources, human resource effectiveness, human resource commitment, and training of people. Extending this perspective, Analoui (2002) noted that managerial skills characterized human resource capabilities based on tasks, people, self-development, and analytical aspects.

Barney and Wright (1998) emphasized that *all the knowledge, experience, skill and commitment of a firm's employees and their relationships with each other and with those outside the firm* (p. 32) are essential for firm success. Yet, *the most enduring and the most difficult thing to achieve is gaining competitive edge from improved organizational capability of people, organizational capability being a business's ability to establish internal structures and processes that influence its members to create organizational-specific competencies and thus enable the business to adapt to changing and strategic needs* (p. 40). There is a general consensus that SMEs lack the capacity to develop HRM practices (Bacon & Hoque, 2005) for developing effective human resource capabilities. Although their HR practices tend to be informal and ad hoc (Mayson & Barrett, 2006), most SMEs exhibit either formal or informal HR practices (Cardon & Stevens, 2004).

Taking a somewhat contrasting stance, Cully et al. (1999) argued that *small workplaces do not operate in a purely informal manner* (p. 272). Almost five decades earlier, Katzell (1962) proposed that because SMEs vary in size, it is inevitable that

they will exhibit different level of formality in their HRM practices. Thus, informality is not universally applicable to SMEs as variations in the adoption of HRM practices are attributable to both internal and external firm influences (Scase, 1995). For instance, innovative HRM practices might centre around recruitment through informal channels and network (Marlow & Patton, 1993; Carroll et al., 1999), newspaper ads and walkins (Hornsby & Kuratako, 2003), word-of-mouth (Kotey & Sheridan, 2001; Marchington et al., 2003); on-the-job training (Gilbert & Jones, 2000; Kotey & Sheridan, 2001); intrinsic rewards (Barrett & Khan, 2004); employee involvement in decision making (Zheng et al., 2009); use of professional employer organizations to provide HR services (Cook, 1999); and engagement of contingent labor such as temporary workers and interns (Cardon, 2003).

Unlike conventional assets, strategic human resource capabilities as a form of intellectual or firm capital, are largely invisible, and do not appear on a firm's balance sheet (Tomer, 1987; Analoui, 1998). It is worth noting, however, that human resource capabilities are difficult to identify and will decay as a consequence of the loss of valued employees, inadequate training, and ineffectual retention capacity. Accordingly, maintaining and reviewing HR policies and practices are essential for ensuring the continued development of human resource capabilities (Ulrich & Lake, 1991) in the face of dynamic environments.

In conclusion, SMEs are vulnerable to changes (Schindehutte & Morris, 2001) and operate with heightened uncertainty in their external environment (Storey, 1994). Yet, a number of SMEs possess characteristics that allow them to thrive. Their frequent exposure to environmental turbulence have made them hidden champions in their markets (Simon, 1996). According to Kitching et al. (2009b), SMEs are resilient in varying degrees, depending on their resources, capabilities and abilities to adapt to challenges. Despite resource constraints, SMEs can exert an influence on their performance and survival by means of their organizational resources, acquisitions and mobilization activities (Kitching et al., 2009a). Specifically, the inherent strength of their organizational behavior and characteristics such as flexibility, adaptability, and innovation (Vossen, 1998) are considered to be important drivers in the development of resilience, and ultimately sustainable businesses (Moore & Manring, 2009). Ismail et al. (2011) stated that SMEs are in a relatively strong position to deal with

turbulence owing to their high level of operational agility. As a result, it is important to identify their strategies along with other antecedents necessary for achieving resilience capabilities that help SME to remain sustainable and maintain long-term firm performance (Kitching et al., 2009b). The theoretical framework of resilience capabilities is discussed in the following chapter.

Chapter 3

Theoretical Conceptualization

Overview

This chapter establishes a theoretical foundation for resilience capabilities, comprising the dimensions of adaptability, agility, anticipatory ability, and flexibility. Chapter 3 begins with a detailed discussion of each dimension including an outline of contextual and background information, definitions, frameworks, and the relationship of these dimensions to environmental turbulence and firm performance. Next, a discussion of the theory underlying this thesis and the antecedents (i.e., dynamic, marketing, information technology, human resource capabilities) to resilience capabilities is provided. This chapter concludes with a proposed research model, involving the relationships between DC, MC, ITC, HRC, resilience capabilities, environmental turbulence, and firm performance.

Despite the contribution of extant literature on resilience capability (e.g., Coutu, 2002; Hamel & Välikangas, 2003; Reinmoeller & van Baardwijk, 2005), the majority of research remains conceptual with a limited number of investigations testing proposed theories in business settings. This limitation propelled the present investigator to examine how resilience capabilities (i.e., adaptability, agility, anticipatory ability, and flexibility) impact on firm performance and the extent to which environmental turbulence influences links between resilience capabilities and firm performance. The following section reviews pertinent literature leading to the development of a proposed model, tested in Study 1.

Four Dimensions of Resilience Capabilities

Adaptability

No company can remain completely static over time without having make changes or adjustments to its operating business model (Schindehutte & Morris, 2001). Managers constantly need to adapt in the form of technology, organizational structure, and business process (Tuominen et al., 2004). Consistent with Miles and Snow (1978), firms must constantly refine and modify the mechanism(s) in an attempt to *rearranging the roles and relationships plus their decision making and control processes* (p. 3), particularly in dynamic environments. According to McKee et al., (1989), adaptability can be viewed as an organizational counterpart to environmental dynamism (McKee et al. 1989). Specifically, adaptability is identified as a source of sustainable competitive advantage (Powell, 1992) and for developing solid relationships with suppliers and customers (Hallen et al., 1991).

Adaptability, a term with a long history in biology, relates to the ways in which living systems achieve goodness of fit (Stoica et al., 2003). In the business context, adaptability lies within the realm of contingency theory, and refers to the interface between an organization and its environment (Hallen et al., 1991). Adaptive firms demonstrate a capacity to identify emerging opportunity or threat (Moorman & Miner, 1997), to change resource acquisition and allocation with respect to new strategy developments and implementation under changing environmental conditions (Ford, 1982; Frazier et al., 1988). In other words, the effectiveness of an organization is dependent upon the congruence between the elements comprising an organization and the demands of its environment (McKee et al. 1989).

Definitions of adaptability

A number of terms have been used interchangeably with adaptability which concerns the ways in which firms adjust to changing environments. Within the context of market orientation, Kohli and Jaworski (1990) and Jaworski and Kohli (1993) highlighted the importance of a firm's responsiveness to change. In contrast, Boynton and Victor (1991) referred to this same business behavior as flexibility. Similarly, Ackoff (1977) argued that firms cannot adapt effectively without promoting flexibility through changes in organizational design.

Adaptability has been employed in a number of ways, ranging from simply *change* including both proactive and reactive behavior (Miles & Snow, 1978) to a more specific description such as: reactions to environments (Astley & Van de Ven, 1983). According to Ashford (1986), adaptability is a firm's ability to change its structures, behaviors, and design to fit a specific environment. Similarly, Koberg et al. (2000) stated that adaptability is geared to maintaining and improving organizational performance through modification of organizational strategies, structures, and processes that align with the environment. Hrebiniak and Joyce (1985) described adaptability as the capability of an organization to adjust to changes or to identify and capitalize on emerging market opportunities in the environment (Miles & Snow, 1978; Chakravarthy, 1982).

Adaptability is best viewed as continuous rather than dichotomous concept (Miles & Snow, 1978; Chakravarthy, 1982; Tuominen et al., 2004) and varies across firms (McKee et al., 1989; Tuominen et al. (2004). For example, Schindehutte and Morris (2001, p. 85) stated that *strategic adaptation in small businesses as substantive modifications of core elements that constitute the business concept as the venture evolves*. This view suggests that *firms can develop and maintain different types and degrees of adaptability* (Tuominen et al., 2004, p. 495) based on associated costs and benefits associated with its development (Oktemgil & Greenley, 1997). For the purpose of this thesis, adaptability is defined as *a firm's ability to continuously adapt and adjust to changes in the face of turbulent environments*.

Adaptability framework

Abernathy and Wayne (1974), Miles and Snow (1978), and Weick (1979) were possibly the first researchers to develop concepts and models explaining adaptive behavior and the way companies respond to their respective environments. Miles and Snow (1978) introduced a strategic typology based on a continuum of increasing levels of adaptability, moving from the position of reactor, to defender, analyzer, and to prospector. These positions can be regarded as different types of adaptable responses to change.

Reactors are those companies that demonstrate the lowest level of adaptability usually as a result of an absence of a strategic orientation and a failure to sense and respond to

market changes. Typically, such firms have an inability to articulate clear strategies, inappropriately link their strategies to organizational structures and processes, and have a tendency to maintain an organizational status quo regardless of external environments (Miles & Snow, 1978). Defenders, on the other hand, tend to have a mechanistic organizational design, emphasizing operational efficiency through the selection of stable and narrowly defined markets. Conversely, analyzers participate in market scanning and research in order to identify emerging opportunities by observing and learning from mistakes of other firms (McKee et al. 1984). Finally, prospectors with an organic organizational structure (Lengnick-Hall & Beck, 2005) tend to place an emphasis on researching and communicating with the market by a mean of identifying and capitalizing on emerging opportunities. In general, reactors and defenders base their strategies predominately on internal organization considerations, while analyzers and prospectors seek and utilize external information (Stoica et al., 2003).

Extending Chakravarthy's (1982) earlier work on adaptive stages (i.e., unstable, stable, neutral), Chakravarthy and Lorange (1984) argued that strategic adaptation can be managed through four distinctive models, including *centralized strategic planning*; *decentralized strategic planning*); *decentralized decision making guided by corporate portfolio planning*; and *the dual focus*). Each of which possessing a set of unique administrative arrangements (i.e., organizational structure, planning systems, performance measurement & reward system) and are based on two strategic processes: adaptive generalization (i.e., strategic responses to future environments) and adaptive specialization (i.e., fine tuning firm strategies to better fit with its current environment (Chakravarthy, 1982). Each model describe ways in which firms manage strategic adaptation in terms of trade-offs between their short-term and long-term interests. The type of model or approach of a firm is dependent on the contextual factors such as management styles, portfolio and financial pressures, organizational culture, and skill level and orientation of managers. Accordingly, no one model is superior to another, because contingency factors determine the type of administrative arrangement which is best suited for a particular firm (Chakravarthy & Lorange, 1984).

By way of contrast, Oktemgil and Greenley (1997) characterized adaptability in terms of three organizational activities: *company response to product-market opportunities*, *marketing activities for responding to these opportunities*, and *speed of response in pursuing these opportunities* (p. 447). *Company response to product-market opportunities* reflects adaptability in terms of spread of markets and products. In other words, the ability of a company to adapt to particular product-market scoping such as specific product modifications, and product customization for specific customers (Hallen et al., 1991). In line with Miles and Snow's (1978) strategic-based typology, low adaptability is characterized by an internal focus that results in a narrow product-market. A high level of adaptability is associated with an external focus that results in a wider product-market scope as a consequence of exploiting opportunities, and an ability to adapt to further market changes (McKee et al., 1989). *Marketing activities* relate adaptability to a firm's level of investment in marketing activities (e.g., resources allocation to marketing) (e.g., Miles & Cameron, 1977; Chakravarthy, 1982). *Speed of response* refers to the speed of change of the marketing mix in order to maintain or improve alignment with changing market conditions (Oktemgil & Greenley, 1997).

In summary, research on organizational adaptation has examined a range of behaviors that firms employ to respond to environmental change, uncertainty, and surprise (Chakravarthy 1982; Jennings & Seaman, 1994). Such responses can be associated with the development and establishment of long-term adaptive relationships between customers (e.g., their needs) and suppliers (e.g., their capabilities) (Hallen et al., 1991). Other possible ways to develop adaptability might include being able to maintain multiple suppliers, engage in joint ventures or development projects (Chakravarthy, 1982); adjust to technological changes and procedures to produce or deliver products and services (Boynton & Victor, 1991); to develop new values and norms which form part of culture of the company (Volberda, 1997); an ability to use different capabilities to satisfy the needs of specific situations (Bahrami, 1992); and to promote decentralization, openness to experimentation, and innovation within the organization (Chakravarthy, 1982).

Relationships between adaptability, environmental turbulence, and firm performance

Firms survive or fail as a function of their fit in the marketplace (Schindehutte & Morris, 2001). According to McKee et al. (1989), the level of adaptability needed depends upon their level of environmental dynamism. Specifically, environmental conditions dictate the adjustments firms make to their strategies and structure (Schindehutte & Morris, 2001). In line with Miles and Snow (1978), strategy typology provides a classification on different strategies adopted in response to different environmental conditions. For example, reactors tend to rely on organizational buffers to protect themselves from adverse consequences (Lengnick-Hall & Beck, 2005) and rarely adjust their technology, structure, or operational methods (Chakravarthy, 1982). Owing to a limited ability to recognize and adapt to market changes, defender firms, focus on cost reduction and narrow product markets in order to defend against changes in the environment. Analyzer firms, on the other hand, tend to operate in stable markets through replicating products and markets by others (Miles & Snow, 1978). Conversely, prospectors pursue broad product markets and frequently creating change in order to reduce vulnerability to the environment.

Similarly, Chakravarthy (1982) conceptualized adaptability based on degree of adaptation to different levels of environmental complexity. Firms occupying the *unstable stage* hold a *defensive strategic posture* (Lengnick-Hall & Beck, 2005) that has effect of reducing the interaction between a firm and its operating environment. These qualities are suitable for slow and predictable environments (Lengnick-Hall & Beck, 2005). Enterprises occupying the *stable stage* incorporate *reactive strategies* (Lengnick-Hall & Beck, 2005). Firms in this stage are open to changes in the environment, and have adequate resources to sense and react to environmental shifts in a ways to safeguard resources. However, they are liable to be constrained by their own bureaucratic nature of administrative arrangement. These firms are geared to operate in environments involving moderate levels of complexity (Lengnick-Hall & Beck, 2005). *Neutral stage* companies tend to adopt a *proactive strategies* (Lengnick-Hall & Beck, 2005) that enable firms to withstand high levels of environmental changes owing to their ability to anticipate changes. This category of firms usually possesses higher level of adaptability that enables them to capitalize on external shifts in highly complex environments (Lengnick-Hall & Beck, 2005).

Although adaptability is critical for firms to adapt to an unexpected change in the environment, different levels of adaptability tend to have varying performance implications (Oktemgil & Greenley, 1997), depending on the perceived level of turbulence (Stoica et al., 2003) and prior experience with change (Venkataraman & Van de Ven, 1998). According to Chakravarthy (1982), the higher the level of complexity that can be handled by a firm, the higher is its level of adaptability and higher the chances of its long term survival.

Takii (2007) found a positive relationship between adaptability and the average profit rate and the market value of a firm. However, such relationships tend to be non-linear (Bourgeois, 1980; Snow & Hrebiniak, 1980; McKee et al., 1989), shifting from positive to negative (Bourgeois, 1980). Despite non-significant differences in performance among types of strategy typology (Miles & Snow, 1978), Snow and Hrebiniak (1980) found that analyzers have highest mean performance among defenders and prospectors because analyzers are able to strike a balance between adaptive and efficiency needs. Notwithstanding, enterprises that display too strong or too weak adaptability can demonstrate negative levels of firm performance (Stoica et al., 2003). This observation suggests that firms that are most adaptable do not necessarily yield the highest performance as over-adaptation can result in difficulty changing as more elements are adapted to each other (Jahre & Fabbe-Costes, 2005).

In contrast, Jennings and Seaman (1994) examined the performance of Texas saving and loan industry in terms of their optimum strategy-structure match during times of environmental dynamism and munificence. Results indicated that firms with an optimum strategy-structure fit tend to have a higher performance than those without an optimum strategy-structure alignment. These findings support the notion of equifinality that there is no one best strategy or structure to match with a given industry environment (Jennings & Seaman, 1994).

Agility

Turbulence and uncertainty in the business environment have become the main causes of business failure (Stratton & Warburton, 2003). Particularly, globalization, intense competition, market fragmentations, and accelerated technological advancements necessitate firms to speed up crucial business processes (Ashrafi et al., 2005), to make

fast decisions, to change direction nimbly (Meyer, 2001), *and to transform their business models more rapidly, more frequently and more far-reachingly than in the past* (Doz & Kosonen, 2010, p.370). In other words, firms that have the capability to be agile maintain a strategic dominance (D'Aveni, 1999), and to operate profitably in a competitive environment of continually, and unpredictable changing market opportunities (Goldman et al., 1995). Such firms embrace changes (Kidd, 2000) as a matter of routine (Vokurka & Fliedner, 1998) and are founded on structures and processes that facilitate speed, adaptation, and robustness (Kidd, 2000).

The concept of agility was first introduced by the Iacocca Institute of Lehigh University by Goldman and Preiss in 1991, focusing on manufacturing systems in which competitiveness has shifted from mass production to the *era of agility* (Tsourveloudis & Valavanis, 2002). In a review of literature, Huang and Li (2009) identified the evolution of agility as encompassing four stages. *Stage 1* concerns about the development of the concept of agility and meaning of agile manufacturing (1991-1997); *Stage 2* relates to the process of achieving agile manufacturing (1996-2004); *Stage 3* examines the repositioning of agility in supply chains and compares this construct with other paradigms (1999-2007); *Stage 4* provides a concrete interpretation of the methods for achieving or measuring agility in disciplines beyond manufacturing (2006-present).

Likewise, Bottani (2009) identified agility as encompassing into four categories. ***Category 1*** relates to the characteristics of agile companies or simply the *attributes* or *capabilities* that aim to provide a clear definition of agile companies (Goldman et al., 1995; Gunasekaran, 1998; Yusuf et al., 1999). For example, Yusuf et al. (2000) developed a comprehensive set of thirty-six attributes of an agile enterprise, ranging from *core execution of activities* to *employee satisfaction*. ***Category 2*** refers to the *enablers* of agile manufacturing. ***Category 3*** provides a conceptual model of implementing agility, linking *agility drivers* to *enablers* and *providers* (Gunasekaran, 1998; Sharifi & Zhang, 2001). ***Category 4*** identifies methods of evaluating agility.

Definitions of agility

Defining agility has been fraught with difficulty possibly because this construct has been associated with adaptability and flexibility. Definitional confusion regarding

these three constructs can be attributed to their prominence in research concerning turbulent, unpredictable, and increasingly dynamic business environments. As well, these constructs are generally considered as an ability to adjust and respond to change (Sherehiy et al., 2007). However, there are fundamental differences among these established concepts. Adaptability emphasizes how a firm's organizational form, structure, and degree of formalization impacts on its ability to adapt (e.g., Miles & Snow, 1978; Chakravarthy, 1982; Hallen et al., 1991). Flexibility relates to an ability of a firm to adjust or change its internal structures and processes in response to environmental changes (e.g., Eardley et al., 1997; Reed & Blundson, 1998; Zhou & Wu, 2010). Agility focuses on effective response times (Gunasekaran, 1999) through rapid and proactive adaptation (Kidd, 1994) of organizational elements to environmental uncertainty and unpredictability. In essence, agility entails a preparedness or readiness to fluctuations in environments, and is growth-oriented, and context-specific (Vokurka & Fliedner, 1998)

An important attribute of agility is the effective and rapid response to change and uncertainty (Kidd, 1994). Specifically, agility is an ongoing process or routine associated with the nimble movement of part or of the entire enterprise (Tsourveloudis & Valavanis, 2002). According to Goldman et al. (1995), agility is defined as a firm's ability to rapidly respond to changes in uncertain business environment by delivering value to customers, being ready for change, valuing human knowledge and skills, and developing virtual partnership. Similarly, Kidd (1994) defined agility as rapid and proactive adaptations of organizational elements to unexpected and unpredictable changes. Tallon and Pinsonneault (2011) referred to agility as an ability of firms to easily and quickly change or revise their strategy. In contrast, Cho et al. (1996) described agility as the capability to survive and prosper through quick and effective reactions and by taking advantage of changes as opportunities arise in continuously changing and unpredictable environments (Sharifi & Zhang, 1999; McCann, 2004; Jamrog et al., 2006). Similarly, Conboy and Fitzgerald (2004, p.37) stated that agility was *the continual readiness of an entity to rapidly or inherently, proactively or reactively, embrace change, through high quality, simplistic, economical components and relationships with its environment*. This view captures an organization's ability to manage and adjust to continuous change and is tied to the frequency and tempo of environmental shifts. Particularly,

those that are geared to preparing organizations to embrace relentless change by generating a range of resource and capability alternatives; developing skills for aligning, realigning, and mobilizing resources; taking resolute action; and removing barriers to change (D'Aveni, 1994; Brown & Eisenhardt, 1997). Consistent with Christopher (2000), agility is a company-wide practice that encompasses organizational structures, logistical processes, information systems, and employee mindsets. In other words, organizational responsiveness to change requires the coordination of activities within a company (Sambamurthy et al., 2003) and the actions taken in relation to relevant information garnered and filtered (Kohli et al., 1993). For the purpose of this thesis, agility is defined as *a firm's ability to respond quickly and effectively to threats and opportunities in the face of turbulent environments.*

Agility framework

Several different frameworks for assessing agility can be found in the literature (e.g., Goldman et al., 1995; Yusuf et al., 1999; Sharifi et al., 2001; Doz & Kosonen, 2010). Goldman et al. (1995) developed four main strategic dimensions, underlying the achievement of agile competitive capabilities based on the association of agility dimensions with current and future organizational operations. The four dimensions of agility include *enriching the customer; cooperating to enhance competitiveness; organizing to master changes; and leveraging the impact of people and information.* *Enriching the customer* entails a quick understanding of and rapid delivering value and solutions to the unique requirements of individual customers. *Cooperating to enhance competitiveness* means intraorganizational and interorganizational cooperation such as supplier partnerships or firm alliances. The objective is to bring products to market rapidly, to maintain costs effectively, and to exploit specific market opportunities. *Effective mastering of change* necessitates flexible organizational structures that enable rapid redeployment and reconfiguration of human and physical resources. *Leveraging the impact of people, information and technology* focuses on the importance of employees through emphasizing education, training and empowerment.

Based on three key organizational aspects (i.e., manufacturing, product, market), Jackson and Johansson (2003) classified agility capabilities into four dimensions.

Product-related change capabilities refer to product-related strategies and operations required to respond to market changes and uncertainty. *The change competency within operations* focuses on competencies, methods, and tools adopted for managing long- and short-term product system change. *Cooperation* relates to internal and external cooperation. *People, knowledge, and creativity* relates to the recognition of employees' knowledge and ability as the foundation for all actions in turbulent markets.

Consistent with these frameworks, Tallon and Pinsonneault (2010) characterized agility in terms of *customer agility* (i.e., responsiveness to changes in demand, innovation, pricing), *business partnering agility* (i.e., adaptiveness of supplier networks), and operations agility (i.e., *response time to new product launches by rivals, market expansion, changes in product mix, the adoption of new production IT*) (p. 473). While Doz and Kosonen (2010) conceptualized strategic agility as three meta-capabilities including strategic sensitivity, leadership unity and resource fluidity.

Despite some authors (e.g., Goldman et al., 1995; Jackson & Johannson, 2003; Tallon & Pinsonneault, 2011) focusing on strategic agility, other researchers emphasize agility in the manufacturing sphere (e.g., Yusuf et al., 1999; Sharifi et al., 2001) or supply chain area (e.g., Lau et al., 2003; Yusuf et al., 2004). For example, Yusuf et al. (1999) developed a conceptual framework for agile manufacturing (AM), linking three aspects of agility (*elemental, micro-, and macro-agility*) to different levels of an organization. This framework was developed based on four core concepts of AM, that is, core competence management, virtual enterprise formation, capability for re-configuration, and the so-called knowledge-driven enterprise.

Alternatively, Sharifi et al. (2001) provided a holistic AM framework, describing interrelationships between *agility drivers, strategic abilities, agility providers, and agility capabilities*. Their conceptual model shows that companies can be driven by *agility drivers*, associated with the characteristics of the external environment (e.g., turbulence, unpredictability) that force firms to revise their current strategies. *Strategic abilities* (i.e., responsiveness, competency, quickness, flexibility) are key attributes for firms when successfully dealing with changes and can be achieved by the means of *agility providers*. Although *agility providers* can be found in

organization via their technology, people, and innovation, they can only be achieved by integrating these areas (Kidd, 1994). Agility capabilities include responsiveness, competence, flexibility, and quickness, necessary ingredients for responding to changes in environments.

Other methods used for measuring agility include weighted indices that focus on the intensity levels of a company's agile capabilities (Van Hoek et al., 2001, Yusuf et al., 2001); analytic hierarchical processes (AHP) (Ren et al., 2000); and so-called agility evaluation index for mass customized (MC) products, the measure of which compares the weighted sum of a company's performance with its agile capabilities (Yang & Li, 2002). Lin et al. (2006) classified agility-enablers into four categories, proposing that firms can achieve agility through *collaborative relationship*, *process integration*, *information integration*, and *customer/marketing sensitivity*. *Collaborative relationship* as a supply chain strategy with buyers and suppliers enable collaborative work, joint product development, information sharing, and a streamlining of operations (Lin et al., 2006). Collaborative relationships are particularly important, when companies do not possess the necessary resources required to meet certain opportunities (Lin et al., 2006). *Process integration* pertains to linking supply chain partners into a network. *Information integration* refers to effectively creation of virtual supply chain by adopting information technology to share data internally and externally to firms. *Customer/marketing sensitivity* relates to the development of mechanism to read and respond to real customer demand and requirements, and to master change and uncertainty in the business environment. Other enablers include *physically distributed teams and manufacturing*; *concurrent engineering*, and *integrated product/production/business information systems*; *rapid prototyping tools*, *electronic commerce* (Gunasekaran, 1998, p. 1226); development external relationships and partnerships (Gulati, 2010); involvement of key people in decision making; provision of training and job enrichment (Crocitto & Youssef, 2003; Peterson et al., 2003), implementation of reward systems (Crocitto & Youssef, 2003); and reduction in jobs and management layers, and outsourcing or off-shoring (Peterson et al., 2003),

Relationships between agility, environmental turbulence, and firm performance

Agility is considered as the dominant solution for maintaining competitiveness in turbulent and volatile environments (Sharifi & Zhang, 2001). Time-based competition necessitates firms to develop *the ability to quickly recognize and seize opportunities, change direction, and avoid collisions* (McCann, 2004, p. 47). According to McCann et al. (2009), environmental turbulence can be well managed by building agility and resiliency in which agility has a stronger relationship with competitiveness, versus resiliency with profitability. Similarly, Sambamurthy et al. (2003) argued that agility can improve firm performance by expanding a firm's competitive actions, and control market risk and uncertainty (Sambamurthy et al., 2003; Fichman, 2004; Benaroch et al., 2006).

Tallon and Pinsonneault (2011) demonstrated a positive and significant association between agility and performance. Additionally, environmental volatility positively moderates the influence of agility on return on assets (ROA), net margins, and the ratio of operating income to assets (OI/A). In other words, agility shows substantial impact on firm financial performance in volatile markets. Likewise, Roberts and Grover (2012) revealed a significant impact of agility on firm performance (i.e., marketing, growth in sales, profitability, market share). In particular, firm experience high levels of performance when demonstrating high levels of customer sensing capability and medium levels of responding capability.

Accordingly, research shows that when companies embrace and or adopt an agile position as part of their strategic management (Lin et al., 2006), they highly likely to develop efficient and quick reactions to changes in market; develop customized products and services; produce and deliver new products in a cost effective manner (Swafford et al., 2006); increase their competitiveness; decrease production costs; remove non-value added activities; and increase customer levels of satisfaction (Lin et al., 2006). Other benefits include an increased pace of innovation, profitability associated with new market expansion (Meyer, 1982; Nohria & Gulati, 1996), and improved market share (Sambamurthy et al., 2003).

It is worth noting that agility per se does not contribute to firm performance (i.e., profitability), rather firms are required to have a wide range of viable actions (e.g.,

Volberda, 1996) and the ability of managing and applying knowledge effectively in decision making (Dove, 1999). Consistent with the views of Perlow et al. (2002), speed alone does not contribute to better performance such as cost effectiveness, quality, and time to market. In uncertain and turbulent business conditions, firms need to have a wide range of viable actions (e.g., Upton, 1995; Volberda, 1996), and demonstrate ability to manage and apply knowledge effectively when making decisions (Dove, 1999). Additionally, it appears that agility has different influences on firm performance, depending on the extent, types, and rate of environmental turbulence (Tallon & Pinsonneault, 2011). Specifically, agility is domain-specific (Sambamurthy et al., 2003). For instance, agility resilience capability is less likely to lead better performance in a stable business environment than in market conditions that are more volatile and unpredictable (Tallon & Pinsonneault, 2011). In the words of Schrage (2004, p. 40), *successful companies know there are times when agility is called for and times when it's not.*

Anticipatory ability

Increasing complexity in today's business environment poses a significant challenge for organizational strategy making (Reeves & Deimler, 2011) and a firm's state of preparedness for adversity (Mitroff & Alpaslan, 2003). According to Mitroff and Alpaslan (2003), only 5-25% of the *Fortune 500* companies are crisis prepared and less than 20% of global companies have sufficient ability to capture forthcoming threats and opportunities (Schoemaker & Day, 2009). Resilient firms tend to maintain and constantly review their operating environments and ongoing operations (Hrebiniak & Joyce, 1985). Specifically, these firms are likely to detect and act on the early signals of change (Schoemaker & Day, 2009) through making sense of weak signals (Hrebiniak & Joyce, 1985; Schoemaker & Day, 2009); and to anticipate events and to simulate possible unexpected events (Weick & Sutcliffe, 2001). Consistent with Wildavsky (1991, p.70), in order to become resilient, firms require an *improvement in overall capability, this is, a generalized capacity to investigate, to learn, and to act, without knowing in advance what one will be called to act upon* (Wildavsky, 1991, p.70). For example, identification of strategic options (flexibility) depends on a firm's sensing abilities (Johnson et al., 2003). Agile firms, however, tend to move *quickly, decisively, and effectively in anticipating, initiating and taking advantage of change* (Jamrog et al., 2006, p.5).

Data-driven strategies have become increasingly important drivers of competitive differentiation (Barton & Court, 2012), and improvements in information and analytics are considered to be a top priority in current business environments (LaValle et al., 2011). Notably, a significant increase in volume, velocity, and variety of data across the internet, mobile phone applications, and social platforms (McAfee & Brynjolfsson, 2012) provides firms with an opportunity to expand insights (Barton & Court, 2012) and make decisions based on evidence rather than intuition (McGrath & MacMillan, 2009). According to Shah et al. (2012), decision makers can be classified into visceral decision makers (i.e., using gut feeling or intuition); informed skeptics (i.e., applying judgement to analysis); and unquestioning empiricists (i.e., use analysis over judgement). Through data exploitation, firms are able to develop good risk-based (Posner & Hopkins, 2009) and informed decisions (Comfort et al., 2001); to make accurate predictions, and to improve profitability (McAfee & Brynjolfsson, 2012). Slater and Narver (1994) argued that creation of superior customer values requires a detailed understanding and assessment of consumers' entire value chain over time (anticipated need) in order to fulfil their current and future needs. Navarro (2009) suggested that firms can develop competitive advantage and outperform their rivals by forecasting the business cycle using daily financial data.

Definitions of anticipatory ability

Resilience is characterized by both exploiting and exploring new alternatives (March, 1991). According to Wildavsky (1988), anticipation as a source of resilience, concerns dealing with uncertain and unexpected situations. Anticipation refers to a firm's ability to actively predict and forecast the future in order to prevent failures. Weick and Sutcliffe (2001) argued that resilient firms are likely to anticipate events, an ability to detect unexpected conditions through monitoring and simulating approaches. El Sawy (1985) described early warning and anticipation as strategic scanning, the acquisition of information in the business environment in order to identify and understand strategic threats and opportunities (Aguilar, 1967).

LaValle et al. (2011) indicated that data analytics (e.g., scenarios and simulations) provide guidance for both day-to-day operations and future optimal organizational actions to be taken when disruption occurs. Barton and Court (2012) demonstrated that firms master their environment by exploiting data and analytics for decision

making. Other enterprises utilize sensing capability or sense making which can be regarded as a firm's ability to detect environmental change; to identify emerging opportunities (Overby et al., 2006); or to seize those competitive market opportunities in turbulent environments (Sambamurthy et al., 2003). Examples of sensing environmental changes include a firm's ability to sense competitors' actions, consumer preference changes, economic shifts, regulatory and legal changes, and technological advancements (Overby et al., 2006).

In comparison, Lau et al. (2014) described sense making as an iterative cognitive process, consisting of information gathering and representation, insight and new knowledge development. Likewise, Schoemaker and Day (2009) referred it as an interpretation in the process of capturing weak signals; or a motivated and continuous effort to anticipate the trajectories of relationships among people, places, and events, in order to act effectively (Klein et al., 2006). In this thesis, anticipatory ability is defined as *a firm's ability to identify and anticipate threats and opportunities in the face of turbulent environments through regular monitoring, sensing and exploiting information from various sources.*

Anticipatory ability framework

Exploiting vast new flows of information can radically improve your company's performance (McAfee & Brynjolfsson, 2012, p.61) through effective forecasts and decisions. Yet, some firms are more prescient than others when identifying and capturing distant threats and opportunities (Schoemaker & Day, 2009). According to El Sawy (1985), the strategic scanning behavior of small to medium-sized companies can be classified into four categories based on proactive and reactive data searching procedures. First, passive or *no scanning* (reactive) refers to unsolicited information. Second, *problemistic search* (reactive) involves actively searching for solutions to specific problems. Third, *coincidental surveillance* (proactive) relates to unanticipated surveillance of non-habitual information sources. Fourth, *routine monitoring* (proactive) involves the systematic surveillance of habitual information sources on regular basis.

Schoemaker and Day (2009) proposed a framework, focusing on developing peripheral vision (i.e., interpreting weak signals) to forecast the future. Their three-

stage conceptual framework includes *scanning for weak signals*, *sense-making*, and *probing and acting*. Scanning for weak signals (i.e., actively surface weak signals) involves tapping local intelligence, leveraging extended networks and mobilizing search parties. Sense-making (i.e., amplifying interesting signals) concerned with testing multiple hypotheses, canvassing the wisdom of the crowd, and developing diverse scenarios. Probing and acting (i.e., probing further and clarifying) includes *seeking new information to confront reality*, *encouraging constructive conflicts*, and *trusting seasoned intuition* (p.84). By way of contrast, Barton and Court (2012) emphasized the importance of choosing the best data from creative and multiple sources, building analytics models for predicting and optimizing business performance outcomes, and transforming organizational capabilities (e.g., capability to exploit big data) for better decisions making.

Hrebiniak and Joyce (1985) claimed that resilient companies proactively search for evidence to respond to a wide range of events and to make sense of weak signals to minimize adverse outcomes. These companies adopt a five ongoing interrelated behavioral processes, consisting of 1) engaging in proactive and preemptive analysis of vulnerabilities; 2) questioning assumptions to develop a full picture; 3) discussing capabilities to ensure performance; 4) attempting to collectively learn from mistakes, and 5) transferring decisions to others with the greatest expertise. Navarro (2009) argued that managers and firms can anticipate downturns and reduce the impact of a recession through managing business cycle strategically. By focusing three key organizational activities, firms are able to anticipate key movements and turning points in the business cycle, in turn, enhancing business performance. Three key activities include: developing and utilizing forecasting capabilities; applying timely business cycle management strategies (e.g., marketing & advertising, pricing the cycle, capital expansion & modernization); and building a recession-proof organization (e.g., a strong business-cycle orientation; a facilitative organizational structure, supportive organizational culture).

By way of contrast, Reeves and Deimler (2011) identified four organizational capabilities for achieving sustainable competitive advantage in turbulent environments. Specifically, firms that thrive tend to read and quickly act on signals of change from external environments; to experiment frequently and rapidly with

operational (e.g., new products & services) and strategic (e.g., business models, processes & strategies) activities; to manage complex and interconnected systems of customers and suppliers to leverage assets and capabilities; and to motivate employees and partners to detect changes in the environment for rapid and proactive responses.

Although it is impossible to plan for all crises, Mitroff and Alpaslan (2003) developed a crisis tool kit to help firms to think about the unthinkable. Specifically, this kit is designed to enable firms to prepare effectively for abnormal accidents a) by thinking about abnormal crisis scenarios at random (wheel of crises), b) training employees to imagine the worse (so-called internal assassins), c) applying metaphors and lexicons of other industries (mixed metaphors), and d) by bringing in outsiders (spy games). Similarly, firms that utilize multiple lenses and talk to customers and suppliers are able to explore and verify weak signals in order to reduce biases and identify new opportunities (Schoemaker & Day, 2009).

Relationships between anticipatory ability, environmental turbulence, and firm performance

It is vital for firms to identify strategic threats and opportunities in an increasingly complex and dynamic business environment (e.g., El Sawy, 1985; Comfort et al., 2001; Mitroff & Alpaslan, 2003; Reeves & Deimler, 2011). Specifically, strategic scanning increases as environmental turbulence increases, shifting towards the surveillance modes of scanning in order to identify ill-defined settings and *uncover its nature before the problems emerge* (El Sawy, 1985, p.58). Such strategic behavior enables firms to prepare for strategic planning based on the identified trends and events in the environment (El Sawy, 1985).

Mitroff and Alpaslan (2003) examined the crisis preparedness of the *Fortune* 500 companies and classified them as *crisis prepared* (i.e., proactive) and *crisis prone* (i.e., reactive). Crisis prone companies prepare only for crises they have experienced, while crisis prepared firms develop plans for a wider range of unexpected events. Their research shows that crisis prepared (proactive) firms have less crises to handle as a result of reducing their incidence; stay in business longer (about 24% longer than crisis-prone or reactive companies); have better financial performance owing to lower

crisis-related costs; are better stewards of their assets; and have better corporate reputations.

Likewise, LaValle et al. (2011) showed that top-performing companies tend to use business information and analytics five times more than lower performers, and are twice as likely to utilize analytics in both current and future strategic decisions. Adoption of analytics enables firms to be *better prepared to turn challenges into opportunities* (p.22), and to achieve competitive differentiation, growth and efficiency (LaValle et al., 2011) in rapidly changing environments. Consistent with McAfee and Brynjolfsson (2012), data-driven companies are not only better performers based on financial and operational measures, but they are also 5% more productive and 6% more profitable than their peers.

The continuous growth of data poses a new challenge for enterprises and organizations (Schmidt et al., 2014). According to McAfee and Brynjolfsson (2012), firms face five management challenges in the areas of leadership, talent management, technology, decision making, and company culture in order to make better use of the data in decision making process (Shah et al., 2012). It is worth noting that data are not major obstacles (LaValle et al., 2011) as firms can collect more data than ever before. Instead, firms should focus on having the *right data and the right framework to analyze the data* (Posner & Hopkins, 2009, p.57) to reduce time for value creation from data analytics, and increase the likelihood of data transformation (LaValle et al., 2011).

Flexibility

Increasing uncertainties have made it more difficult for companies to plan, than ever before. Companies that embrace flexibility in their strategies (Das & Elango, 1995) are able to not only achieve and maintain organizational effectiveness (Evans, 1991; Hitt et al, 1998), but also competitive advantages (e.g., Levy & Powell, 1998; Combe & Greenley, 2004; Zhang, 2005) and superior performance (Zhang, 2005) in hypercompetitive environments (Volberda, 1996). Specifically, flexibility is a critical organizational capability that facilitates the exploitation of a diverse range of strategic options (Das & Flango, 1995; Dreyer & Gronhaug, 2004; Rudd et al., 2008) and rapid shifts from one strategy to another (Slack, 1983; Sanchez, 1995) in order to overcome

organizational inertia (Zhou & Wu, 2010), manage varied challenges and opportunities when arise (Grewal & Tansuhaj, 2001).

While research has been focused on the notion of flexibility and its importance, the application of this construct appears to be ubiquitous. Related concepts included adaptability, resilience, slack, liquidity, agility, and versatility (Evans, 1991). Albeit cross-discipline applications of the flexibility construct, such as in economics (Klein, 1984; Mills & Schumann, 1985), organizations (Carlsson, 1989; Jennings & Seaman, 1994), operations (Sethi & Sethi, 1990; Newman et al., 1993), and strategy (Sanchez, 1995), Ozer (2002) stress the importance of considering a holistic view that takes into account technology and marketing, especially when flexibility is viewed as a consequence of strategic of strategic planning (Rudd et al., 2008).

Definitions of flexibility

Flexibility, as an organizational capability, forms the basis for competitive strategy, design, development, and implementation (Dreyer & Gronhaug, 2004). Specifically, this capability serves as a strategic response to the unseen (Eppink, 1978) that focuses on the *flexible use of resources and reconfiguration of processes, reflecting one type of dynamic capability that enables companies to achieve competitive advantage in turbulent markets* (Zhou & Wu, 2010, p. 551). The concept of flexibility has been researched extensively across several areas, reflecting a diverse array of definitions across disciplines (Carlsson, 1989; Genus, 1995).

According to Eardley et al. (1997), flexibility is the ability to change direction rapidly, deviating from predetermined action. Harrigan (1985) defined flexibility as a firm's ability to reposition itself in a market, change game plans, or dismantle its current strategies. Reed and Blunsdon (1998) referred to flexibility as an ability to adjust processes and structures when respond to environmental changes. Sanchez (1995) described flexibility as rapid resource commitments to new actions in response to change, and forgoing current investment in exchange for future development. Evans (1991) suggested that flexibility is *the ability of a firm to do something other than what was originally intended* (p. 73), generating new or alternative decisions for positive organizational change and adaptation to turbulent environments (Rudd et al., 2008). Similarly, Vokurka and Fliedner (1998) argued that flexibility is an ability to

move from one task to another as a routine procedure in which every situation is defined in advance. In essence, flexibility is about keeping options open (Bowman & Hurry, 1993), modifying or changing strategies (Evans, 1991; Hayes & Pisano, 1996), having multiple responses to circumstances that arise (Phillips & Tuladhar, 2000), maleable actions (Bowman & Hurry, 1993), and holding a variety of managerial capabilities (Volberda, 1996). For the purpose of this thesis, flexibility is defined as *a firm's ability to change its predetermined strategies, capabilities, and resources in response to turbulent environments.*

Flexibility framework

Different dimensions of flexibility have been outlined in the literatures. These dimensions can be classified as *functional* such as flexibility in operations, marketing, and logistics (Kim, 1991; Lynch & Cross, 1991). For example, in manufacturing, flexibility is measured in volume, delivery, mix, and new product development (Beamon, 1999). In marketing, flexibility is examined in terms of product, volume, launch, access, and target market (Vickery et al., 1999; Swafford et al., 2006). In recent years, flexibility has been extended to activities associated with supply chains including product design and development flexibility, manufacturing flexibility, logistics flexibility, information systems flexibility (Swafford et al., 2006; Kumar et al., 2007), operation systems flexibility, and organizational flexibility (Adrian et al., 2007).

Flexibility can also be classified in terms of time horizons such as short-term (Zelenovich, 1982), medium-term (Carlsson, 1989), and long-term flexibility (Zelenovich, 1982; Carlsson, 1989); *hierarchical* such as flexibility at an operational; tactical; and strategic levels (Carlsson, 1989; Grant, 1996a; Stevenson & Spring, 2007), *object of change* like flexibility in product, mix, and volume (Martínez Sánchez & Pérez Pérez, 2005), and *degree* such as no flexibility, limited flexibility, total flexibility (Garavelli, 2003). Other types include passive and active flexibility (Eppink, 1978); external and internal flexibility (Ansoff, 1968); range and response flexibility (Kumar et al., 2008).

Notwithstanding, operationalizing flexibility can be difficult owing to its complex and multidimensional nature (Kumar et al., 2008). Evans (1991) proposed a flexible

manoeuvre approach based on two aspects of flexibility: temporal and intentional. A temporal dimension refers to the time it takes for an organization to respond to changes, consisting of *ex ante* mode (preparing in advance) and *ex post* mode (adjustment after an event). The intentional dimension refers to the degree to which organizations take an offensive or defensive action in response to environmental changes.

Building upon on these two dimensions, four types of manoeuvres were identified including: *pre-emptive*, *exploitive*, *protective* and *corrective*. As Evans (1991) and Eardley et al. (1997) discussed, pre-emptive manoeuvres involve some future tactical actions for unpredictable events. Exploitive manoeuvres take advantage of opportunities through identifying unique resources and capabilities. Protective manoeuvres relate to identifying difficult-to-imitate resources and capabilities that, are applied prior to unpredictable conditions and aim to minimize the damage caused by an unknown future. Corrective manoeuvres are associated with regenerating and recovering from survival-threatening events. In essence, measuring flexibility might require a high level of futurity and proactiveness (Combe & Greenley, 2004).

Golden and Powell (2000) expanded this framework by including range and focus as two important considerations when examining dimensions of flexibility. Their work demonstrates that an ability to change is determined by time, foreseen or unforeseen changes; offensive or defensive actions; and internal or external organizational factors. Similarly, Volberda (1996) identified four types of flexibility including steady-state, operational, structural, and strategic. These types were matched with three organisational forms (rigid, planned, flexible), three types of competitive forces (dynamic, complexity, unpredictability) and three organizational design tasks (technology, structure, culture). By way of contrast, Das and Elango (1995) argued that flexibility should be viewed in terms of cost, degree of change, and speed of change.

Alternatively, Combe and Greenley (2004) proposed a flexible cognitive approach, focusing on cognitive decision style of individual decision makers. Specifically, contrasting the impact of beliefs of decision makers on generating different forms of strategic flexibility and associated decision-making options for different changing

environments. This cognitive model draws upon rational, developmental, deterministic, probabilistic, and chaos belief systems (Nutt, 1993). While Pujawan (2004) suggested a framework for assessing supply chain flexibility based on the relationship between drivers (e.g., product life cycle) and dimensions of flexibility (e.g., product development), Nayyar and Bantel (1994) proposed a four strategy grid approach (i.e., slow specialist, fast specialist, slow generalist, fast generalist) based on the degree of flexibility and speed (Nayyar & Bantel, 1994; Volberda, 1996; De Toni & Meneghetti, 2000). From this perspective, different levels of flexibility can be identified with the fast generalist strategy showing a high level of strategic flexibility, while the slow specialist represents a low level of flexibility.

Flexibility can be regarded as a company-specific skill or resource (Dreyer & Gronhaug, 2004), and is context-specific (Evans, 1991). However, flexibility can be developed through the development of multiple sourcing (Pujawan, 2004; Swafford et al., 2006), building inventory buffers, having long-term relationships with suppliers, and by promoting internal collaboration and process integration (Mendonça Tachizawa & Giménez Thomsen, 2007), establishing networks and forming alliances with other firms; using modular product design (Das & Elango, 1995), training of multi-skilled employees (Volberda, 1996), and having alternative logistic options (Pujawan, 2004; Swafford et al., 2006).

Relationships between flexibility, environmental turbulence, and firm performance

Flexibility capability is recognized as another central requirement for the attainment of positive performance and survival in turbulent environments (Dreyer & Gronbaug, 2004). Research shows that flexibility can provide firms with the competitive advantage to respond to different environmental uncertainty and changes (Sanchez, 1995; Ahmed et al., 1996; Hitt et al., 1998; Zhang, 2005), through the development of competitive strategies (Hunt & Morgan, 1995) that enable firms to plan for major shifts in their environment (Overby et al., 2005). According to Eardley et al. (1997), the three advantages of seeking flexibility in turbulent environments include: an adeptness to respond pliantly to changing situations to enhance the chances of firm survival; the capacity to develop superior levels of efficiency through organizational activity improvements; and proficiency to develop new performance-enhancing features and exploit the first-mover advantage (Porter & Millar, 1985; Van de Ven,

1986). Likewise, Das and Elango (1995) argued that embracing flexibility at most, if not all levels of an organization enables firms to act proactively in unfavorable industry conditions through exploration and exploitation of new markets and products, quickly and efficiently, leading to improved firm performance.

Rudd et al. (2008) identified four types of flexibility (i.e., operational, structural, financial, technological) that are related positively to non-financial performance, including employee satisfaction and retention. Findings also showed that operational and financial flexibility enhanced relationships between strategic planning and financial performance (i.e., profit growth, sales growth, market share), while non-financial performance is enhanced through structural and technological flexibility. In comparison, Yuan, et al. (2010) found that coordination flexibility (i.e., effectively and efficiently integrating and deploying organizational resources) positively moderated the relationship between product innovation and firm performance (i.e., market position, sales volume, profit rate, reputation) in highly competitive environments. Moreover, Verdú-Jover et al. (2004) examined the fit between a firm's flexibility and environmental requirements on operational (e.g., variation in volume of production), structural (e.g., job enrichment), strategic level (e.g., speed of strategic change). Their findings revealed significant and positive between operational flexibility and business performance (i.e., sales growth, ROA, ROS, overall performance, growth success) in service firms. Structural and strategic flexibility were significant capabilities that impacted business performance favorably in the manufacturing sector.

Despite reports highlighting that flexibility has a substantial influence on firm performance during times of turbulence (Swamidass & Newell, 1987), contrary results have been reported (Pagell & Krause, 2004). Grewal and Tansuhaj (2001) stated that strategic flexibility has an adverse influence on firm performance before a crisis but neither in environments with a high demand nor technological uncertainty. Although flexibility is generally considered to be desirable (Das & Elango, 1995), and provides a way to *solve the problem of environmental turbulence* (Eppink, 1978, p.9), this capability is not necessarily *appropriate for all firms and in all situations* (Das & Elango, 1995, p.67). For example, plants in low uncertainty environment may require low levels of flexibility, while high levels of flexibility in high uncertainty

environment (Pagell & Krause, 2004). Consistent with Das and Elango (1995), flexibility as a strategy is less evidenced in an environment with infrequent changes as firms operating in such environment are less likely to compete effectively due to incur financial costs. Additionally, Dreyer and Gronhaug (2004) argued that different types of flexibility are important in different competitive settings. For example, firms might expect to have high level of flexibility in product strategy in high-end markets. In other words, an ability to develop limited and customized products when compared with firms in low-end markets. Similarly, other authors (e.g., Sanchez, 1995; Eisenhardt & Martin, 2000) have argued that flexibility is more important in fast-changing industries than in slow-changing industries. Perhaps, another possible reason for these confounding findings might relate to inconsistencies in definitions of flexibility which pose limitations when it comes to comparing results and drawing definitive conclusions. Furthermore, definitional confusion has culminated in different ways of operationalizing flexibility capability and subsequent problems in developing and testing theory (Pagell & Krause, 2004).

The above literature review examines, synthesizes, and integrates research relating to adaptability, agility, anticipatory ability, flexibility, environmental turbulence and firm performance, culminating in the development of a structural model of resilience capabilities in business settings. Owing to the definitional confusion, and the interchangeably use of these resilience capabilities when describing strategic responses to changes and uncertainties in the environment, their contributions to firm performance are evidenced, particularly in the times of turbulence. Additionally, it has been observed that positive firm performance can be a result of applying multiple resilience capability dimensions. For example, firms cannot adapt effectively without promoting flexibility through changes in organizational design (Ackoff, 1977). Agile responses necessitate firms to have a wide range of viable actions (e.g., Upton, 1995; Volberda, 1996), and demonstrate ability to manage and apply knowledge effectively when making decisions (Dove, 1999). Although resilience capabilities are generally desirable, they may be less inclined in a relatively stable environment (e.g., Das & Elango, 1995; Grewal & Tansuhaj, 2001; Tallon & Pinsonneault, 2011). For example, agility is less likely to lead to better performance in a stable business environment than in market conditions that are more volatile and unpredictable (Tallon & Pinsonneault, 2011). In other words, resilience capabilities are context and

time specific (e.g., Werner & Smith, 1982; Garmezy, 1985; Garmezy & Rutter, 1985; Sambamurthy et al., 2003). Thus, it is proposed that the effects of these resilience capabilities on firm performance are contingent upon environmental conditions. The following section discusses the theory underpinning this thesis and as a foundation for the development of the proposed conceptual model of resilience capability.

Contingency Theory

Contingency theory adopts the position that there is no universally superior strategy, irrespective of environmental or organizational contexts (Venkatraman, 1989) and what resources or circumstances firms have (Sauser et al., 2009, Meilich, 2006). Contingency theory comprises *contextual* (or contingency), *response* (i.e., organizational or managerial actions in response to contingency factors), and *performance* variables (Sousa & Voss, 2008). Firm performance is viewed as being dependent upon the fit between external context and internal arrangements (Lawrence et al., 1967; Drazin & Van de Ven, 1985).

Having said that, McKee et al. (1989) and Miller (1992) postulated that performance is dependent upon an external fit between the design of internal structure and the demands of external environment, as well as an internal fit among key design components such as structure, strategy, systems, culture, staff, shared values, and skills (Venkatraman & Camillus, 1984; Miller, 1992). Consistent with Ketchen et al. (1997) and Siggelkow (2001), high-performing design patterns must also achieve external fit with environment. In general, the contingency distinguishes between the concept of internal and external fit, proactive and reactive strategies to change organizational external and/or internal context (Van de Ven et al., 2013), focusing on the conditions or boundaries in which particular structures and process hold (Van de Ven et al., 2013). Notwithstanding, contingencies determine organizational responses, but the corresponding detrimental effect on performance will, in long term, force firms back into fit (Donaldson, 2001).

The concept of fit is particularly critical in dynamic environment, necessitating firms to engage in a continuous process of modifying the elements in their control in order to maximize the fit for their firm (Naman & Slevin, 1993). To some extents, decision makers in large firms are able to influence their environments (Pfeffer & Salancik,

1978; Bourgeois, 1980, 1984); changing the external environment to better fit their goals and operations (Pfeffer & Salancik, 1978) by proactively shaping and changing the structural characteristics of markets through collaborations or mergers with competitors or other players (Tushman & Anderson, 1986). The decision choices made by firms that influence their environments can be illustrated through the lens of the managerial choice perspective (McKee et al., 1989). Specifically, Hrebiniak and Joyce (1985) reconciled environmental determinism to strategic choice and identified four situations: 1) low environmental determinism and high strategic choice, compatible with Miles and Snow prospector typology; 2) high environmental determinism and low strategic choice, similar to defender typology, 3) low environmental determinism and low strategic choice, consistent with the reactor typology, and 4) low environmental determinism and high strategic choice, in line with the analyzer typology. This view provides a reference point for understanding that decision types vary with the type of environment (Hrebiniak & Joyce, 1985), and that strategies or actions are situational and can be inappropriate under certain environmental situations (Wright & Ashill, 1996).

It is worth noting however, in recent times alternative models which incorporate creative organizational design, design thinking (Brown, 2008), and innovative by design (Barry, 2011) have been proposed. These models are regarded as keys for organizational survival and success in rapidly changing environments, and to some extent fail to support notions of fit and misfit (Van de Ven et al., 2013). As discussed, firm sustainability depends on the capacity of firms to develop, harness and employ their resilience capabilities to deal with dynamic environments. Contingency theory helps us to understand the interrelationships between the alignment of organizational resources, capabilities, and performance to environmental conditions. In this light, the present thesis proposes that environmental turbulence can be regarded as a contingency factor that moderates the resilience capability-performance relationship. The role of external environment is discussed in the following section.

Environmental turbulence as a moderating factor of the relationship between resilience capabilities and firm performance

Increasingly dynamic and rapidly changing environments require constant strategy and operation modification to reflect these changing circumstances for maximum firm

performance (Calantone et al., 2003). Firms strategies that make *no direct reference to the influences external to the organization* (Venkatraman & Camillus, 1984, p.517) are less likely to survive in turbulent environments than their counterparts. Particularly, when managerial choice is constrained by specific environments (Aldrich & Pfeffer, 1976). Hence, environmental factors and associated market characteristics can exert a moderating influence on the relationships between resources and strategy formulations (Barney & Griffin, 1992). This view is consistent with contingency theory (Lee & Miller, 1996; Miller & Shamsie, 1996; Gardner et al., 2000; Aragon-Correa & Sharma, 2003). As noted earlier, the principal theme of contingent strategy models is the fit between market environments and the strategic and organizational capabilities of firms (Ginsberg & Venkatraman, 1985; Miller, 1992; Mintzberg, 1996; Borch et al., 1999).

Several studies have provided support to the contingent role played by the environment in influencing the way in which a firm's strategy is developed. For instance, Borch et al. (1999) argued that different environmental characteristics moderate the relationship between resource configurations and competitive strategies. Porter (1985) suggested that industry conditions influence the way firms position themselves in relation to their counterparts, and acknowledged that organizational resources can shape organizational strategies in order to fit with the environmental conditions. These perspectives provide a concrete foundation for the present thesis proposed framework supporting arguments that the operating environment plays an essential part in the links between firms' organizational capabilities and their strategy formulation. Although researchers (e.g., Dess & Beard, 1984; Miller, 1987; Covin & Slevin, 1989; Jaworski & Kohli, 1993; Zahra & Bogner, 2000) highlight the difficulties associated with conceptualizing the environment, two approaches emerge, including *archival* (e.g., growth in industry sales, concentration ratios) and *perceptual* measures (i.e., subjective judgements by key organizational informants and members) (Boyd et al., 1993).

There are different levels of environment, each encompassing different characteristics, with which firms interact. For instance, Dess and Beard (1984) identified three types of environments: dynamism, munificence, and complexity. Dynamism utilizes absence of pattern, turnover, and unpredictability as measures of environmental

stability-instability. Munificence is associated with the extent to which the environment supports sustainable growth. Environmental complexity relates to variations in market characteristics and needs that are being served by the firm. Similarly, Zahra and Bogner (2000) classified external environments into dynamism, hostility, and heterogeneity. While Covin and Slevin (1989) classified environments dichotomously as benign versus hostile, Jaworski and Kohli (1993) related environments to market turbulence (i.e., the rate of change in the composition of customers and their preference), competitive intensity (i.e., level of competition), and technological uncertainty (i.e., the rate of technological change). Notwithstanding, environments can be categorized as: complex (Emery & Trist, 1965; Duncan, 1972), dynamic (Emery & Trist, 1965; Duncan, 1972; Dess & Beard, 1984), heterogeneous (Khandwalla, 1977; Miller, 1987), hostile (Miller, 1987; Covin & Slevin, 1989), unfamiliar (Souder et al., 1998), uncertain (Thompson, 1967; Khandwalla, 1977), and volatile (Bourgeois, 1985).

Because of their high levels of vulnerability (Schindehutte & Morris, 2001) to environmental influences and uncertainty, environments might hold greater significance and play a substantially bigger role in the life cycle of small firms when compared with their counterparts. Despite this view, Wiklund (1998, p. 238) argued that *small firms operate in an environment with increasing dynamism tend to grow faster than others*. Environments characterized with high levels of stress can be associated with opportunities that call for the application of resilience capabilities (Kobasa, 1979). This in line with McKelvey (1982), environments do not cause variations among companies, they only select those that survive.

Firm Performance

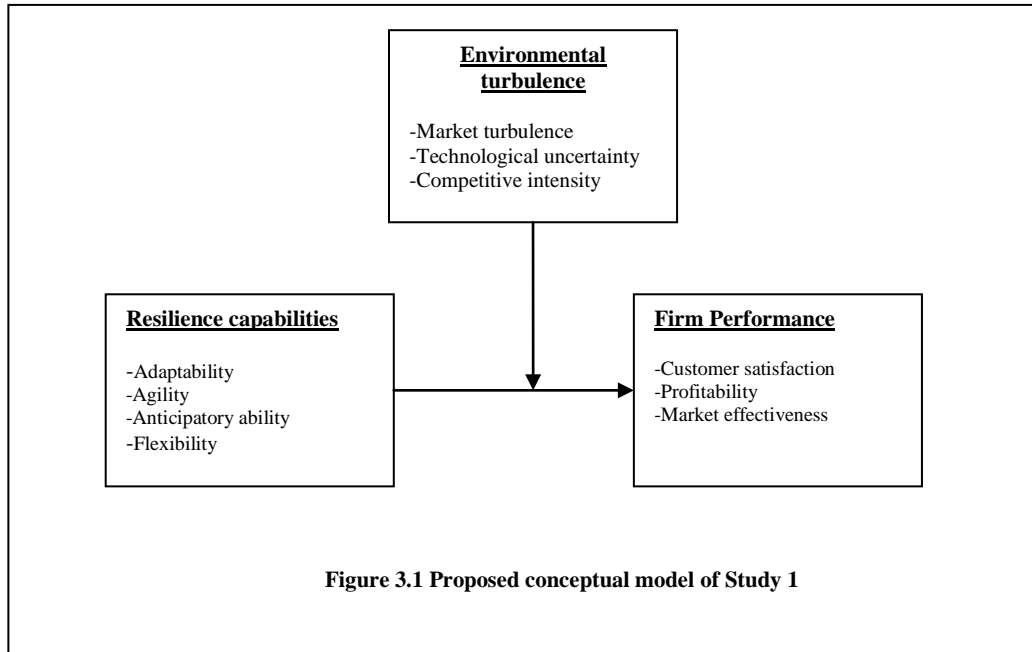
Performance measures are utilized for a multitude of reasons including assessment of firm success (Kennerley & Neely, 2003), and to quantify both efficient and effective management of organizational actions (Neely et al., 1995). Organizations can evaluate firm performance using *hard* quantitative and *soft* qualitative measures (e.g., Pun & White, 2005; Vorhies & Morgan, 2005). *Hard* quantitative measures include profitability indicators, financial ratios, employee turnover, and customer complaints. *Soft* qualitative measures involve assessment of customer perceptions, satisfaction, effectiveness of leadership or employee motivation (Pun & White, 2005).

Firm performance can also be measured through the application of objective and subject indicators. *Subjective measures* can include opinions or estimations by staff (Covin et al., 1990; Narver & Slater, 1990; Hart & Diamantopoulos, 1993; Jaworski & Kohli, 1993; Greenley, 1995). *Objective measures* can be based on secondary archival data (Dess & Robinson, 1984; Venkatraman & Ramanujam, 1986; Dutta et al., 1999). However, there is debate concerning the validity and accuracy of either forms of measures (Mezias & Starbuck, 2003).

However, the existence of a wide range of performance measures and lack of agreement on basic terminology has posed a major challenge for researchers and practitioners (Jogarathnam et al., 1999; Pun & White, 2005). To address these problems, many performance measurement (PM) systems, models, and frameworks have emerged to provide a means for companies to implement tools useful for improving performance (e.g., Kaplan & Norton, 2000; Neely et al., 2000). These PM systems can be classified into two distinct groups in which one emphasizes self-assessment (e.g., Deming, 2004), and the other one focuses on helping managers measure and improve business processes (e.g., Neely et al., 2001). Examples of PM systems include *Strategic Measurement Analysis and Reporting Techniques* (SMART) (McNair et al., 1990; Lynch & Cross, 1991); the *Performance Measurement Questionnaire* (PMQ) (Dixon et al., 1990); *The Balanced Scorecard* (BSC) (Kaplan & Norton, 1992, 1996, 2000); and the *Cambridge Performance Measurement Process* (CPMP) (Neely et al., 1996, 2000; Bourne et al., 1998, 2000). Reasons for implementing PM systems include: monitoring of performance, identifying areas for improvement, enhancing motivation, improving communications, and strengthening accountability (Neely et al., 1996).

Given that Chinese-owned small firms are reluctant to publicly reveal financial and marketing data (Huang, 1997; Ang & Schmidt, 1999), employment of less-intrusive self-reported measures is recommended. Although self-assessed measures can be regarded as biased, Dess and Robinson (1984) believed that in the absence of other objective criteria, self-assessed measures can serve as appropriate and reliable alternative indicators. Other researchers suggested the use of multi-dimensional constructs, including financial, operational, and customer related performance indicators (Venkatraman & Ramanujam, 1986; Kaplan & Norton, 1992, 1993, 2000)

when objective performance measures cannot be obtained. The following proposed conceptual model (Figure 3.1) shows the relationships between resilience capabilities, environmental turbulence and firm performance tested in Study 1. The relationships between these factors are then explored in details in Study 2 with particular focus on *why* and *how* these relationships are established.



There appears a limited academic enquiry, concerning those attributes and capabilities that contribute to the formation of resilience capabilities. According to Kitching et al. (2006b), it is important to identify the strategies and sources for achieving resilience capabilities which can influence a firm's sustainability and long-term performance. In this light, it is proposed that dynamic, marketing, information technology, and human resource capabilities might be sources for the development of resilience capabilities. Inconsistencies in the understanding and application of this concept (Bennett et al., 2005; Nystrom et al., 2008) are two primary reasons driving this investigation into how resilience capabilities are utilized in response to different environmental conditions, leading to Study 2. The following section provides a discussion of potential precursors (i.e., dynamic, marketing, information technology, human resource management capabilities) to resilience capabilities, forming part of the objectives of Study 2.

Dynamic, marketing, information technology, and human resource capabilities as antecedents of resilience capabilities

Dynamic capabilities (DC)

There is an increasing evidence to suggest that firms benefit from having dynamic capabilities (Teece et al., 1997) in their operations. For example, integration of learning processes enables identification of market opportunities (e.g., Griffin & Hauser, 1996; Gupta & Souder, 1998); improved problem solving ability, and better anticipation of problems (Pisano, 2000). Bruni and Verona (2009) examined dynamic capabilities based on market-knowledge creation and release in high-performing pharmaceutical firms. Specifically, integration of different departments (R&D, manufacturing, marketing, sales) in new product development facilitates continuous exchange of information within firms, identification of attributes of potential product which, in turn, provide support for fast product developments (Bruni & Verona, 2009). Likewise, Fang and Zou (2009) argued that cross-functional collaboration between JIV parties enables firms to combine and integrate resources and capabilities for fast-responding product development, efficient and responsiveness to individual needs and preferences, and improvements in product quality.

Application of dynamic capabilities in organizational activities such as crafting new business and strategies; leveraging other resources (Bowman & Ambrosini, 2003); entering new markets (King & Tucci, 2002); and learning new skills (Zollo & Winter, 2002; Bowman & Ambrosini, 2003) can enhance firm performance as a result of improved strategic flexibility (Zahra et al., 2006); increased company's agility and market responsiveness in complex and volatile environments (Zahra & George, 2002). Despite the contribution of dynamic capabilities in rapidly changing environments, an unpredictable environment is not a necessary element of a dynamic capability (Zahra et al., 2006).

Marketing capabilities (MC)

As discussed, marketing capabilities are all-embracing, adaptable (Trim & Lee, 2007; Day, 2011) and flexible (Trim & Lee, 2007), and can lead to the development of resilience capabilities (e.g., McKee et al., 1989; Lee, 2004; Reinmoeller & van Baardwijk, 2005; Sheffi & Rice, 2005). Lee (2004) proposed that the development of collaborative relationships with suppliers and design processes enable firms not only

to build agile response to changes in demand or to supply, but also reduce time and cost for product development and offering (Kotha, 1995). Similarly, Reinmoeller and van Baardwijk (2005) argued that cooperation outside firm boundaries facilitates the leveraging of ideas, resources, and skills across firms for product innovation, and quick access to new market (Sheffi, 2005a). Development of flexibility and adaptability resilience capabilities can be associated with the use of multiple suppliers, an ability to move production across different plants (Sheffi, 2005bc), and enabling flexibility in product design (Lee, 2004). These processes help firms to adjust and to modify their strategies, products, and technologies to meet shifts in markets.

Information technology capabilities (ITC)

Information has become an invisible asset for gaining a competitive advantage (Tippins & Sohi, 2003) in an increasingly changing global environment. Incorporating information technology (IT) into business strategy enables firms to develop an efficient and quick reaction to changes in the market (Lin, et al., 2006). Specifically, IT increases decentralization of decision-making and facilitates flexible operations (e.g., Orlikowski, 1991; Levy & Powell, 1998; Palanisamy, 2006). Moreover, information systems (IS) speed up information processing so that timely decisions can be made, tasks can be performed rapidly, enabling firms to capture new opportunities.

For instance, Christopher (2000) suggested that the use of IT (e.g., point-of-sale, EDI, Internet) enables firms to collect real-time needs of their end users (Lee, 2004), respond directly (Christopher, 2000) through product adaptation/modification (Lee, 2004), and supply adjustment (Christopher, 2000). While communications technology helps remove the constraints of time and place in decision-making (Meyrowitz, 1985), shared information with suppliers through common systems reduces new product development time and costs, and upgrading products faster than before (Kotha, 1995).

Human resource capabilities (HRC)

Human resource management strategies, human resource practices, organizational culture, and value have been related to shown to be associated with nimble reactions,

organizational flexible initiatives (e.g. Blyton & Morris, 1992; Gooderham & Nordhaug, 1997; Dastmalchian & Blyton, 1998), and sustainability in volatile environments (Doe, 1994; Horne & Orr, 1998; Mallak, 1998a). According to Lengnick-Hall et al. (2011), problem-solving techniques can be promoted through provision of training and work designs that enable employees to develop new skills and knowledge for dealing rapidly with varied and unconventional situations.

Similarly, Blyton and Morris (1992) argued that employees' flexibility to undertake a range of tasks can be achieved through cross-training (Sheffi, 2005b). Empowering employees to act quickly is associated with self-management and self-leadership capability development (Lengnick-Hall et al., 2011), enabling corrective actions to be made in advance. Other HR principles and practices for resilience capability development include practising decision making in a vacuum and creating fluid team-based work for rapid decisions (Gibson & Tarrant, 2010; Lengnick-Hall et al., 2011); developing divergent and creative thinking (Atkinson & Gregory, 1986; Atkinson, 1984; Lengnick-Hall et al., 2011), and fostering a committed workforce (Boudreau & Ramstad, 1997). The following chapter presents Study 1.

Chapter 4

Study 1

An Exploration of the Resilience Capability in the Face of Environmental Turbulence

Overview

This thesis employs a mixed methods design (Creswell & Plano Clark, 2011), utilizing both quantitative (Study 1) and qualitative (Study 2) research methods. Chapter 4 reports on the findings of Study 1, a survey of 177 Hong Kong-based SMEs. The aim of this investigation is to explore the interrelationships between resilience capabilities and firm performance, and the impact of environmental turbulence on these relationships. Following a brief introduction of pertinent research paradigms employed for this thesis, an explication and justification of the conceptual framework (paradigms), that is, the dialectical stance that underpins the mixed methods design of this research are provided. Next, a description of data collection procedures (e.g., instrumentation, a profile of participants, sampling methods), questionnaire development, presentation of the validity and reliability of the SME questionnaire; and statistical procedures employed are also included. This chapter concludes with an analysis of findings, and a review of the limitations and implications for future research, the scholarship of which forms the basis for verification and extension of findings outlined in Study 2 (Chapter 5) by means of interview-based case studies.

Introduction

In order to address the diversity and complexity associated with the development of resilience capabilities in SMEs, a mixed methodology (Creswell & Plano Clark, 2011) was adopted over a mono-methods approach. There are three main reasons underlying the rationale for utilizing a mixed methods approach. For the purpose of *triangulation*, the *complementary* use of quantitative and qualitative data allow the researcher to capture a more complete, holistic, and contextual view of the phenomenon under study (Jick, 1979; Yauch & Steudel, 2003), in turn, contributing to the validity and robustness of the results (Yauch & Steudel, 2003) than either approach alone. In addition, using multiple data sources enables researchers to *extend the breadth and range of inquiry by using different methods for different inquiry components* (Greene et al., 1989, p. 259). For instance, quantitative research can identify and provide general explanations for the relationships among variables (Creswell & Plano Clark, 2011), enabling generalizability of findings to large group, as well as casting new light on qualitative findings. However, such methods have been criticized on the grounds of lacking an ability to understand the context in which people talk (Creswell & Plano Clark, 2011). In contrast, qualitative data can be examined, analysed, and interpreted for the purpose of discovering underlying meanings and patterns of relationships, helping to explain and build a level of understanding required in quantitative results (Creswell & Plano Clark, 2011), despite the view that qualitative methods of inquiry are regarded as not having the robustness to enable the testing of hypotheses with empirical data.

As a result, the limitations of one method can be *offset by the strengths of the other, providing a better understanding of problems under study than either approach alone* (Creswell & Plano Clark, 2007, p.5). According to Teddlie and Tashakkori (2010), there is an equally important result of combining information from different sources, specifically, divergent results often provide broader insight into complex aspects of same phenomenon, and/or to the design of a new study for further investigation.

Research Paradigm

The research paradigm that underpins this thesis is dialectical in which post-positivist and constructivist are employed and integrated to explain firm reality, values, and knowledge. A *paradigm* can be defined as a set of belief or worldview that guides

and direct thinking and action (Guba & Lincoln, 1994) and can be identified in terms of *positivism, postpositivism, constructivism, critical theory*, and the *participatory* paradigms (Denzin & Lincoln, 2000). Positivism and postpositivism are associated with quantitative approaches while the other paradigms are often associated with qualitative approaches. Although these paradigms have common elements, they hold different stances in terms of ontology (the nature of reality, i.e., singular or multiple), epistemology (how we gain knowledge of what we know i.e., relationship between inquirer and the known), methodology (the process of research, i.e., means by which knowledge is gained), axiology (the role values play in research, i.e., outsider or insider perspective), rhetoric (the language of research, i.e., formal or informal style) (Creswell & Plano Clark, 2011).

Mixed methods research have been called the *third methodological movement* or the *third research paradigm*, followed by quantitative and then qualitative research (Teddlie & Tashakkori 2003; Johnson & Onwuegbuzie, 2004). As postulated by Teddlie & Tashakkori (2003, p.x), *mixed methods research has evolved to the point where it is a separate methodological orientation with its own worldview, vocabulary, and techniques* that fall into a pragmatic paradigm (Tashakkori & Teddlie, 1998) or dialectical perspective (Greene & Caracelli, 1997).

As part of the paradigm debate about questioning researchers' abilities to use methods from disparate paradigms together, Rossman and Wilson (1985) were the first to articulate a typology of stances delineating the differing perspectives concerning conducting mixed methods research. Greene and Caracelli (1997) further reformulated three stances to reflect their interest in incorporating different paradigms into mixed methods approaches, namely *purist, pragmatic*, and *dialectical* positions.

The first stance is *purist*, advocated by positivists/postpositivists, and constructivists/interpretativists, and rooted in paradigmatic concerns, arguing that different paradigms are incompatible and could not be mixed because the philosophical assumptions (i.e., ontology and epistemology) underpinning them are irreconcilable. For example, it is unusual to see a constructivist, conducting a survey and analyzing data using statistical methods. In sum, the purist position does not allow the possibility of mixing methods framed by different paradigms.

The second stance is the *pragmatic* position. Pragmatists understand the philosophical difference among paradigms (Greene & Caracelli, 1997), valuing both objective and subjective knowledge (Creswell & Plano Clark, 2011) and welcome the choice between postpositivism and constructivism (Tashakkori & Teddlie, 2003). The pragmatic approach is based on abduction reasoning, allowing the shifting back and forth between induction and deduction in a study (Venkatesh et al., 2013). The focus of this position is primarily on the importance of the research questions rather than the methods, and on the use of multiple methods of data collection in which both qualitative and quantitative research methods can be used in a single study such as *the dictatorship of the research question* (Tashakkori & Teddlie, 2003, p.21). In sum, the emphasis of pragmatism practical and applied research philosophies, and employs 'what works' the best to address the research problem at hand (Tashakkori & Teddlie, 2003; Creswell & Plano Clark, 2011).

Conversely, the *dialectical* position assumes all paradigms have something to offer and the use of multiple paradigms contributes to a deeper understanding of the phenomenon under scrutiny (e.g., Greene & Caracelli, 2007). This stance focuses on intentionally implementing methods within explicit paradigms through a dynamic back-and-forth listening to multiple perspectives, specifically, with a prior commitment to use mixed methods to reach the same goals in a complementary rather than a compatible manner. According to Greene (2007, p. 69), *important paradigm differences should be respectfully and intentionally used together to engage meaningfully with differences and, through the tensions created by juxtaposing different paradigms, to achieve dialectical discovery of enhanced, reframe, or new understandings*. In other words, advocates of the dialectical approach, who seek both universal objective and multiple realities are likely to use information from each method to gain insight in a generative and spiraling manner by integrating paradigmatic and methodological difference (Greene & Caracelli, 1997).

Researchers employing a dialectical stance utilize both quantitative (e.g., surveys) and qualitative (e.g., interviews) methods either by combining (or integrated or linked) sequentially (connecting information by having one build on the other) or simultaneously (merging information by bringing together). These procedures

encourage the triangulation of findings, and improve the internal consistency, generalizability, interpretability, and accuracy of data.

In regard to this, the present investigators held a prior commitment on the use of mixed methods (quantitative - survey, qualitative - in-depth interviews) and multiple paradigms (postpositivist and constructivist). Accordingly, a dialectical position was adopted (Greene & Caracelli, 1997) and was considered appropriate rather than pursuing a single worldview such as pragmatism (Creswell & Plano Clark, 2011). The following section provides details of the paradigms adopted for Studies 1 and 2.

Study 1: A Postpositivism Approach

Study 1 involved a survey of 177 SMEs located in Hong Kong. This survey was guided by a postpositivism paradigm (critical realism). The ontological assumption underlying postpositivists assumes an objective and singular reality that is imperfectly apprehendable and measurable (Guba & Lincoln, 1994). Owing to human thoughts, beliefs, or knowledge, and the underlying complexity of the world, *true* reality can never be fully captured. By way of contrast, positivists (naïve realism) hold the view that there is only one true reality that is apprehensible and identifiable. In other words, proponents of this paradigm believe that the existence of a universal generalization can be applied across different contexts. Notwithstanding, Hill and McGowan (1999) argued that positivist research does not generate a full understanding of key issues that might affect small firm potential development. Similarly, Robson (1993, p. 60) claimed that a positivism view is not suitable for identifying social phenomenon such as marketing network as *it ignores respondents ability to reflect on problem situations, and act on these in an independent way*.

The epistemological assumptions of positivism and postpositivism emphasize objectivism and dependence between the inquirers and the reality of situation (Guba & Lincoln, 1994). However, postpositivists believe that knowledge generation is a result of a social conditioning in which inquirers influence what is being researched by participating in the inquiry process (modified dualism). In contrast, positivists separate themselves from the reality they study and hold that participants and topic can be studied without the influence of values or biases of the inquirer (dualism), otherwise, the study is open to serious criticism.

In term of methodological assumptions, both postpositivists and positivists emphasize the importance of a deductive approach and scientific method for theory testing. Positivists might employ closely controlled experiments to test hypotheses, while postpositivism proponents tend to be less rigid in their approach. A key distinction between these two paradigms is that postpositivists are concerned with *theory falsification* while postivists emphasize *theory verifications* (Lincoln & Guba, 2000, p. 107). In search of falsification of hypotheses, postpositivists adopt modified experimental and manipulative approaches complimented with the application of qualitative techniques identify possible multiple realities.

Study 2: A Constructivism Approach

Study 2 was an in-depth case study of four SMEs based in Hong Kong and was guided by constructivism (relativist). The ontological assumption underlying constructivism is that there are multiple and constructed realities rather than a single true reality. The multiple perspectives of participants can be developed through multiple interviews. Critical theorists (historical realism) emphasize that social realities are shaped over time by social, cultural, economic, ethnic, gender-based, and political values that have crystallized in the institutional structures of the society (Guba & Lincoln, 1994). According to some commentators, this paradigm however, is not suitable for marketing research unless a researcher attempts to liberate people from their historical mental, social, and emotional structures (Guba & Lincoln, 1994). Proponents of the participatory paradigm (participatory realism) view the reality of a situation in terms of political contexts that are co-created in the minds of those who participate in an event at a particular point in time.

The epistemological assumption of constructivism (subjectivism and transactional) is that maintaining a socially constructed reality requires researchers to have a dynamic and interactive dialogue with participants such that knowledge is co-created in the context of the transactions (Guba & Lincoln, 1994; Denzin & Lincoln, 2000). Thus, to capture and describe the lived experience of participants through listening and dialogue, researchers are required to be *passionate participants* (Guba & Lincoln, 1994, p.112) who see themselves as involved and reliable facilitators in the knowledge accumulation process. Again, there are distinctions between constructivism and alternative paradigms. Similar to constructivism, critical theorists

(subjectivism and transactional) understand that reality is subjective, yet, inquiry-participant interactions are mediated by the values of the inquirers. Participatory paradigm proponents view the reality of a situation as subjective which can be fully understood only by those individuals who have lived in that situation or circumstance.

According to Denzin and Lincoln (2000), the methodological assumption underlying constructivism is that the reality of a situation under study can be understood through the interactions between inquirer and participants in a naturalistic setting. Through intense dialogue, hidden meaning can be uncovered (hermeneutical discovery) and differences in individual interpretations can be brought to consensus (dialectical). Sharing the common view as constructivists, critical theorists seek to understand reality through naturalistic inquiry, adopting both dialogic and dialectical approaches in order to stimulate transformation in the participants. Proponents of participatory paradigm employ a practical form of inquiry by collaborating with participants to form actions in practice (Creswell & Plano Clark, 2011). Below, the present research design of Study 1 is presented. Overall, the objectives of Study 1 are:

Research Objective 1: *What is the relative contribution of resilience capabilities to firm performance during times of turbulence?*

Research Objective 2: *How does environmental turbulence moderate the relationship between resilience capabilities and firm performance?*

Research Design

Mixed methods design

As mentioned earlier, this thesis employs a mixed methods design, comprising both quantitative (survey) and qualitative (in-depth interview) approaches. There are six major mixed methods designs, including convergent parallel, explanatory sequential, exploratory sequential, embedded, transformative, and multiphase, the designs of which are reflected by interaction, priority, timing, and mix (Creswell & Plano Clark, 2011). The present thesis adopts an explanatory sequential design in which collection and analysis of quantitative and qualitative data occurs over two distinct interactive phases. As shown in Figure 4.1, the design starts with collecting and analysing quantitative data through survey (Phase 1: Study 1) by addressing the research questions of this study. Followed by the subsequent qualitative (Phase 2: Study 2)

data collection approach and analysis which helped to explain, interpret, and extend initial findings that emanated from Study 1 (Morse, 1991; Creswell & Plano Clark, 2011). Results of both methods were then integrated in the interpretative phase (Phase 3: Study 1 & 2) for the final analysis of the thesis.

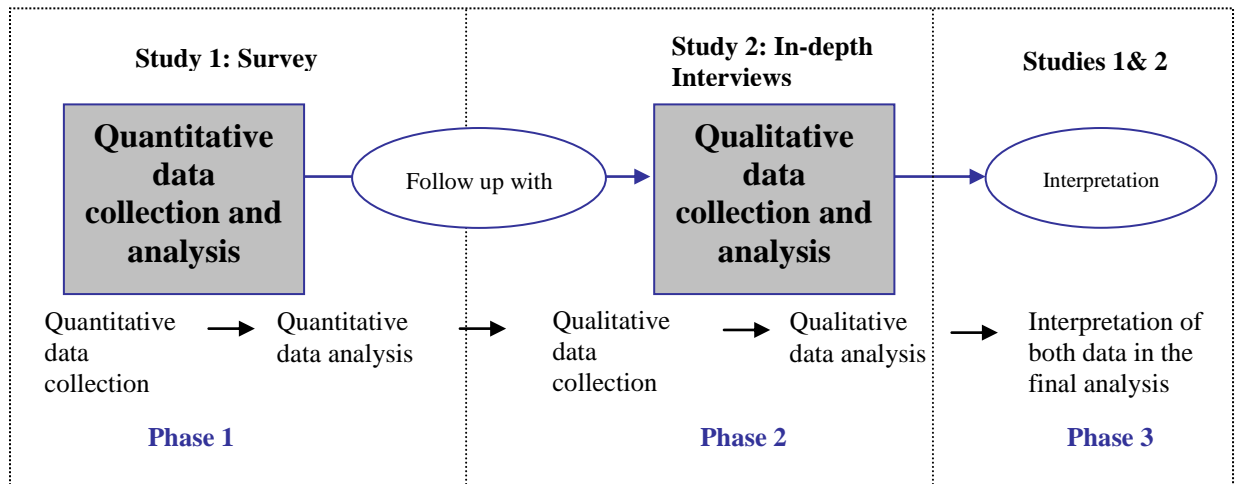


Figure 4.1. The explanatory sequential design (Creswell & Plano Clark, 2011)

Ethical Considerations

This thesis followed Ethics Guideline Procedures outlined by RMIT University in the Ethics Review Process. Ethics approval was obtained to carry out this research. The present researcher was prepared, organized and considerate of participants are gratefully acknowledged their contributions. Participation in the study was on the basis of informed consent, and voluntary, with rights of withdrawal at any time. This process was made clear to all participants. Copies of summary report have been made available for all the participants upon request.

The next section outlines the Research Methodology of Study 1 including data collection procedures (e.g., instrumentation, a profile of participants, sampling methods), questionnaire design and development, reports on validity and reliability of the SME Resilience Questionnaire; and the statistical procedures employed.

Research Methodology

Data Collection Procedures

The purpose of this study is to examine interrelationships between resilience capabilities to firm performance and turbulent environments. Specifically, Study 1 aimed to determine the influence on SME performance during the crises such as the

GFC. An exploratory and descriptive research method was adopted. According to Best (1970), descriptive research is concerned with *conditions or relationships that exist; practices that prevail; beliefs, points of views, or attitudes that are held; processes that are going on; effects that are being felt; or trends that are developing. At times, descriptive research is concerned with how what is or what exists is related to some preceding event that has influenced or affected a present condition or event* (p.12).

Instrumentation

A cross-sectional, self-report questionnaire was administered to a selected sample from Hong Kong small to medium enterprises (SMEs) identified by Trade and Industry Department, HKSAR (2012). Criteria for selected participants are based on *manufacturing enterprises with fewer than 100 employees in Hong Kong and non-manufacturing enterprises (including firms engaged in construction; mining; quarrying; electricity and gas; import and export; wholesaling; retailing; catering; hotel; transport; warehouse; insurance; real estate; business service; community, social and personal service) with fewer than 50 employees in Hong Kong.*

Participants and Sampling

Participants are owners/CEOs/managers of SMEs located in Hong Kong. Businesses were chosen from multiple sources (i.e., Kompass database, Hong Kong Business Directory Services and Manufacturing), the database of which is held by the Hong Kong SME Centre. A random sample of 500 respondents was selected and questionnaires were distributed in person during the period of June 2012 to September 2012 by three groups of interviewers with two members in each team. An explanation of the research background, purpose, and ethical consideration was provided prior to their consent to participate in this survey. Those who agreed to participate were asked to complete the questionnaire and return to the interviewers either at the time or by mail. After three months of data collection, one hundred and seventy-seven ($n=177$) questionnaires were obtained, generating a response rate of 35.4%. Of these participants, 50.9% being seniors and 49.1% being middle management in manufacturing industry (29.2%) and service industry (70.8%). Number of employees ranged from less than 5 employees (19.4%) to more than 20

(28%). Of these companies, 11.4% have been operating for less than 5 years, 13.2% for 5-10 years and 75.4% for more than 10 years. 61.6% of company's decisions are made at management level and 33.1% at both management and operational level. In relation to the non-respondents, 33.4% were from manufacturing sector and 66.6% from services industry, with 26% having less than 5 employees, and 21.7% having more than 20 employees. Table 4.1 shows company characteristics.

Table 4.1. Profile of Companies

Company profile	% (n=177)		% (n=177)
Position		• 11-15	9.1
• Senior	50.9	• 16-20	17.1
• Middle	49.1	• More than 20	28
Owner	20.9	Industry	
Age of firm		• Manufacturing	29.2
• Less than 5 years	11.4	• Service	70.8
• 5-10 years	13.2	Company decisions are made at:	
• More than 10 years	75.4	• Management level	61.6
No. of employees		• Operational level	5.2
• Less than 5	19.4	• Both	33.1
• 5-10	26.3		

The Resilience Capability Questionnaire

Items of the Resilience Capability Questionnaire (RCQ) were derived from related and pertinent studies relating to: *anticipatory ability* (Oktemgil & Greenley, 1997; Overby et al., 2006), *agility* (Tallon & Pinsonneault, 2011), *adaptability* (Oktemgil & Greenley, 1997), *flexibility* (Zhou & Wu, 2010); environmental turbulence (Jaworski & Kohli, 1993); and firm performance (Vorhies & Morgan, 2005). The RCQ comprises 52 close-ended items, measured on 7-point Likert scales, ranging from 1- *Not at all* to 7-*To a large extent* (Part 2 & 3), 1-*Much worse than our competitors* to 7-*Much better than our competitors* (Part 4).

The RCQ involved four parts, comprising 52 close-ended items. Part One consists of six questions related to personal (e.g., participant's position) and company background (e.g., year company established). For examples, participant's position, year of establishment. Part Two entailing 23 items focusing on the four different dimensions of resilience capability: *anticipatory ability* (e.g., *Our company regularly monitors changes in our markets*), *agility* (e.g., *Our company quickly responds to changes in*

overall demand), adaptability (e.g., *Our company frequently introduces new products/services*), and flexibility (e.g., *Our company is flexible in allocating production resources to manufacture a broad range of product*). Part three consists of 14 items concentrating on participants' perceived levels of environmental turbulence in their respective industry, including competitive intensity (e.g., *In our industry, anything that one competitor can offer, others can match readily*), technological uncertainty (e.g., *In our industry, the technology changes rapidly*), and market turbulence (e.g., *Our customers tend to look for new product/service all the time*). Part Four comprises three broad measures (9 items) relating to firm performance (profitability, customer satisfaction, market effectiveness) in relation to their competitors. Profitability (e.g., *Our company's return on investment (ROI) is...*), customer satisfaction (e.g., *Our company's delivery of value to our customer is...*), and market effectiveness (e.g., *Our company's sales to existing customers is...*). Table 4.2-4.4 show items encompassing each construct (Appendix 4.2, p. 317 shows a complete copy of the RCQ).

Table 4.2. Measures of Resilience Capability Dimensions

RESILIENCE CAPABILITY DIMENSIONS

Adaptability

- Our company frequently adopts new marketing techniques.
 - Our company frequently introduces new products / services.
 - Our company frequently modifies our products / services.
 - Our company frequently adopts new technologies and skills.
-

Agility

- Our company quickly responds to changes in overall consumer demand.
 - Our company quickly reacts to new product / service launches by competitors.
 - Our company quickly introduces new pricing schedules rapidly in response to changes in competitors' prices.
 - Our company quickly changes (i.e., expands or reduces) the variety of products / services available for sale.
 - Our company quickly switches suppliers to take advantage of lower costs, better quality, or improved delivery times.
 - Our company quickly adopts new technologies to produce better, faster, and cheaper products / services.
 - Our company quickly expands into new regional or international markets.
-

Anticipatory Ability

- Our company regularly monitors changes in our markets.
 - Our company regularly monitors competitor's actions.
 - Our company regularly monitors consumer preference changes.
 - Our company regularly monitors regulatory/legal changes.
 - Our company regularly monitors economic shifts.
 - Our company regularly monitors technological advancements.
-

Flexibility

- Our company is flexible in allocating marketing resources to market a diverse line of products.
 - Our company is flexible in allocating production resources to manufacture a broad range of product.
 - Our company is flexible in product design to support a broad range of potential products.
 - Our company has an ability to adapt our product strategies to match products / services with targeted market segments.
 - Our company redeploys organisational resources effectively to support our firm's intended strategies.
 - Our company modifies the resources we can use in developing, manufacturing, and delivering its intended products to targeted markets.
-

Note. All items measure on 7-point likert scales (1 = *Not at all*, 7 = *To a large extent*).

Table 4.3. Measures of Environmental Turbulence

ENVIRONMENT TURBULENCE

Competitive Intensity

- In our industry, anything that one competitor can offer, others can match readily.
- There are many "promotion wars" in our industry.
- Price competition is a hallmark of our industry.
- Competition in our industry is cutthroat.
- Our competitors are relatively weak.

Technological Uncertainty

- In our industry, the technology changes rapidly.
- Technological changes provide big opportunities in our industries.
- In our industry, it is very difficult to forecast where the technology will be in the coming year.
- In our industry, a large number of new product ideas have been made possible through technological breakthroughs in our industry.
- In our industry, technological developments are rather minor.

Market Turbulence

- Our customers tend to look for new product / service all the time.
- Our company is witnessing demand for our products / services from customers who never bought them before.
- Our company caters too many of the same customers that we used to in the past.
- In our industry, customers' product / service preferences change quite a bit over time.

Note. All items measured on 7-likert scales (1 = *Not at all*, 7 = *To a large extent*).

Table 4.4. Measures of Firm Performance

FIRM PERFORMANCE (1 = *Much worse than our competitors*, 7 = *Much better than our competitors*)

Profitability

- Our company's return on investment (ROI) is...
- Our company's return on sales (ROS) is...
- Our company's ability to reach the financial goals is...

Customer satisfaction

- Our customer satisfaction level is...
- Our company's delivery of value to our customer is...
- Our company's delivery of what our customer want is...

Market effectiveness

- Our company's growth in sales revenue is...
- Our company's acquisition of new customers is...
- Our company's sales to existing customers is...

Note. All items measured on 7-likert scales (1 = *Not at all*, 7 = *To a large extent*).

Validity and Reliability of Measures

Respectively, validity and reliability is concerned with the extent to which an instrument actually measures what it is supposed to measure and consistency of

measurement. These elements are critical for effective research. Development of reliable and valid measures helps to reduce measurement error, *a discrepancy between respondents' attributes and their survey response* (Groves, 1987, p.162). Although it is difficult to develop perfectly reliable and valid instruments, it is reasonable to design one that approaches a consistent level of response and measure in such a way that inferences drawn can be deemed to be accurate. The following section addresses issues regarding the validity and reliability of the RCQ.

Reliability

Reliability refers to the internal consistency of items that comprise a latent construct (Hair et al., 2005). In other words, variability is fundamental to this concept and the goal *is to minimize the errors and biases in a study* (Yin, 2003, p. 37). To assess reliability, composite reliability and factor loadings were used to estimate scale or construct reliability based on a cut-off point ($\alpha=0.7$) for alpha (α) values (Nunnally & Bernstein, 1994).

Construct Validity

Construct validity refers to the process of *operationalizing* (Creswell, 2003), the extent to which a measure is actually measuring what it is intended to measure (Brown, 2000) and the generalizability to the broader concept that the study attempts to measure or draw conclusions. To demonstrate the evidence of construct validity, both convergent validity and discriminant validity are tested in the present thesis.

Convergent Validity. Convergent validity refers to the extent to which multiple attempts measure the same concept when different methods are in agreement (Hair et al., 2005). That is, measures that should be related are in reality related. To assess the convergent validity, the average variance extracted (AVE) should be higher than 0.70 (Fornell & Larcker, 1981).

Discriminant Validity. Discriminant validity is the extent to which a concept differs from other concepts (Hair et al., 2005). In other words, measures that should not be related are in reality not related. In order to test for discriminant validity, the Fornell-Larcker criterion is used such the square root of AVE for each latent construct should

be higher than the construct's correlation with any other latent construct. The next section provides a description of the data analytic methods and statistical procedures.

Data Analysis

Data were analysed using the Statistical Package for the Social Sciences version 22.0 (SPSS 22.0), through the application of Structural Equation Modelling (SEM) procedures, involving Partial Least Squares (PLS) and SmartPLS (Ringle et al., 2005). PLS-SEM is a variance-based approach to SEM and the primary objective of its application is explanation of the relationships and prediction of target constructs (Hair et al., 2014). PLS-SEM has been employed in a variety of disciplines such as marketing (e.g., Henseler et al., 2009), Management information system (e.g., Chin et al., 2003), and business strategy (e.g., Hulland, 1999).

This technique was used in this study for five reasons. First, using PLS, parameters can be estimated independent of small samples, particularly with samples of less than 200 participants (Chin & Newsted, 1999). Second, PLS is regarded as a more rigorous approach to assess the paths in the causal models compared to correlation and regression analyses. Third, PLS is particularly suited to theory development and with respect to the current thesis, relationships between resilience capability dimensions and firm performance, and the influence of moderating effects have been lacking examined previously. Fourth, PLS requires less stringent assumptions of multivariate normality of data and randomness of samples (Fornell & Bookstein, 1982). Finally, a focus of this thesis is on the exploration, explanation and prediction of the impact an endogenous construct (Sarstedt et al., 2014).

Statistical Procedures

Data analyses were carried out in accord with the four steps: data screening; and assessment of measurement models, main effects models, and moderating effect model (Henseler et al., 2009; Hair et al., 2014) through the application of Partial Least Squares (PLS) - a variance-based approach to Structural Equation Modeling (SEM) for explanations of the relationships and prediction of target constructs (Hair et al., 2014). As part of the preparation and screening process, data was tested using SPSS 22.0 for missing data, suspicious response patterns, outliers and normality of data distribution (Hair et al., 2014).

First, an expectation-maximization (EM) iterative method was used to replace missing data with estimated values. Second, response patterns were examined through identifying any straight lining in the data set. No suspicious patterns were found. Finally, the normality of data distribution was assessed. Based on skewness and kurtosis, the assumption of normality supported as all values are within +1 to -1 range.

The statistical plan for the present thesis involved three main processes: assessment of measurement models, and testing of the main effect structural and moderating effect models using SmartPLS 2.0 software (Ringle et al., 2005). As PLS-SEM relies on measures indicating the model's predictive capabilities to determine the model's quality, the evaluation is then built upon a set of nonparametric evaluation criteria such as bootstrapping and blindfolding (Hair et al., 2014). A discussion of these three processes as follows. Table 4.5 provides a summary of the steps and criteria involved for model evaluation.

Table 4.5 Steps for Model Evaluation

Stage 1: Assessing Measurement Models

- *Internal consistency reliability*: Composite reliability should be higher than 0.70 (Nunnally & Bernstein, 1994).
- *Indicator reliability*: Outer loadings should be higher than 0.70.
- *Convergent validity*: The average variance extracted (AVE) should be higher than 0.50 (Fornell & Larcker, 1981).
- *Discriminant validity*: The square root of AVE in each latent construct should be higher than the construct's correlation with any other latent construct (Fornell & Larcker, 1981)

Stage 2: Assessing the Structural Model (Main Effect)

- R^2 of endogenous latent variables: R^2 values of 0.67, 0.33, or 0.19 for endogenous latent variables in the inner path model are described as substantial, moderate, or weak by Chin (1998, p. 323)
- Estimates for path coefficients: Should be evaluated in terms of sign, magnitude, and significance.
- Path coefficients' significance: Paths are significant if t -values are greater than critical t -values for a two-tailed test are 1.65 ($p=0.1$), 1.96 ($p=0.05$), and 2.58 ($p=0.01$).
- Prediction relevance Q^2 (cross-validated redundancy measure value): Q^2 values of an endogenous construct is larger than zero (>0) indicate that the exogenous (explanatory) constructs have predictive relevance for the endogenous construct.

Stage 3: Assessing the Structural Model (with moderators or interaction effects)

- R^2 of endogenous latent variables: R^2 values of 0.67, 0.33, or 0.19 for endogenous latent variables in the inner path model are described as substantial, moderate, or weak by Chin (1998, p. 323)
- Estimates for path coefficients: Should be evaluated in terms of sign, magnitude, and significance.
- Path coefficients' significance: Paths are significant if t -values are greater than critical t -values for a two-tailed test are 1.65 ($p=0.1$), 1.96 ($p=0.05$), and 2.58 ($p=0.01$).
- The strength of moderating effect or interaction effect: Can be assessed through the effect size (f^2) by comparing the R^2 of the main effect model (i.e., the model without moderating effect) with the R^2 of the full model (i.e., the model including the moderating effect).

$$f^2 = \frac{R^2 \text{ model with moderator} - R^2 \text{ model without moderator}}{1 - R^2 \text{ model with moderator}}$$

- Moderating effects with effect sizes f^2 of 0.02, 0.15, or above 0.35 can be regarded as weak, moderate, or strong (Cohen, 1988).

Note. Adapted from Hair et al. (2011), and Henseler et al. (2009)

Stage 1: Assessing Measurement Models

There are two sub-models in a structural equation model: Outer and Inner model. The outer model states the relationships between the latent variables and their observed indicators, whereas the inner model specifies the relationships between the independent and dependent latent variables. This stage involves evaluating the measurement (outer) model through an examination of the reliability and validity of the constructs to ensure the establishment of a good measurement model that supports their inclusion and evaluation of relationships in the structural model (Stage 2). Assessment includes an evaluation of composite reliability for internal consistency, indicator reliability, average variance extracted (AVE) for convergent validity, and application of the Fornell-Larcker criterion for discriminant validity.

Stage 2: Assessing the Structural Model (Main Effect)

Satisfaction results for the measurement model are a prerequisite for evaluating the relationships in the structural model. This stage focuses on analyses of the structural (inner) model that represents the underlying concept of the path model, enabling the determination of how well the empirical data support and confirm the proposed concept. The hypothesized or proposed model is then tested based on the significance of path coefficients and the coefficients of determination (R^2 values) through bootstrapping procedures. Instead of measuring goodness-of-fit, the structural model is evaluated in terms of the model's predictive capabilities, that is, the predictive relevance Q^2 is used to assess how well the model predicts the endogenous variables/constructs (Hair et al., 2014).

Stage 3: Assessing the Structural Model (Moderating or Interaction effects)

After having evaluated the main effects, moderating effects are tested at this stage in order to examine the relationships between resilience capabilities and firm performance during turbulence. To validate the moderating effects, the interaction term (i.e., cross product of the resilience capabilities and environmental turbulence construct) needs to be analysed. In this stage, the moderating effect model contains the impact of the resilience capabilities on firm performance, the direct effect of the moderating variables (i.e., the environmental turbulence) on firm performance, and the impact of the interaction variables. A moderating effect is supported when the path coefficient from the interaction term to the dependent variable is significant irrespective of other effects (Baron & Kenny, 1986).

Results

Measurement models

Internal consistency reliability, indicator reliability and convergent validity

The factor loadings are all constructs within the range of 0.7492 to 0.9486, composite reliabilities range from 0.8615 to 0.9397, exceeding the common cut-off value of 0.70. AVE exceeds the required threshold of 0.5 in all cases. These findings support reliability and convergent validity of the proposed measures (Table 4.6-4.8).

Table 4.6. Mean Scores, Standard Deviations, Cronbach's Alphas, Composite Reliabilities, and AVE for Resilience Capability Dimensions

Resilience Capability Dimensions (1 = <i>Not at all</i> , 7 = <i>To a large extent</i>)	Mean (S.D)	Adaptability	Agility^a	Anticipatory Ability^b	Flexibility
Our company frequently adopts new marketing techniques.	3.92(1.485)	0.8094			
Our company frequently introduces new products / services.	3.99(1.674)	0.8025			
Our company frequently modifies our products / services.	4.14(1.640)	0.8284			
Our company frequently adopts new technologies and skills.	3.94(1.650)	0.8686			
Our company quickly responds to changes in overall consumer demand.	4.771(1.424)		0.8458		
Our company quickly reacts to new product / service launches by competitors	4.51(1.497)		0.8918		
Our company quickly introduces new pricing schedules in response to changes in competitors' prices.	4.39(1.504)		0.7492		
Our company quickly changes (i.e., expands or reduces) the variety of products/services available for sale.	4.28(1.492)		0.7690		
Our company regularly monitors changes in our markets.	4.51(1.361)			0.8095	
Our company regularly monitors competitors' actions.	4.55(1.422)			0.8324	
Our company regularly monitors regulatory/ legal changes.	4.16(1.605)			0.7533	
Our company regularly monitors economic shifts.	4.39(1.390)			0.8113	
Our company is flexible in allocating marketing resources to market a diverse line of products.	4.25(1.428)				0.7826
Our company is flexible in allocating production resources to manufacture a broad range of product.	4.20(1.420)				0.8295
Our company is flexible in product design to support a broad range of potential product.	3.98(1.665)				0.8331
Our company has an ability to adapt our product strategies to match products/ services with targeted market segment.	4.27(1.53)				0.8375
Our company redeploys organizational resources effectively to support our firm's intended strategies.	4.15(1.467)				0.8878
Our company modifies the resources we can use in developing, manufacturing, and delivering its intended products to targeted markets.	4.19(1.514)				0.9228
<i>Cronbach's alpha</i>		<i>0.8459</i>	<i>0.8359</i>	<i>0.8151</i>	<i>0.9227</i>
<i>Composite reliability</i>		<i>0.8957</i>	<i>0.8880</i>	<i>0.8782</i>	<i>0.9397</i>
<i>Average variance extracted (AVE)</i>		<i>0.6824</i>	<i>0.6658</i>	<i>0.6435</i>	<i>0.7226</i>

Note: ^a Denotes three items were deleted. ^b Denotes two items were deleted because loadings <0.70.

Table 4.7. Mean Scores, Standard Deviations, Cronbach's Alphas, Composite Reliabilities, and AVE for Environmental Turbulence Dimensions

Environmental Turbulence (1 = <i>Not at all</i>, 7 = <i>To a large extent</i>)	Mean (S.D)	Competitive Intensity^a	Technological Uncertainty^a	Market Turbulence
In our industry, anything that one competitor can offer, others can match readily.	4.32(1.599)	0.7971		
There are many "promotion wars" in our industry.	3.99(1.616)	0.7980		
Price competition is a hallmark of our industry.	4.60(1.663)	0.7579		
Competition in our industry is cutthroat.	4.95(1.445)	0.7670		
In our industry, the technology changes rapidly.	4.11(1.884)		0.9125	
Technological changes provide a big opportunity in our industries.	4.26(1.784)		0.9486	
In our industry, it is very difficult to forecast where the technology will be in the coming year.	4.04(1.670)		0.7635	
In our industry, a large number of new product ideas have been made possible through technological breakthroughs in our industry.	4.13(1.689)		0.8915	
Our customers tend to look for new product/service all the time.	4.44(1.668)			0.8165
Our company is witnessing demand for our products/services from customers who never bought them before.	4.29(1.564)			0.8771
Our company caters too many of the same customers that we used to in the past.	4.45(1.438)			0.9126
In our industry, customers' product/service preferences change quite a bit over time.	4.47(1.655)			0.7686
<i>Cronbach's alpha</i>		<i>0.7961</i>	<i>0.9071</i>	<i>0.8667</i>
<i>Composite reliability</i>		<i>0.8615</i>	<i>0.9329</i>	<i>0.9090</i>
<i>Average variance extracted (AVE)</i>		<i>0.6087</i>	<i>0.7776</i>	<i>0.7149</i>

Note. ^a Denotes 1 item was deleted due to loading <0.70.

Table 4.8. Mean Scores, Standard Deviations, Cronbach's Alphas, Composite Reliabilities, and AVE for Firm Performance Dimensions

Firm Performance (1 = Much worse than our competitors, 7 = Much better than our competitors)	Mean (S.D)	Customer Satisfaction	Profitability	Market Effectiveness
Our customer satisfaction level is...	5.09(0.955)	0.8747		
Our company's delivery of value to our customer is...	4.89(1.122)	0.8865		
Our company's delivery of what our customer want is...	5.11(1.047)	0.8775		
Our company's return on investment (ROI) is...	4.35(1.033)		0.9331	
Our company's return on sales (ROS) is...	4.39(1.005)		0.8897	
Our company's ability to reach the financial goals is...	4.51(0.983)		0.8666	
Our company's growth in sales revenue is...	4.48(1.044)			0.9118
Our company's acquisition of new customers is...	4.31(1.229)			0.9045
Our company's sales to existing customers is...	4.66(1.147)			0.8698
<i>Cronbach's alpha</i>		0.8558	0.8793	0.8763
<i>Composite reliability</i>		0.9111	0.9249	0.9239
<i>Average variance extracted (AVE)</i>		0.7733	0.8044	0.8020

Discriminant validity

Table 4.9 shows that the square root of the AVE of each construct is larger than the correlation of that construct with all other constructs in the model. Discriminant validity is supported.

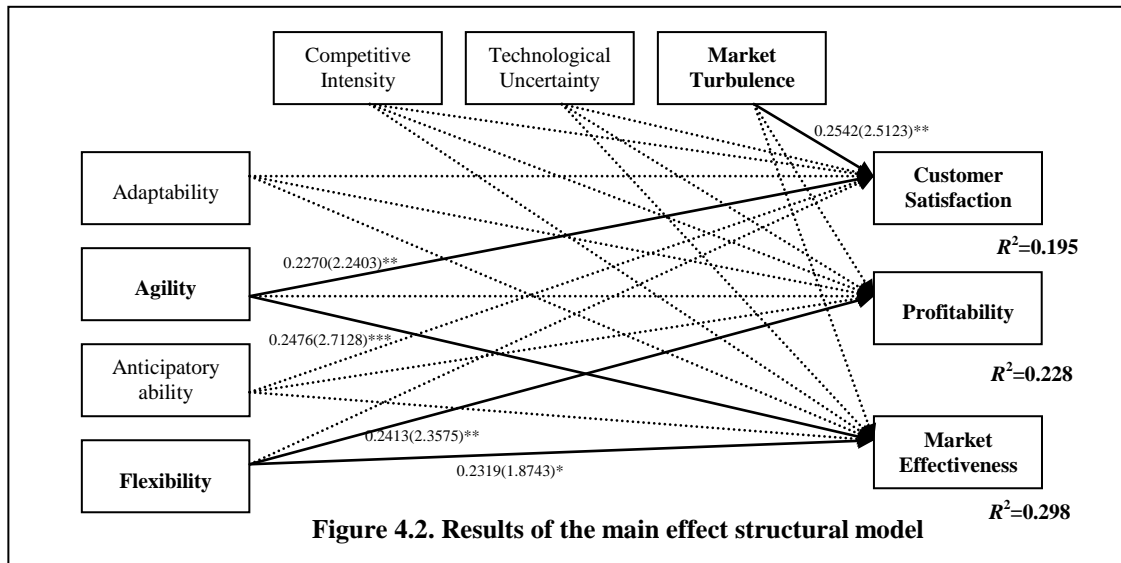
Table 4.9. Correlations and Discriminant Validity on the Construct Level

Latent Construct	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Adaptability (1)	0.826 <i>1</i>									
Agility (2)	0.519 <i>6</i>	0.816 <i>0</i>								
Anticipatory Ability (3)	0.485 <i>4</i>	0.569 <i>5</i>	0.802 <i>2</i>							
Flexibility (4)	0.742 <i>3</i>	0.508 <i>6</i>	0.426 <i>2</i>	0.805 <i>1</i>						
Competitive Intensity (5)	0.147 <i>2</i>	0.369 <i>5</i>	0.398 <i>2</i>	0.121 <i>5</i>	0.780 <i>2</i>					
Technological Uncertainty (6)	0.532 <i>6</i>	0.366 <i>2</i>	0.337 <i>7</i>	0.513 <i>5</i>	0.180 <i>0</i>	0.881 <i>8</i>				
Market Turbulence (7)	0.524 <i>6</i>	0.552 <i>3</i>	0.390 <i>4</i>	0.499 <i>4</i>	0.368 <i>8</i>	0.438 <i>9</i>	0.845 <i>5</i>			
Customer Satisfaction (8)	0.224 <i>7</i>	0.380 <i>2</i>	0.301 <i>6</i>	0.201 <i>2</i>	0.195 <i>0</i>	0.194 <i>2</i>	0.371 <i>8</i>	0.879 <i>6</i>		
Profitability (9)	0.353 <i>3</i>	0.366 <i>8</i>	0.327 <i>1</i>	0.392 <i>0</i>	0.172 <i>0</i>	0.156 <i>6</i>	0.354 <i>1</i>	0.506 <i>2</i>	0.896 <i>9</i>	
Market Effectiveness (10)	0.337 <i>9</i>	0.477 <i>2</i>	0.390 <i>8</i>	0.397 <i>1</i>	0.272 <i>8</i>	0.191 <i>6</i>	0.395 <i>3</i>	0.642 <i>6</i>	0.756 <i>1</i>	0.895 <i>5</i>

Note. The values in the diagonal are the square root of AVE, and correlations are off-diagonal.

The Main Effect Structural Model

In this stage, the main effect structural model is evaluated. The results are shown in Figure 4.2. With R^2 values of 0.195, 0.228, and 0.298, the present model explains 19.5%, 22.8%, and 29.8% of the variance of firm performance in relation to customer satisfaction, profitability and market effectiveness, respectively, indicating the predictor latent variables have weak to moderate effect at the structural level. Owing to a relatively small sample size ($n=177$), the main effect model includes five significant paths. Path coefficients range from 0.2270 to 0.2542, with the strongest effects linking market turbulence and customer satisfaction, agility and market effectiveness, and flexibility and profitability, followed by flexibility-market effectiveness, and agility-customer satisfaction.



Note. * $p < 0.1$, ** $p < 0.5$, *** $p < 0.01$. Values in parenthesis are t -values, solid lines indicate significant paths.

As well as examining the magnitude of R^2 as a criterion for predictive relevance, values of Q^2 for the endogenous variables are: customer satisfaction- 0.1105, profitability- 0.1605, and market effectiveness- 0.2133, indicating that anticipatory ability, agility, adaptability and flexibility resilience capabilities have predictive relevance for all firm performance indicators. Table 4.10 shows the full details of path coefficients, R^2 , and Q^2 of the main effect structural model.

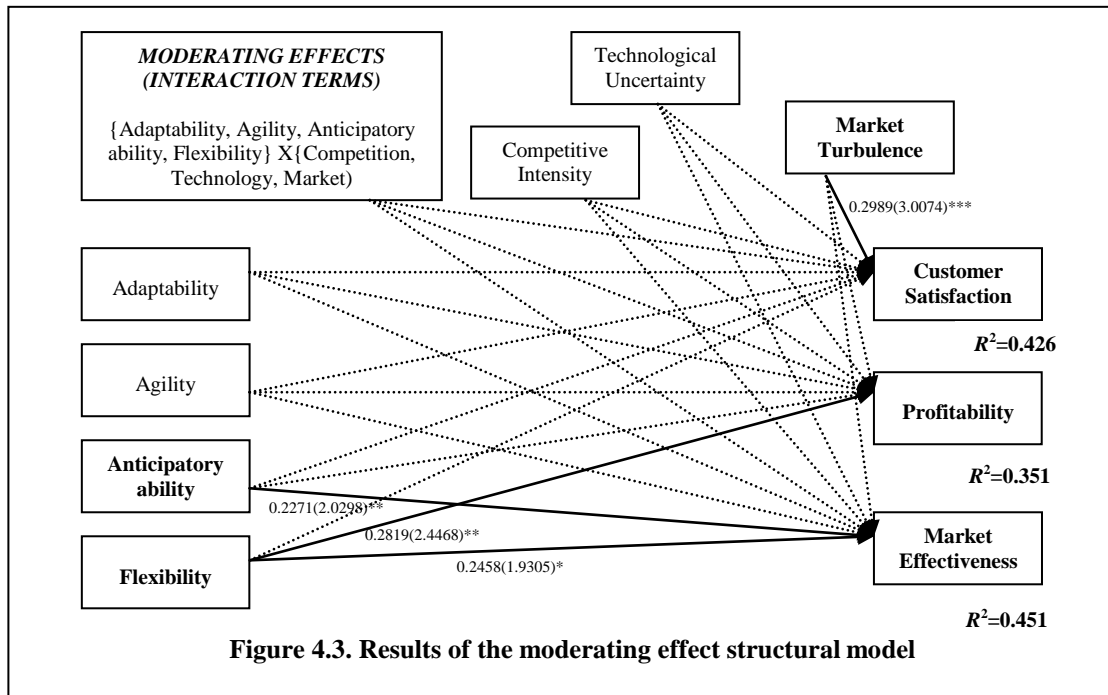
Table 4.10. Path coefficients, R^2 , and Q^2 of the Main Effect Structural Model.

Path	Path coefficient	
Adaptability → Customer satisfaction	-0.0424	
Adaptability → Profitability	0.0536	
Adaptability → Market effectiveness	-0.0507	
Agility → Customer satisfaction	0.2270**	
Agility → Profitability	0.1101	
Agility → Market effectiveness	0.2476***	
Anticipatory ability → Customer satisfaction	0.1257	
Anticipatory ability → Profitability	0.1176	
Anticipatory ability → Market effectiveness	0.1269	
Flexibility → Customer satisfaction	-0.0709	
Flexibility → Profitability	0.2413**	
Flexibility → Market effectiveness	0.2319*	
Competitive intensity → Customer satisfaction	-0.0214	
Competitive intensity → Profitability	0.0156	
Competitive intensity → Market effectiveness	0.0785	
Technological uncertainty → Customer satisfaction	0.0199	
Technological uncertainty → Profitability	-0.1481	
Technological uncertainty → Market effectiveness	-0.1089	
Market turbulence → Customer satisfaction	0.2452**	
Market turbulence → Profitability	0.1579	
Market turbulence → Market effectiveness	0.1386	
	R^2	Q^2
<i>Customer satisfaction</i>	0.195	0.1105
<i>Profitability</i>	0.228	0.1605
<i>Market effectiveness</i>	0.298	0.2133

Note. * p<0.10; **p<0.05; ***p<0.01.

The Moderating or Interaction Effect Structural Model

After having tested the main effects, the moderating effects are tested. The effect structure of environmental turbulence (i.e., competitive intensity, technological uncertainty, market turbulence) on the relationships between resilience capabilities (i.e., adaptability, anticipatory ability, agility, flexibility resilience capabilities) and firm performance (i.e., customer satisfaction, profitability, market effectiveness) is shown in Figure 4.3.



Note. * Denotes $p < 0.1$. ** $p < 0.5$. *** $p < 0.01$. Solid lines indicate significant paths.

While the R^2 values of 0.195 for customer satisfaction, 0.228 for profitability, and 0.298 for market effectiveness reflect the respective amounts of variance explained by the main effect model, these values changed significantly to 0.426, 0.351, and 0.451, respectively after moderating effects were included. The interaction terms in the present model were found to be nonsignificant, indicating that environmental turbulence did not have a significant impact on relationships between resilience capability dimensions and firm performance. Four significant positive paths were identified in the present model in which three of the paths were same as those observed in the main effect model, and a new path between anticipatory ability dimension and market effectiveness.

It is worth noting that all path coefficients increased when compared to the main effect model. While these findings suggest that turbulence tends to strengthen or intensifies relationships between flexibility resilience capability and profitability and market effectiveness, nonsignificant paths between agility - customer satisfaction and market effectiveness were identified during turbulent times (i.e., the moderating effect model). Interestingly, there is a significant path between market turbulence and customer satisfaction. Notwithstanding, nonsignificant effect sizes f^2 of 0.4024 (customer satisfaction), 0.1895 (profitability) and 0.2789 (market effectiveness) suggest moderate-to-strong moderating effects (Cohen, 1988). Table 4.11 shows the

full details of the path coefficients, R^2 , and f^2 of the moderating effect structural model.

Table 4.11. Path coefficients, R^2 , and Q^2 of the Moderating Effect Structural Model.

Path	Path coefficient	
Adaptability → Customer satisfaction	0.1025	
Adaptability → Profitability	0.0428	
Adaptability → Market effectiveness	-0.0758	
Agility → Customer satisfaction	0.1566	
Agility → Profitability	0.0922	
Agility → Market effectiveness	0.1710	
Anticipatory ability → Customer satisfaction	0.1189	
Anticipatory ability → Profitability	0.1304	
Anticipatory ability → Market effectiveness	0.2271**	
Flexibility → Customer satisfaction	-0.0621	
Flexibility → Profitability	0.2819**	
Flexibility → Market effectiveness	0.2458*	
Competitive intensity → Customer satisfaction	-0.0887	
Competitive intensity → Profitability	-0.0056	
Competitive intensity → Market effectiveness	0.0449	
Technological uncertainty → Customer satisfaction	0.1125	
Technological uncertainty → Profitability	-0.1219	
Technological uncertainty → Market effectiveness	-0.0507	
Market turbulence → Customer satisfaction	0.2989***	
Market turbulence → Profitability	0.1779	
Market turbulence → Market effectiveness	0.1404	
Moderating effects		
Adaptability * Competitive intensity → Customer satisfaction	0.0878	
Adaptability * Competitive intensity → Profitability	0.1124	
Adaptability * Competitive intensity → Market effectiveness	0.2677	
Adaptability * Technological uncertainty → Customer satisfaction	0.1885	
Adaptability * Technological uncertainty → Profitability	-0.0898	
Adaptability * Technological uncertainty → Market effectiveness	-0.0783	
Adaptability * Market turbulence → Customer satisfaction	0.2008	
Adaptability * Market turbulence → Profitability	0.1850	
Adaptability * Market turbulence → Market effectiveness	0.1404	
Agility * Competitive intensity → Customer satisfaction	0.140	
Agility * Competitive intensity → Profitability	0.1279	
Agility * Competitive intensity → Market effectiveness	-0.058	
Agility * Technological uncertainty → Customer satisfaction	0.1017	
Agility * Technological uncertainty → Profitability	-0.0464	
Agility * Technological uncertainty → Market effectiveness	-0.2318	
Agility * Market turbulence → Customer satisfaction	0.0999	
Agility * Market turbulence → Profitability	-0.0482	
Agility * Market turbulence → Market effectiveness	-0.0598	
Anticipatory ability * Competitive intensity → Customer satisfaction	0.2009	
Anticipatory ability * Competitive intensity → Profitability	-0.0726	
Anticipatory ability * Competitive intensity → Market effectiveness	0.0760	
Anticipatory ability * Technological uncertainty → Customer satisfaction	-0.0916	
Anticipatory ability * Technological uncertainty → Profitability	0.2380	
Anticipatory ability * Technological uncertainty → Market effectiveness	0.2217	
Anticipatory ability * Market turbulence → Customer satisfaction	-0.1282	
Anticipatory ability * Market turbulence → Profitability	0.0259	
Anticipatory ability * Market turbulence → Market effectiveness	0.0217	
Flexibility * Competitive intensity → Customer satisfaction	-0.1259	
Flexibility * Competitive intensity → Profitability	-0.2464	
Flexibility * Competitive intensity → Market effectiveness	-0.2234	
Flexibility * Technological uncertainty → Customer satisfaction	-0.0158	
Flexibility * Technological uncertainty → Profitability	-0.0162	
Flexibility * Technological uncertainty → Market effectiveness	-0.1217	
Flexibility * Market turbulence → Customer satisfaction	0.0353	
Flexibility * Market turbulence → Profitability	-0.0705	
Flexibility * Market turbulence → Market effectiveness	0.1111	
	R^2	f^2
Customer satisfaction	0.426	0.4024
Profitability	0.351	0.1895
Market effectiveness	0.451	0.2787

Note. * p<0.10; **p<0.05; ***p<0.01.

Discussion and Implications

This section discusses findings in relation to research objectives and concludes with limitations and recommendations for future research. Study 1 confirms that the position of resilience capability is a multi-dimensionality construct that plays an influential role in moderating the impact of turbulence on firm performance. Moreover, resilience capabilities are associated favorably with firm performance (e.g., Reinmoeller & van Baardwijk, 2005; Lengnick-Hall et al., 2011). Of particular note is the finding of increases in R^2 , and path coefficients when moderating effects were examined. These increment were relatively strong, suggesting that resilience capabilities intensify during times of turbulence.

Significant paths identified in the main effect model are contrary to Carpenter et al., (2001) who reported that resilience is desirable only in the context of uncertain conditions, the capabilities of which become evident after a disruption (Wildavsky, 1988; Coutu, 2002). Consistent with Somers (2009), the current findings indicate that resilience capabilities are in operation not only during, but also prior to times of turbulence. These findings suggest that companies should foster the development of resilience capabilities in stable environments to maintain competitiveness and enhance performance.

A comparison of main effect and moderating effect models reveals that different resilience capability dimensions come to the fore during different times of environmental turbulence. In line with Werner and Smith (1982), Garmezy (1985), and Garmezy and Rutter (1985), resilience capabilities vary across time and contexts. Specifically, the intensity of resilience capabilities fluctuates over time (Werner, 1995). This finding intimates that firms adopt different resilience capability postures (e.g., flexibility vs. agility) at different point in time in order to remain competitive.

Flexibility resilience capability is associated consistently with firm performance (i.e., profitability, market effectiveness), underpinning the importance of SMEs to maintain flexibility in resources allocation and deployment, and product design inter alia during different environmental conditions. Consistent with Eppink (1978) that flexibility serves as a strategic response to the unseen, prompting decision makers to generate different forms of flexibility and associated decision-making options for different

situations (Combe & Greenley, 2004). It is worth noting that this dimension has a substantial influence on firm performance during times of turbulence (Swamidass & Newell, 1987) as it forms the basis for competitive strategy, design, development, and implementation (Dreyer & Gronhaug, 2004). It is possible that flexibility resilience capability is crucial for organisational survival when the external environment is rather competitive, dynamic and fluid (Volberda, 1996).

As observed agility resilience capability is related positively to customer satisfaction and market effectiveness in the main effect model as identified as stable environments. However, during turbulent times (i.e., the moderating effect model), nonsignificant paths to customer satisfaction and market effectiveness, suggesting that agility resilience capability has a differential influence on firm performance is dependent upon the timing or speed of response to the extent and type of environment turbulence. Confirming with Conboy and Fitzgerald (2004), organization's ability to manage and adjust to continuous change is tied to the frequency and tempo of environmental shifts. This finding contrasts with those of Tallon and Pinsonneault view (2011) who reported that agility resilience capability is less likely to contribute to firm performance in a stable than volatile and unpredictable business environments. This thesis demonstrates the influence of agility resilience capability on different measures of firm performance prior to crises, intimating that timing or speed of response might also critical. In other words, companies act in advance rather than merely responding quickly to changes in markets, competitors, and customers. Perhaps it is important to view agility resilience capability as an ongoing process or routine associated with the nimble movement of part or of the entire enterprise (Tsourveloudis & Valavanis, 2002), further suggesting companies need to be able to adapt their behavior, and dynamically reinvent their business models and strategies before economic circumstances change (Hamel & Välikangas, 2003).

The present findings also reveal that anticipatory ability resilience capability is a nonsignificant predictor of firm performance during relatively stable environments. In the context of the present thesis, anticipatory ability resilience capability can be regarded as a knowledge-based process geared towards information seeking and prediction of events which is insufficient to impact singularly on firm performance. Notwithstanding, this dimension comes to the fore in the face of turbulence,

indicating that monitoring changes in and garnering information concerning economies, markets, competitors, and regulatory compliance is not only critical for survival, but also for being able to turn challenges into opportunities (LaValle et al., 2011). Implicit in this finding is the possibility that firms do not have the capability to monitor their external environment or focus predominately on collecting information relating to operational levels rather than for strategic purposes might be more likely to adopt a reactive stance when dealing with turbulent environments. This finding also suggests that anticipatory ability resilience capability may have a complementary effect to other resilience capability dimensions (e.g., agility, flexibility) when SMEs strive to achieve positive firm performance as adaptive companies are able to identify opportunities, threats in order to adjust to new conditions (Moorman & Miner, 1997). In other words, in order to capitalize on external shifts in highly complex environments (Lengnick-Hall & Beck, 2005), and to improve profitability (McAfee & Brynjolfsson, 2012), companies must be able to read and act on signals of change (Schoemaker & Day, 2009) in both internal and external environments by developing good risk-based (Posner & Hopkins, 2009), and informed decisions (Comfort et al., 2001), making accurate predictions and devising strategies for dealing with different operating conditions.

Depending on the context, resilience capability can be desirable or undesirable (Carpenter et al., 2001). Despite this view, the current evidence suggests that the level of expression of different types of resilience capabilities wax or waned during different times of turbulence. In line with Werner (1995), that level of resilience fluctuates over time with specific domain. This finding provides a possible explanation as to why not all resilience capability dimensions influence all measures of firm performance at one point of time or period. As a case in point, agility resilience capability is related significantly to satisfaction and market effectiveness, but not to profitability during stable environments. Adaptability resilience capability, in contrast, is unrelated significantly to firm performance both prior to and during turbulence. This finding is contrary to studies (e.g., Jennings & Seaman, 1994; Takii, 2007) that have established positive relationships between adaptability resilience capability and firm performance.

According to Bourgeois (1980), relationship between adaptability and firm performance would remain positive only up to a point and are non-linear (Snow & Hrebiniak, 1980; McKee et al., 1989), intimating that timing and intensity of application are important considerations. Other relevant influential factors might include the fit between the strategy adopted and organizational structure (McKee et al., 1989; Hallen et al., 1991), and experience dealing with turbulence (Pleitner, 1989; Walsh & Kirchoff, 1998). The seminal work of Miles and Snow (1978) distinguishes between firms that adopt either reactive or defending position to turbulence or change. These authors propose that firms displaying low levels of adaptability are likely to not only fail to sense and respond to market changes, but also to link strategy to organizational structure and processes inappropriately and to retain their organizational status quo regardless changes in the external environment (Miles & Snow, 1978).

Findings reveal that of the three environmental measures of turbulence, only market turbulence impinged on firm performance (i.e., customer satisfaction). It is possible that an industry effect is present here as the majority of companies are in service sectors. Thus, it is likely that market turbulence would have relatively higher impact to firm performance than other types of environmental turbulence.

Limitations and Future Research Directions

This thesis models the relationships between resilience capabilities and firm performance during turbulent and nonturbulent contexts. Despite the adoption of a mixed methods approach involving two studies, limitations are acknowledged. First, Study 1 utilized subjective rather than objective measures of performance because access to private and confidential information was not made available, comparative measures of performance were employed. Similar instruments have been adopted by present investigators (e.g., Dess & Robinson, 1984; Venkatraman & Ramanujam, 1986; Vorhies & Morgan, 2005; Morgan et al., 2009).

Second, findings are cross-sectional, focusing on the analysis of static, rather than longitudinal, time-series dynamic parameters. Resilience is on the reports, ratings, and memories of participants. As resilience capabilities evolve and change over time, a longitudinal approach would have been preferable to capture the dynamics of

changes and measurement of performance outcomes over time. This type of design is robust, but was not possible owing understandably to resource (financial) and time constraints.

Third, the findings of Study 1 are based only on the self-reports of CEO/owner/manager at each company. Statistically, such method does not appear to threaten the validity of the results. Future research should attempt to integrate a variety of data collection techniques such as objective financial data and utilize multilevel or multi-sources from the same organization. Notwithstanding, Study 2 employed a qualitative paradigm as a way of triangulating and extending research findings.

Fourth, although the sample included only SMEs, analyses neither explored nor assessed the influence of industry, or product/services such an exploration provides an avenue for future research to determine possible pattern of variations or similarities within and across a diverse range of industries. Similarly, classifying companies according to Miles and Snow's (1978) market typologies (i.e., reactor, defender, analyser, prospector) also provide another possible line of inquiry that might further an understanding of practical significance.

Fifth, although one of the objectives of Study 1 is to explore the interrelationships between resilience capabilities and firm performance, the current design does not permit an examination of the underlying processes driving the development and utilization of resilience capabilities, and the complementary or counter effects on firm performance. In depth qualitative research could be useful to uncover these underlying processes and further advance our understanding of this phenomenon of interest and the related relationship.

Finally, future research should consider examining the level of intensity of resilience capabilities over different time periods and contexts. Such an explanation might help to determine the relative input of different resilience capability dimensions and relative effects on performance.

In terms of the theoretical, research, and practical significance of findings, the positive associations between resilience capabilities and firm performance in turbulent environments provide a key take home message concerns the importance of developing different types of resilience capabilities, that different types are associated with different outcomes in response to different environments and times. These issues form the basics further exploration of four research questions to be addressed in Study 2: An in-depth qualitative examination of resilience capabilities, environmental turbulence, and firm performance.

Research Question 1: *In what ways do SMEs utilize resilience capabilities, if any, during times of turbulence?*

Research Question 2: *Do particular resilience capability dimensions predominate during different phases of turbulence?*

Research Question 3: *In what ways do SMEs develop resilience capabilities to deal with threats and opportunities in turbulent environments?*

Research Question 4: *How do resilience capability dimensions contribute, if any, to business performance in turbulence environments?*

Conclusion

The main objective of Study 1 was to examine the impact of resilience capabilities on firm performance in turbulent environments. Although there seems to be a consensus at the conceptual level regarding the positive impact of resilience capabilities on firm performance, review of the literature reveals a lacking of empirically-based studies exploring this association. This thesis is possibly the first empirical research to employ a contingency model to examine the moderating effect of environmental turbulence on relationships between the multidimensionality aspects of resilience capability and different measures of firm performance. Moreover, this research appears to be the first investigation to explore the concurrent effects of all four dimensions of resilience capabilities. Findings of Study 1 indicate that resilience capability dimensions are significant predictors of SME performance in both stable and turbulent environments.

Resilience capability, as reflected in the literature, involves four dimensions (i.e., adaptability, agility, anticipatory ability, flexibility). However, not all dimensions are

necessarily equally important in different competitive settings. In other words, resilience capabilities are time and context specific with different types of capabilities emerging at different times. Clearly, researchers, theoreticians, and managers need to be aware of this critical observation. Next chapter presents Study 2.

Chapter 5

Study 2

An Examination of Key Precursors to Resilience Capability and Their Utilization in Strategy Development For Dealing With Environmental Turbulence

Overview

Chapter 5 adopts an interview-based case study approach that comprises the qualitative part of this thesis. The goals of Study 2 are to confirm or refute findings of Study 1 (Chapter 4) and to extend and corroborate insights into current understanding of resilience capability in business settings. While Study 1 tests hypothesized relationships, Study 2 probes for deeper insights regarding how relationships between variables are formed. Specifically, the present chapter aims to provide an in-depth examination of the utilization of resilience capability in strategy development for dealing with threats and opportunities, key precursors and associated business performance in the SME sector. In pursuit of these objectives, face-to-face interviews were conducted with owners, CEO, or managers in a sample of four SMEs. Findings of this study are then used as a guideline for the effective development and utilization of resilience capability to build strategic responses amongst SME owners/managers in turbulent environments. Thus, this chapter begins with a description of methodology, followed by a justification of generalization, validity and reliability of the data collection procedures. Next, a detailed interview report of individual case studies is provided, following with an evaluation of data analysis involving within-case analysis with causal network models, and an acknowledgement of limitations.

Research Design

Study 2 is a case study design, involving four cases each of which is SME. Below, pertinent issues relating to generalizability of findings, validity and reliability of this approach are discussed.

Case Study Method

Case study is a common qualitative technique or strategy used for explaining the *how* and *why* questions (Yin, 2009), providing description (Kidder, 1982), testing or generating a theory (Eisenhardt, 1989b), and creating causal relationships (Yin, 2009). This approach can result in new learning about real-world behavior and its meaning. As such, case study research can be defined as *an empirical inquiry that investigates a contemporary phenomenon in depth and with in its real-life context, especially when the boundaries between phenomenon and context is not clearly evident* (Yin, 2009, p. 18), emphasizing an ability to undertake an investigation into a phenomenon in its own right and context. While O'Leary (2004, p. 116) suggested that *case studies attempt to build holistic understanding through trust and the development of rapport or trust. The goal is authenticity and a richness and depth in understanding that go beyond what is generally possible in large-scale survey research.* In addition, case studies can be employed as a follow-up to survey research in order to examine phenomena in greater depth, to validate empirical findings (Voss et al., 2002) and to describe, build, and test theory (Eisenhardt, 1989b).

Generalization of Findings, Validity and Reliability of Case Study Research

The trustworthiness of qualitative research is often challenged by positivists because of imperatives concerning generalization, validity and reliability cannot be addressed in the same way in naturalistic work (Shenton, 2004). Yet, Yin (2009) distinguished two types of generalization namely, *statistical* and *analytic generalizations* in which the latter is the appropriate type for case study research. In pursuit of a trustworthy study, four criteria can be used to establish the quality of the case study design: construct validity, internal validity, external validity, and reliability the tests of which should be applied throughout the case study process: during design, data collection, data analysis and reporting (Yin, 2009). These criteria are discussed, below.

Construct validity

Construct validity relates to establishing sound operational measures for the concepts under investigation (Yin, 2009). In other words, confirming that data collection procedures conforms a logical process that maintains consistency from research questions to conclusions. To ensure the confidence of construct validity, three key principles needed to be addressed, namely using multiple sources of evidence (triangulation), establishing a chain of evidence, and having key informants review draft case study materials.

Multiple sources of evidence. A key element of construct validity is triangulation (Yin, 2009). As noted, the present case study employed both quantitative (Study 1-survey) and qualitative procedures (Study 2-In-depth interviews), enabling the present investigator to use evidences from different sources to corroborate findings (Yin 2009). Aside from utilizing an interview protocol as a guide for data collection, accessibility to online artefacts was also obtained to develop an understanding of businesses, as well as a means of substantiating verbal information (Creswell, 2005).

Chain of evidence. Establishing and maintaining a chain of evidence allows an external observer to follow the deviations of any evidence from formulation of initial research questions to ultimate conclusions as well as circumstances of the evidence to be collected (Yin, 2009). As such, an independent reviewer was employed to examine the chain of evidence in terms of its logic, flow, clarity, and content, ensuring that data collection procedures were logical and transparent.

Having key informants review draft case study report. Participants were invited to review the draft case study reports to identify any inaccurate facts or information regarding their companies. No changes to these case studies were reported.

Internal validity

Internal validity refers to establishing causal relationships between variables (Yin, 2009) and is applied to explanatory and casual studies. For the purpose of Study 2, pattern matching was utilized during data analysis, enabling comparisons between empirically-based patterns derived from case study data with those that were predicted.

External validity

External validity is addressed at the research design stage, and is concerned with establishing a domain to which the findings can be generalized. Study 2 utilized multiple cases to ensure a level of replication logic. However, it should be noted that the purpose of these case studies was to build and extend, rather than to test theories.

Reliability

The principal test of reliability demonstrates that the operations of a study can be replicated with similar results by other parties (Yin, 2009). For Study 2, an interview protocol for data collection and the development of a case study database were made to ensure a high level of confidence in reliability. As this study involved multiple sources of evidence, a written summary of each case, information gathered from questionnaires, and online information from company websites or other social platforms were included in this database. Table 5.1 provides the details of the provisions of case study tactics and responses made by the investigator to promote confidence in accurately recording the phenomena under scrutiny.

Table 5.1 Case study tactics and responses in this study (based on Yin, 2009)

Tests	Possible Provision of Case study tactics	Stage of research in which tactics occurs	Responses to tests
Construct validity	• Using multiple data sources	Data collection	• Use of survey, in-depth interviews, and online artefacts
	• Establishing a chain of evidence	Data collection	• Employed an independent reviewer
	• Having key informants review draft case study report	Composition	• Written case study reports were reviewed by participants for any inaccurate factual information
Internal validity	• Pattern matching	Data analysis	• Patterns identified across cases
	• Explanation building	Data analysis	• Not performed
	• Time series analysis	Data analysis	• Not performed
External validity	• Using theory in single-case studies	Research design	• Not used
	• Using replication logic in multiple case studies	Research design	• Multiple cases investigated using replication logic
Reliability	• Using case study protocol	Data collection	• Same data collection procedure followed for each case, consistent set of initial research questions used in each interview
	• Developing case study database	Data collection	• Interview transcripts developed, other notes, and accesses to online artefacts

Method

Approach

To investigate how SMEs utilize resilience capabilities for strategy development in different phases of turbulence, this study followed Grant (2003) and adopted an exploratory-oriented methodology for two reasons. First, the aim of Study 2 was to develop an in-depth understanding of the ways in which SMEs develop resilience capabilities, and how these capabilities change in intensity and applications during different phases of crisis. In other words, how do SMEs deal with threats and opportunities in turbulent environments. Second, there is limited empirically-based theory relating to resilience capability.

Data Collection Procedures

In-depth Interview Protocol

An interview protocol was developed based on the research questions identified from in-depth literature review and findings emanating from Study 1 (Appendix 5.2, p. 321). This protocol comprised of four sections including an overview of the case study project (e.g., objectives, issues, topics being investigated), field procedures (e.g., credentials, access to site, sources of information), a set of questions to be addressed while collecting the data (e.g., specific questions that the researcher kept in mind during data collection), and a guide for case study report (e.g., outline and format for the narrative). Data pertaining to the strategic responses to crises (e.g., the GFC) enabled the investigator to identify differences and similarities in the ways in which companies utilized and the intensity of resilience capability associated with each of the four cases across three phases of crisis.

In-depth Interview Procedures and Participants

Semi-structured interviews of 1 hour were conducted by researcher in the period of September-October, 2012. Invited participants were given an opportunity to refuse so as to ensure that data collection procedures and information collected involve only those who were genuinely willing to participate. Following each interview, written interviews were sent to interviewees for verification and amendment, as required, and follow-up communications via email were undertaken for clarification on any issues regarding their businesses.

Four cases were conducted within the defined research framework outlined above in order to guide the research and to ensure that findings are replicable. Each case helped to understand a real-life situation of SMEs in turbulent business environments. Although selection of participants was based on convenience, a principal goal was to sample participant enterprises from a diverse range of industries, and background.

The first case (Magenta-pseudonym) was a young micro-sized firm, residing in the construction industry. This company appeared to hold limited financial and human capital. Although Magenta had no prior exposure to crises, this company demonstrated an ability to transit from reactive to proactive responses to crises. The second case (Far East-pseudonym) is a well-established company in the textiles & clothing trading industry, and in contrast has had multiple experiences dealing with crises. Far East exhibits a capability to capture opportunities during times of crisis through forward planning and formulation of medium-to-long term strategies. Westshore (pseudonym) operates in the precision tool engineering sector. This third case shows how a change in management leadership shaped the strategic vision and strategies development of the company to deal with threats and take advantage of opportunities. The final case (Emass-pseudonym), a multigenerational family business in the garment manufacturing industry, demonstrates that holding limited resources does not necessarily have to be a disadvantage when it comes to competing favorably in turbulent environments. Table 5.2 shows the demographic profile of participant companies.

Table 5.2. Profile of Cases

Company	Interviewee	Industry	Year Founded	Revenue (US)	No. of employees	Office location(s)	Target Market
Magenta	Owner/CEO	Construction / interior design (professional services)	2008	Projects range from \$50,000 - \$1m	Less than 10	Hong Kong	Local
Far East	Manager	Textiles /clothing trading /retailing	1983	\$35 m	80	Hong Kong and China	Local, regional & international
Westshore	Manager	Precision tool engineering / trading	1996	\$20 m	40	Hong Kong and Germany	Regional & international
Emass	Owner/CEO	Garment manufacturing / trading	2001	\$2 m	20	Hong Kong, China, and USA	Local, regional & international

Data Analytic Procedures

This study adopts a four-stage approach for data analysis. As shown in Table 5.3, the analysis began with basic data coding, coding for patterns, within-case analysis, and cross-case analysis, culminating in the development of causal network models (Miles & Huberman, 1994). These steps are discussed as follows.

Table 5.3. The Four Research Stages

Research Stage	Procedure and Aim	Data Analyzed
Stage 1 (<i>basic data coding</i>)	<p>Procedure</p> <ul style="list-style-type: none"> • Assigning basic codes to different dimensions of resilience capability (RC), precursors (DR), strategies for crises (ST), business performance (BP) and crises (CR) based on the evidences of how interviewees dealt with crises <p>Aim</p> <ul style="list-style-type: none"> • To code and distinguish overall themes related to resilience capabilities 	Four interviews with CEO/owners and managers of SMEs in Hong Kong
Stage 2 (<i>coding for patterns, themes, and causal links</i>)	<p>Procedure</p> <ul style="list-style-type: none"> • Development of pattern codes including themes, patterns, and causal links across four cases in terms of resilience capability building and application in turbulent environments • Coding of interview data into three distinctive periods (P) [i.e., pre-, during and post-crisis phases] <p>Aim</p> <ul style="list-style-type: none"> • To organize the interview materials into chunks or segments in terms of emerging themes • To code instances of related organizational work based on the ways in which enterprises utilized resilience capabilities 	Four interviews with CEO/owners and managers of Hong Kong-based SMEs
Stage 3 (<i>within-cases analysis</i>)	<p>Procedure</p> <ul style="list-style-type: none"> • Analysis of the dimensions of resilience capability over time • Cross-reference of resilience capability dimensions with instances of related organizational work <p>Aim</p> <ul style="list-style-type: none"> • To scrutinize the utilization of resilience capability dimensions across three phases of crisis • To examine the differential intensity of resilience capability dimensions based on the coding reference counts and level of correlation between dimensions of resilience capability and phases of utilization • To explain the interrelationships between resilience capability dimensions, precursors, strategies, and associated business performance 	Individual case study interviews with CEO/owner or manager of Hong Kong-based SMEs
Stage 4 (<i>cross-case analysis</i>)	<p>Procedure</p> <ul style="list-style-type: none"> • Comparison and identification of commonalities and differences among cases through <i>pattern matching</i> <p>Aim</p> <ul style="list-style-type: none"> • To explain the underlying reasons for the development and utilization of resilience capabilities across different phases of crisis • To prompt new questions and ideas for current understanding and development of resilience capabilities 	Making comparisons between the four cases

Stage 1: Basic Data Coding

Coding is *a systematic way in which to condense extensive data sets into smaller analyzable units through the creation of categories and concepts derived from the data* (Lockyer, 2004, p. 137). In other words, coding facilitates *the organization, retrieval, and interpretation of data and leads to conclusions on the basis of that interpretation* (Lockyer, 2004, p. 137). This stage involved reading through transcribed interview material to develop a general understanding and generate initial thoughts and consideration for data. Coding of interview began by assigning codes in the margins of each paragraph. This coding procedure was detailed and conducted twice to ensure consistency when relating coded data to the research questions and conceptual interests (Miles & Huberman, 1994). These codes included the resilience capability dimensions, key precursors of resilience capabilities, strategies adopted for dealing with crises, business performance and crises. Overall, the aim of this stage was to code and distinguish overall themes relating to resilience capability dimensions specific to the SME sector.

Stage 2: Coding for Patterns

After each unit of data was assigned its unique codes, Stage 2 employed pattern codes (explanatory or inferential categories) to identify emergent themes, configurations, and explanations (Miles & Huberman, 1994). According to Hatch (2002), patterns can be characterized by *similarity (things happen the same way)*, *difference (they happen in predictably different ways)*, *frequency (they happen often or seldom)*, *sequence (they happen in a certain order)*, *correspondence (they happen in relation to other activities or events)*, and *causation (one appears to cause another)* (p.155). Using one or more of these categorizations enabled the present researcher to identify specific patterns, and causal links. The aims of this stage were to organize the interview materials into chunks or segments through emergent themes; and to code instances of related organizational work related to resilience capability development and utilization across the different phases of crisis.

Stage 3: Within-case Analysis

Stage three (within-case analysis) examined how patterns in the four resilience capability dimensions (i.e., adaptability, agility, anticipatory ability, flexibility) evolved over time relate to the strategies companies adopted in turbulent

environments. Three phases were identified in relation to resilience capability and associated organizational work (coded in previous stage). While these phases are dynamic and overlap, the utilization of resilience capability has distinctive impacts on the configuration of strategies at participant companies.

In each crisis phase, the changing intensity of the resilience capability dimensions and details of both proactive and reactive strategies were discussed. These findings were then integrated to explore how the patterns in these dimensions might change over time relate to forms of strategies adopted, and their respective business performance. Procurers of resilience capabilities and their business performance were also reported. Finally, a causal network modeling was created displaying the *key independent and dependent variables in a field study (as shown in boxes) and of the relationships among them (as shown by arrows)* (Miles & Huberman, 1994, p.153).

The aims of this stage were to examine the differential intensity of resilience capability dimensions across different times of crisis based on coding reference counts and level of correlation between dimensions of resilience capability and phases of utilization, and to explain the interrelationships between key resilience capability, precursors, strategies and associated business performance in times of turbulence.

Stage 4: Cross-case Analysis

A cross-case analysis was conducted to identify relationships among cases, and to accumulate knowledge from across cases for concept refinement or development (Ragin, 1997). In this stage, the current researcher utilized *pattern matching* (Yin, 2009) to delineate set of factors that may have contributed to the outcomes of each case, constructed explanations for commonalities and differences, and made sense of confusing or distinctive findings (Khan & Van Wynsberghe, 2008). Specifically, theoretical replication was achieved when patterns coincided across cases and comparisons were made between the *emergent concepts, theory, or hypotheses* and *the extant literature* that involved *asking what is this similar to, what does it contradict and why* (Eisenhardt, 1989b, p.544). This activity occurred over the course of the present thesis process to strengthen the body of evidence and monitor for important developments within pertinent fields. The application of cross-case analysis not only helps to derive conclusion from a set of cases, but also compels

researchers to go beyond imagination (Stretton, 1969; Eisenhardt, 1989b). Thus, the objectives of this stage were to explain the underlying reasons for the development and utilization of resilience capabilities in times of turbulence, and to prompt new questions and ideas for a current understanding and development of resilience capabilities.

Magenta Architectural Company

Vignette

Operating in a fluctuating and competitive environment requires firms to make quick decisions, reassess their capabilities, and reorganize and reallocate resources in an effective manner. In the face of global economic conditions, low demand, tight property supply, and the financial standing of stakeholders, the construction industry is regarded as one of the most vulnerable industries amongst others. Since its start up in 2008, prior to the global financial crisis (GFC) hitting hard in Hong Kong, Magenta, a small interior and architectural company, encountered a number of crises. Despite limited resources, Magenta managed to survive and recover through immediate cost reduction, rapid rearrangement of payments to/with stakeholders, and quick market expansion. Underlying these strategic decision making were Magenta's leadership, being a risk and quick decision maker, having dual capabilities in interior design and architecture and solid relationships with clients. Magenta's resiliency can be attributed to its adaptability resilience capability (e.g., business model modification), anticipatory ability resilience capability (e.g., anticipating and understanding local/global market conditions), flexibility resilience capability (e.g., working in residential and commercial markets), and agility resilience capability (e.g., quick market expansion) in dealing with economic (e.g., slowdown of residential market), and intra-organizational (e.g. financial difficulty of contractors) challenges, leading to a quick recovery from the economic downturn, positive word-of-mouth, and profit growth through new business.

Case Summary: Magenta

Company profile

Owner/manager characteristics

- Having experience and qualification in interior design and architecture, leadership, creative, design and quality oriented, quick decision maker, risk taker, independent

Capability

- Pricing - Affordable
- Product/service development - Unique, quality, and creativity
- Channel management - Solid relationship with stakeholders through regular contact and communication
- Marketing communication - Showcase on TV, magazines, and social platforms
- Marketing information management - Use of social platforms to garner comments and feedback, research on HK-based economic and financial reports and news print media
- Design capabilities in interior design and architecture

Business model

- Diversification (expanding into new markets and growing existing markets)

View of firm resilience

- Reversal of low profit or loss into sustainable profit

Factors regarded as contributing to firm resilience capability for dealing with crises

- CEO characteristics - risk-taking, quick decision maker, leadership, skills and knowledge of interior design and architecture
- Company characteristics - micro-sized organizational structure
- Channel management - solid relationship with stakeholders

Dimensions of resilience capability

1. Adaptability

- adopting communication apps for real time information exchange
- creation of web pages/images for clients
- modifying business operating model through market expansion from the residential to commercial market
- adjusting organizational structure
- adjusting payment policy and schedule for contractors/suppliers and with clients

2. Agility

- quick and effective response to economic and intra-organizational crises
- effective strategic actions to build rapid responses

3. Anticipatory and planning

- understanding and anticipating local/global market conditions
- continuously anticipating and identifying customer needs, preferences, and market trends
- cognisant of business opportunities in other market
- identifying new material suppliers/contractors
- having contingency plans in place

4. Flexibility

- in products designing, pricing, delivery, production scheduling, and development stage
- in promoting the company and its services & products across different platforms
- having multiple sources of customer and market information
- allocating resources between different markets
- working in the residential and commercial markets
- having multiple back-up building material suppliers and contractors

Crisis #1: Global economic condition - slowdown of residential market

Strategy: Cost reduction, expansion into the commercial market

Performance Outcome: Survived through better cash flow, generating new income sources, business opportunities

Crisis #2: Financial difficulty of stakeholders

Strategy: Rearrangement of debt payments to contractors/suppliers, rescheduling to up-front payments to suppliers, negotiation of advantageous payment schedules with clients

Performance Outcome: On-time completion of projects, customer satisfaction and customer value, WOM-referrals, new and repeat business

Crisis#3 : 12-month maternity leave

Strategy: Having in place a number of business projects with repeat clients

Performance Outcome: Secured income sources

Company background

Magenta Architectural Company (pseudonym) is a Hong Kong-based interior design and architectural firm, providing a suite of services for residential and commercial renovation. Established in early 2008 by a first-time business entrepreneur, Lin was determined to start-up a business, in which she had full control of directing her own work and destiny, ensuring the individuality, quality, and uniqueness of each other company's projects. Magenta has a client base across a range of sectors (e.g., chambers, hotels, clubs/bars), and retail service types (interior & exterior renovation, façade, planning, branding & architectural related design) from residential houses to commercial offices. Over a 5-year time span, Magenta has completed 55 projects, ranging in value from US\$ 50,000 to US\$ 1 million, with 60% involving residential and 40% commercial projects. With only 2.5 continuing full-time and 10 contract staff, Magenta demonstrates how micro-sized firms can influence and be influenced by challenges posed by turbulent markets, as reported below. This case study is structured as follows. The first section begins with a brief description of the company background underlying its structure and business model, then details the different types of turbulences Magenta encountered, and the respective responses to each crisis, followed by an examination of Magenta's organizational capabilities. This case study concludes with a discussion related to factors contributing to Magenta's resiliency in the face of severe economic downturn.

Start up

Raised in Australia, Lin is well versed in appreciating the importance of pursuing her own interests and independence. Although Lin was exposed to a variety of projects and participated in a number of design competitions, her passion has been to design what she loves, rather than designing briefs assigned to her, utilizing her own creativity to maintain a sense of uniqueness for each assigned project.

Prior to start-up, Lin worked in a number of prominent and multinational architectural companies in Hong Kong. As a creative yet ambitious architectural professional, Lin's initial goals extended beyond achieving freedom and fulfillment. She anticipated becoming a senior partner in an architectural firm with an annual salary of at least US\$130,000 within 3 years. However, she believed that there were better lucrative prospects running her own company than working in a firm. Despite a lack

of managerial skills, Lin was not deterred from taking the risk of becoming a first-time entrepreneurial business founder. Looking at the booming property market in early 2008 prior to the onset of the Global Financial Crisis (GFC) later that year, coupled with the low interest rate environment, which had an effect of attracting more people to the property market, Lin saw an opportunity to launch her own brand. As she said, both pull and push factors made her more confident and determined to take the risk of starting her own venture. Interestingly, another reason for deciding to establish her own business was the forecasted over supply of design and architecture students in coming years, which could have resulted in more intense competition among professionals in this industry.

The Magenta Business Model

Magenta's business model was relatively simple from the outset, with only 2.5 full-time staff and a list of casual contractors. Having graduated with a postgraduate qualification in architecture, Lin insists on designing all projects in order to maintain consistency and quality of work. Her lack of accounting skills and administrative experience prompted the hiring of a personal assistant to fill this gap, along with a part time draftman to share the labor intensive role of drawing. Trades people are recruited on a casual basis in order to minimize costs.

At the beginning, Magenta focused only on the residential market, with the majority of her clients working as professionals, later expanding into the commercial sector. Lin's decision to be involved in designing all projects and belief that *slow work for better quality* has limited Magenta's pace of growth and take-up of extra projects. Owing to time and resources constraints, each project requires longer completion windows, in comparison to her competitors. From the onset, Lin informs her clients of the meticulous nature of Magenta's approach prior to committing to projects because the development stage for each project can often range from a few days to several months depending on scale. Because design involves considerable subjectivity, Lin prefers to work only with clients who appreciate her work and who do not hold a strong preference for quick completion.

Turbulence Associated with the Real Estate Industry

Lin stated that *the operating business environment has become increasingly harder to manage because of the frequent occurrences of short-term upsides and downsides*. Magenta, an interior design and construction company is, to a large extent, affected by global economic conditions, the financial situation of collaborative companies, market demands, and supply of property; the factors of which are not only interrelated, but also herald threats and related opportunities.

First strike: The Global Economic Condition (Slow down of the residential market)

According to Lin, *Hong Kong's business environment is affected by the overall economic condition of the world. The construction industry is highly competitive, displays wide fluctuations in activities over relatively short periods of time, and is highly exposed. This sector is more vulnerable than before, mainly because of the tight supply of property relative to demand and the oscillation of property demands during different states of the economy.* The impact of these factors is especially evident in the highs and lows of the real estate market. Lin pointed out that *while traditional Chinese thinking is to have your own property, despite the residential property market being slow with prices at a low following the GFC, buyers remained reluctant about property ownership.* Lin recalled a lesson learnt from negative gearing experiences that resulted from a slump in the property price from its peak in 1997 to the economic meltdown in 1998 (the Asian Financial Crisis). Residents of Hong Kong have become highly sensitive and alert to the possibility of housing bubbles and confidence in the state of the economy had reached a low point.

At start-up, Magenta engaged in 10 projects involving renovating small-sized apartments, through referrals. Just eight months following the launch of the business, the GFC overflowed from the US to many other countries including Hong Kong, owing to the close business connections between the US and Hong Kong. Residential property prices fell by 14% between September and December 2008 (Economic Analysis Division, May 2009) and the number of private housing unit constructions decreased from 17,300 in 2006 and 8,000 in 2008, to 7,200 in 2009 (Transport & Housing Bureau, 31 March 2010). Moreover, the number of sales and purchase agreements for residential property in 2009 was down by 55%, compared with 2008

(Economic Analysis Division, May 2009). Similarly, property transactions in the first quarter of 2009 dropped by 55% in contrast to the same period in the previous year.

First Move!

Notwithstanding, to a certain degree, survival depends on the type of market and industry sector(s) within which a company operates. However, cost reductions are not uncommon strategies that many companies adopt when dealing with economic downturns. In 2008, when the GFC hit hard in Hong Kong, Magenta made a number of prudent decisions and took immediate action by retrenching a full-time personal assistant, a part-time draftman and 5 construction workers, retaining only those considered to be quality employees. Through building relationships and partnerships with suppliers and maintaining sufficient cash reserves, Magenta was able to lower the cost of materials, goods, and the company's operations.

Magenta's business model has been driven mainly by repeat clients and referrals from friends, focusing on residential units. The downturn in the economy led to a sharp decline in the residential property market, drastically impacting on their business, virtually overnight. This dramatic plunge in economic activity placed Magenta in financial distress. Focusing only on the residential property market and the associated risk of single market concentration were further contributing factors. In light of a narrowly defined client base, attracting new clients by expanding into new markets was considered to be the best solution and as a way of diversifying the risks associated with running a business. In order to ensure that all projects were completed on time, Magenta needed new clients to harness a cash flow to run the business, despite making a loss on several projects. Lin emphasized: *word-of-mouth is the key in this industry, if such reputation is jeopardized, so does your business.* Lin further explained: *with limited available choice and not much time for thinking, Magenta quickly shifted its focus and direction onto the commercial sector, as investors enjoyed the low cost of expanding their businesses during the economic downturn.* According to the Hong Kong Land Registry, prices of office spaces declined by 9% during December 2008 to March 2009 (Economic Analysis Division, May 2009). As such, Lin decided to capture the opportunities to be had in the commercial market sector such as retail, hotel, food, and beverage in order to expand its income source and limited market base. These businesses usually fit-out and

renovate their premises, on average, every 4 years owing to a relatively short business cycle, and high customer expectations, further confirming the decision to move into the commercial market.

Although global economic condition forced changes in their business model, Magenta took into account the level of risk. Lin stated that, *I assess both the downside and upside of all projects, giving a project the go ahead only when the downside is evaluated as: not that bad.* As a case in point, shortly following the decision to seek projects in the commercial sector, Magenta was approached by an entrepreneur to renovate one of his hotel premises. Although the offer was attractive, Lin was wary that Magenta might be *too small for such a big project, especially with only three employees.* Following a number of meetings with the hotel owner, and an assessment of internal and personal resources, and manpower, Lin turned Magenta's small size to an advantage by reorganizing existing resources and reallocating resources assigned to residential assignments to this commercial project. She also proposed to narrow down the project into number of phases so that the hotel could remain partly open during the period of renovation. This approach was a win-win situation enabling the hotel to remain operational and generate business revenue, while ensuring that Magenta maintained sufficient cash flow for running this and other projects. The decision to reorganize and reallocate resources demonstrates a level of risk-taking, highlighting the potential loss and costs involved in owner-managing her own company in the face of having given up an opportunity to be a business partner in a large company with a relatively high annual salary.

Second Strike: Financial Difficulty of Stakeholders

Compounding difficulties was the delay in payments from clients, bankruptcy of several notable suppliers, and unpaid construction workers engaged by contractor company, leading to problems in financing on-going projects. Remaining healthy and stable financially can be a challenge for start-ups and SMEs at the best of times, and a lack of sufficient capital and cash flow as well as receiving late payment for services are not uncommon for companies, particularly in the construction industry. The industry norm for payment arrangements (to contractors/construction workers/suppliers or from clients) usually spreads over four phases, 30% prior to starting a project, a 30% interim payment, 30% upon site completion, and 10%

following client review. The payment process can collapse when one party fails to commit to their responsibilities or meet their contractual obligations. Based on the payment schedule, it is not unusual for payments to be spent in advance. For Magenta, a serious financial problem arose when one of their contractors failed to pay construction workers when the contractor's client filed for bankruptcy. Magenta had paid the contractor money received from their clients, the money of which was utilized by the contractor on other projects, including the purchase of materials.

Let's Rearrange!

Cash flow uncertainty predominates in this industry, in particular, for contractors. In order to address this issue, Magenta immediately developed a policy of paying contractors 40-50% of costs upfront and 50% upon completion, as way of allaying fears, increasing a sense of confidence and motivation, and ensuring that contractors had sufficient capital to sustain business operations and cash for buying materials, and paying workers. This process of payment has helped to foster trust between owners and contractors, leading to the engagement of quality employees, enhanced contractor morale, high work quality, and timely completion of projects.

As for suppliers, Magenta is prepared to pay for the purchase of goods prior to delivery, the practice of which is unusual in the construction industry where payment is often made post good arrival. Again, advance payment has helped to build close relationships with suppliers, ensuring quality and on-time material delivery. Lin explained that, *Magenta's relationship with suppliers goes beyond business and is akin to friendship*, as evident by invitations to attend a suppliers' daughter's wedding and other family gatherings.

Word-of-mouth referrals and long-term relationships are intangibles and distinctive assets that Magenta possesses, although powerful, these intangibles are hard to build. Lin emphasized that promoting Magenta's brand image and reputation, maintaining positive word-of-mouth, and delivering added value have enabled Magenta to negotiate advantageous payment schedules with their clients during the time of crisis. Subsequently, clients are in positions to receive sound returns on investments. For instance, for the club and bar projects, clients prefer their business operations to

recommence on schedule following projects, to generate profits. Thus, priority is given to project commencement and completion dates.

Lin's quick decision making coupled with positive word-of-mouth has enabled Magenta to expand its market to the commercial sector, helping the company to resolve cash flow problems and to finance the continuity of current residential projects. More importantly, Magenta was able to reallocate limited resources to areas that seemed more promising and to build brand at different times during the economic crisis condition. A prominent outcome of her strategic move was to survive through the GFC and recover from financial distress.

Recovery of the Property Market

Following the economic surge in mid-2009, coupled with improvements in income levels, a favorable labor market, an increasing demand for property, relatively sound economic conditions, an ongoing low interest environment, and tight supply relative to demand, the residential property market gained momentum, leading to strong support for both prices and transactions (Economic Analysis Division, May 2010). Notwithstanding, the Hong Kong Government strove to ensure a healthy and stable development of the property market through the introduction of a Special Stamp Duty (SSD) in November 2010 and tightening of the down payment on property. The Euro zone debt crisis in late 2010 appeared to have only a marginal effect on the property market, affecting mainly speculation of luxury flats, since the market is led primarily by small-medium-sized flat users. Based on Land Registry Department data, the total number of sale and purchase agreements for residential property rebounded approximately by 36% from the previous quarter to the first quarter of 2012 (Economic Analysis Division, May 2012). Despite the upward movement of demand leading to significant increases in property prices having the effect of minimizing funding and budgets for residential renovations, Magenta was able to secure business from this sector.

In hindsight, Magenta would have dealt with the challenges associated with the GFC and other crisis differently. Lin stated that *I would have communicated with the construction workers more often to obtain first-hand information about their situation, to gain an appreciation of what was happening on the ground and to*

observe important signals earlier, to help mitigate the impact of problems on the company. Having said that, Lin believed that the GFC was a *good* lesson for appreciating the importance of detecting the negative signals at arm's length and the importance of having contingency plans in place, to ensure that Magenta was well prepared for any drastic future events.

Be Prepared!

From February 2011 to early 2012, Lin was on maternity leave. Although work-life balance was on the forefront of her mind, in order to address her absence, and more importantly, having experienced both economic and intra-organizational crises as previously stated, she had rapidly lined-up and secured commercial projects with her repeat clients prior to taking leave of absence. According to Lin, *the development stage of a commercial project can take at least 6 months prior to commencement of construction, depending on the scale of the project, in turn, giving me the flexibility and time to work from home, and because of the relationships I had forged, my clients were willing to postpone projects to accommodate my needs and schedule.* Her clients saw the added value associated with successfully completed projects. Lin pointed out *how over that time, these projects helped my clients to generate solid revenue.* For instance, in number of cases, her clients were able to charge at least 2-times more rental than the market price, with hotel room rates selling for 4-times their previous price. These added values have been transformed into positive word-of-mouth, repeat businesses, and solid profits for Magenta.

Magenta's Capabilities

As explored below, six significant capabilities including: channel management, pricing, product/service development, marketing communication, market information management, and design characterize Magenta.

Channel management

Like any other industry, Magenta views relationships with stakeholders as pivotal for success. Part of Magenta's success and crisis recovery can be attributed to developing and building solid relationships with valuable clients, enabled through regular contact and open communication so that needs and expectations are clearly articulated and understood. Magenta uses communication apps extensively, which help to facilitate

real time information exchange between different stakeholders (dynamic capability), enabling fast decision making and quick-time problem solving in everyday business operation (agility).

Furthermore, Magenta has developed solid business relationship with suppliers and contractors by working closely with them and through effective payment rearrangement (agility), as outlined earlier. The increasing number of bankruptcies among suppliers in China, and the risk of contractor companies cash flow short-falls triggered Magenta to identify new material suppliers in Hong Kong (anticipatory ability) and to have a back-up labor force (flexibility) in case of overflow capacity and to minimize any risks of oversupply or workload, in the case of disruptions. Magenta is conscious of the potential disadvantage of being small, and is very selective with whom they partner to ensure that resources are utilized in the most effective manner and that on-time project completion is maintained.

The supply of skilled and youthful labor in the construction industry is another imperative, and is influenced by its image. Although workers are regarded in general as uneducated, the work tends to be physically demanding, involving long hours in tough conditions. The majority of contractors engaged by Magenta are in their 50s, and their physical capabilities are of concern, particularly in the long-term.

Pricing

Pricing has a major impact on Magenta's success. Lin aims to ensure that the company's designs are affordable and can be enjoyed by a diverse range of clients. Magenta strives to set prices for services lower than those of competitors. According to Lin, pricing models for design projects such as a hotel project might be 50% less than that of competitors, without sacrificing both quality and inventiveness.

Product/service development

Magenta is a creative and design focused company, placing heightened stress on the delivery of new products or services to customers, ultimately providing Magenta with a unique position amongst competitors. Being the owner of this company, Lin has given the capacity to mandate decisions concerning the type of and flexibility in product design, as well as pricing, delivery, production arrangement, and which target

market segments (flexibility) upon which to concentrate. Although competitors could match the prices set by Magenta, Lin emphasized *that developing a competitive edge means ensuring the provision of quality work that has high customer value*. Magenta's designs incorporate western elements, reflecting Lin's formative background, education, and values. For Lin, maintaining a competitive edge means ensuring individuality, quality, and avoiding duplications or repetition in design.

In relation to commercial clients, Lin also introduced a new branding service (adaptability) not provided by the majority of Magenta's competitors. Specifically, this service concerns the creation of websites reflecting new brand images, enabling clients to see how their hotel, club, or bar could be positioned in relation to different market segments. Lin described this process as *simply creating another image from an architectural perspective*. Lin said that the presentation of alternative perspectives usually surprised her clients as it provided them with different ways to generate sales from a new image on their business websites. As a case in point, Lin described *how such a website added twice the rental market value to one of the residential projects, following a renovation*.

Marketing communication

Often SMEs do not have the resources to undertake marketing activities necessitating the adoption of alternative approaches. Magenta pursues a creative and innovative approach *to get people to know*. One way in which Magenta has marketed the company has been by accepting invitations to showcase their work on television programs and to feature their designs in home/office-related magazines and newspapers, at no cost. Their promotional activities appear to target both potential and current customers, and are sometimes scheduled during economic downturns to maintain their exposure in the public domain. According to Lin, *these special arrangement have been effective because they provide a variety of platforms upon which our projects can be displayed, marketed, and shared with a wide-ranging audience* (flexibility). However, limited time, manpower, and resources, along with project-related responsibilities have to some degree hindered further opportunities to promote Magenta's brand images and reputation. In this regards, Lin has arranged for the introduction and promulgation of a range of marketing activities such as

showcases on TV and magazines that flag the company during times of relative economic prosperity (flexibility, dynamic capability).

Market information management

Market research has helped Magenta to understand existing customers and effectively market their new projects (anticipatory ability). For example, Magenta posts images of completed projects, and collect existing and potential customers reviews and comments on each project on various social platforms (flexibility) including Facebook (Magenta does not have an official website). Visits to hotels and restaurants, and analysis of relevant magazines to determine latest trends are undertaken regularly. As well, time is spent researching the latest property transactions to ascertain which sector predominates (anticipatory ability). Financial reports and news print media are also monitored to track the economic condition of Hong Kong and globally, allowing Magenta to obtain the information needed for making quick decision in response to economic threats and related opportunities (anticipatory ability, agility, strategy-market diversification).

Design Capabilities in Interior Design and Architecture

Magenta relies heavily on its design capabilities for developing products that are unique, of quality, and individually responsive to different markets. It appears that possession of dual capabilities in interior design and architecture have contributed significantly to Magenta's survival and recovery during crises, enabling the company to have the flexibility and knowledge to work in both residential and commercial sectors (flexibility, strategy - market diversification). Associated with these capabilities are a unique sense of interior design, and familiarity with regulations and laws across sectors. It seems that these distinctive qualities are not common in either profession, in the same industry. Lin stressed that *the possession of architectural skills is very important for working on commercial projects since there are many regulations and laws that must be followed, and these regulations are often revised or amended*. Her role as a consultant and owner-manager of an interior and architectural firm allows the enterprise to provide relevant advice to clients, adding that the time working as an employee helped her to develop relevant knowledge and keep abreast of changes in the industry. According to Lin, *not remaining current of developments in the industry, practice, regulations, and law placed companies in peril because of*

the high costs associated with ignoring or missing key elements relating to each of these areas (anticipatory ability).

The above case demonstrates how individual and organizational capabilities are organized, interacted, and become embedded organizational processes that lead to emergence of specific organizational capabilities. Next, an examination of emergence of resilience capability dimensions over time, the precursors of resilience capabilities, development of strategies and their respective business performance at Magenta will be conducted.

Within-case Analysis

Today's operating environment is challenging, driven by global economic conditions, lows and highs in the property market, and the financial situation of stakeholders. Accordingly, the construction industry in Hong Kong has become increasingly vulnerable exposed to fluctuation in global markets. The present case study reveals the key CEO and company characteristics that have contributed to the development of resilience capability, and the strategic responses employed by Magenta when dealing with threats and related opportunities, ultimately affecting the firm's performance. Table 5.4 provides detailed supporting qualitative evidence for each dimension of resilience and their respective proactive and reactive plan of actions for each phase of the crisis with numbered references to particular verbatim quotes associated with the findings.

Pre-crisis: Defining - with an emphasis on anticipatory ability and flexibility resilience capabilities

The early strategies of Magenta emphasized on delivering quality and creative work to the residential market, and holding the belief of *slow work for better quality*. At the same time, there was pressure from having limited financial and human resources to compete favorably in this highly competitive industry. In addressing these challenges, Magenta focused on business operational practices and procedures that enabled the provision of quality work and services that had high customer value and led to positive word-of-mouth.

As the data show, the principal dimensions of resilience capability that were prominent in this phase were flexibility and anticipatory ability. Flexibility reflected Magenta's micro-sized organizational structure, limited resources, as well as the CEO characteristics. The focus of strategies utilized in conjunction with this dimension was about effective and efficient use of limited resources. In promoting the company and its services and products, Magenta pursued a creative and innovative approach such as accepting invitations to showcase on television, magazines, and the news print media [1.1]. These activities enabled the company to reach a wide-ranging audience across different platforms without incurring additional operating costs, building positive brand image, and maintaining exposure in the public domain. Besides, Magenta garnered customer and market information from multiple sources [1.2] so as to obtain a full picture of customer needs and preferences, consequently, facilitating the provision of products/services that match with current markets. Table 4.5 shows the links between resilience dimensions, precursors, and performance across three phases of turbulences.

Anticipatory ability was also emphasized during this phase and was utilized for examining local/global market conditions, the capability of which is critical for operating in this industry. Not complying with industry practices, regulations, and law can result in negative repercussions [1.3]. Magenta was able to acquire pertinent information by constantly reviewing financial data, industry reports, and news print media coverage to ensure an appreciation of any developmental changes in the industry. Although Magenta preferred to work with clients who appreciate individuality and uniqueness of work standards, collection of customer comments and feedback was regarded highly [1.4]. These proactive activities were driven by market information management capability and the characteristics of the CEO (design & quality oriented) geared to understanding and anticipating customer preferences and needs, and leading to future improvements, acquisition of new customers, and new market entry.

Overall, this phase reflects efforts by the owner/manager to define operating practices and procedures within and across her company, and to identify the enterprises position in the industry based on the company's core value and provision of quality products/services to its target markets. Cultivating key operating principles and

defining the business and its associated context were key features associated with this phase

During-crisis: Refining - reactive strategies with an emphasis on adaptability and agility resilience capabilities

In absence of prior crisis experience and lack of time for planning and thinking in advance, Magenta's strategies tended to be predominately reactive during the heat of the crisis. Despite the reactive nature of these responses, assessment and evaluation of risks was viewed as essential and critical. In this phase, the utilization of multiple dimensions of resilience capability was highlighted, specifically, the increasing emphases on adaptability and agility resilience in strategy development for handling crises.

Notably, during the GFC, culminating in a slowdown of the residential market, had forced Magenta to immediately rethink its current business model (adaptability and agility). With the utilization of knowledge and analysis of both local and global economic conditions (anticipatory ability), Magenta was able to expand quickly into the commercial market [2.1], anticipating business opportunities to be had in this sector [2.2], with an immediate reallocation of resources from the residential to commercial market (dynamic capability). However, being a small company with limited resources, placed Magenta in a conundrum. Magenta was able to reorganize available resources and turned this limitation to its advantage by exercising a high degree of organizational flexibility by effectively shifting resources from the residential to commercial markets [2.3]. Other strategies for dealing with crises included immediate organizational restructuring through staff retrenchment [2.4], and quick amendment to payment policy and schedule for contractors and suppliers [2.5].

Regarding the agility dimension, two notable CEO characteristics were identified as key precursors to its development, namely risk taking and quick decision making, driving rapid strategic decisions relating to operating practices (e.g., market expansion, growing an existing market). Capitalizing on this major advantage - dual knowledge in interior design and architecture enabled Magenta to create a new income stream by expanding into the commercial sector, and to initiate projects that had the potential to secure its financial future, in turn, leading to positive firm

performance (e.g., profitability, new/repeat business, sustainability). Interestingly, Magenta did not consciously realize the potential advantage inherent in the organization's design capabilities prior the GFC hitting hard in Hong Kong as evidenced by its prime focus on the residential market.

Flexibility and agility were driven by Magenta's design capability, in which knowledge of interior design and architecture provided the elasticity to quickly expand into new markets and to work concurrently in both residential and commercial sectors. Moreover, Magenta's micro-sized organizational structure allowed the flexibility in resource allocation and development of solid working relationships with stakeholders, in turn, maintaining positive word-of-mouth clients, customer satisfaction, and profitability, as a result of on-time completion and quality work (firm performance).

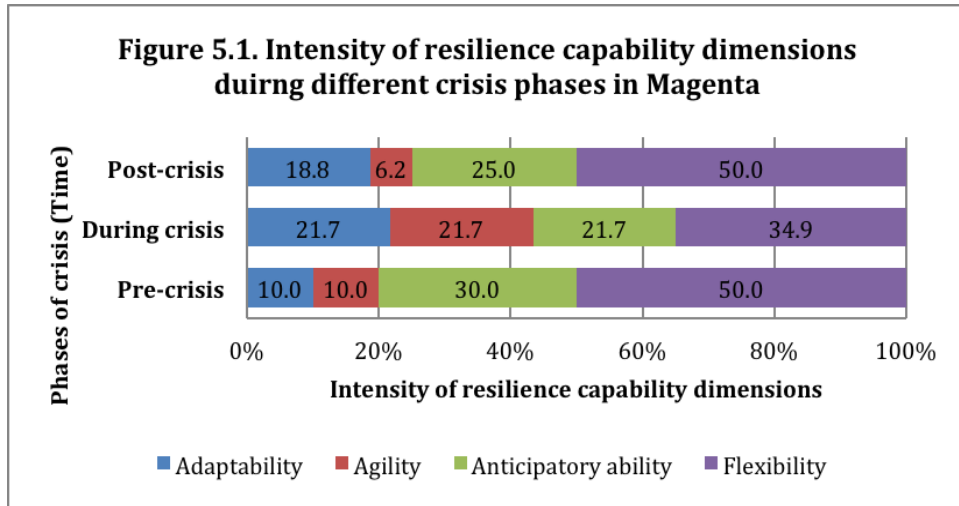
Although CEO and company characteristics play a leading role in the formation of resilience capability, organizational capabilities contribute significantly to its development. For instance, market information management gave rise to agile responses (rapid expansion into the commercial market) to deal with the economic crisis (slowdown of residential property market) through identification of business opportunities in other sectors (anticipatory ability resilience capability). Solid relationships with stakeholders (channel management capability) not only contributed to negotiation of advantageous payment schedules with clients to resolve cash flow problems (adaptability resilience capability), but also to ensure having multiple back-up building material suppliers and contractors (flexibility resilience capability), and quick responses to economic and intra-organizational crises (agility resilience capability).

This phase was about refining through testing Magenta's capability against crises, specifically, examining its preparedness and responsiveness for challenges in turbulent environments. Particular attention was placed on carving out an operating business model, practices, and procedures as a consequence of crises. Moreover, strategies developed in pre-crisis phase were also under assessment for refinement during this phase.

Although agility was prominent and critical during the time of the crisis, outcomes were dependent upon the effectiveness of strategies for dealing with threats and opportunities. For instance, immediate staff retrenchment to reduce cost was just an example of temporary relief from crisis in Magenta. In other words, simply acting fast is not sufficient to contribute business sustainability, instead, agility was deployed for strategic actions that lead to thriving and growing the company. To take full advantage of this resilience capability dimension, Magenta made a series of strategic decisions in association with other dimensions to support the new market expansion such as resource allocation between different markets. These decisions, in turn, led to the emergence of a new business model incorporating target markets, products & services offered, and operating practices. In general, this phase was about evaluation, refinement, and change challenging the continuation of the existing business model.

Post-crisis: Planning- proactive strategies with an emphasis on anticipatory ability and flexibility resilience capabilities

Predominantly, this third phase was about adapting to the refined business model. Despite the achievements in both sectors, the unstable global economic condition posed threats to Magenta's existence. As a result of having experienced the challenges associated with different crises, Magenta realized the importance of sensing signs of change and risks in both internal and external environments, having contingency plans in place in order to mitigate the impact of problems on the company [3.1], and having a number of business projects lined up in the pipe-line prior to taking maternity leave [3.2]. To address these issues, being proactive and prepared were essential for dealing with the turbulent environment. Consequently, anticipatory ability was employed increasingly during this phase and flexibility also predominated. Again, refinement of specific activities developed during the previous two phases continued. This phase was also one of reflection and planning to build heightened awareness of internal and external business environments, reinforcing the development of strategies that could be deployed in an agile manner to deal efficiently with any future challenges.



In summary, the intensity and influence of each dimension of resilience capability fluctuates, demonstrating a relative level of significance during different phases of turbulence. In other words, for each company, different resilience dimensions are enacted during specific phases of crisis. As shown in Figure 5.1, flexibility and anticipatory ability come to the fore in the pre- and post-crisis phases. While increasing intensity of adaptability and agility resilience was evidenced during the heat of the crisis. Through the implementation of appropriate strategies, each of these dimensions of the resilience capability enabled Magenta to manage the rigors of and to capture the opportunities that emerged as consequence of the crisis.

Conclusion

A contextual analysis of interview material reveals that operating practices evolve as external environmental conditions change. Environmental turbulence (e.g., the GFC) leads to business model modifications, realization and development of resilience capability, moderating relationships between strategies (e.g., rearrangement of contractor payments, market expansion), and firm performance (e.g., sustainability, profitability). The proposed causal network model shown in Figure 5.2 illustrates the interrelationships between antecedents of resilience capabilities development, strategies, and business performance. The present case study demonstrates how a company shifted from being predominantly reactive to the crises to being proactive as evidenced by the deployment of high levels of anticipatory ability after experiencing different crises.

To sum up, the case of Magenta provides an in-depth contextual analysis of how a small enterprise responded to economic and intra-organizational turbulences, identifying the antecedent factors that contribute to the development of resilience capability. This case study suggests that specific dimensions utilized or drawn upon to deal with turbulent environment play a significant role in the development of resilience capability. These dimensions include adaptability resilience capability (e.g., business model modification), anticipatory ability resilience capability (e.g., having contingency plans in place, regularly monitoring the external environment), flexibility resilience capability (e.g., allocating resources for different markets/projects), and agility resilience capability (e.g., making timely & effective strategic decisions). It is noteworthy that Lin defined resilience as *a company able to turn low profits or loss into solid profits easily*, during an economic downturn. Being agile, flexible, and anticipatory enabled Magenta to develop effective strategies for managing existing crises as well as potential challenges associated with unstable business environments, in turn, contributing to sound firm performance during times of change.

Table 5.4. Dimensions of resilience capability and their respective proactive and reactive plan of actions across different phases of crises for Magenta

Resilience dimensions /Crisis	Pre-crisis	During crisis	Post-crisis
Adaptability	<ul style="list-style-type: none"> Using communication apps for real time information exchange between different stakeholders in everyday business operation* 	<ul style="list-style-type: none"> Repositioning of a client company on the web from an architectural perspective*: <i>Simply creating another image from an architectural perspective...how such a website added twice the rental market value to one of the residential projects, following a renovation</i> Modifying business operating model through expansion from the residential to commercial market [2.1] Adjusting organizational structure [2.4] Amending payment policy and schedule for contractors/suppliers and with clients* [2.5] Continuation and refinement of the activity, processes, and procedures (with *) adopted in pre-crisis phase 	<ul style="list-style-type: none"> Continuation and/or refinement of those activities, processes, and procedures (with *) in earlier phases.
Agility	<ul style="list-style-type: none"> Having in place a number of business projects with repeat clients prior to taking maternity leave during February 2011-February 2012: <i>...because of the relationships I had forged, my clients were willing to postpone projects to accommodate my needs and schedule</i> [3.2] 	<ul style="list-style-type: none"> Quick response to sharp decline in the residential property market: <i>With limited available choice and not much time for thinking, Magenta quickly shifted its focus and direction onto the commercial sector, as investors enjoyed the low cost of expanding their businesses during the economic downturn...</i>[2.1] Immediate staff retrenchment for cost reduction [2.4] Rapid debt payment rearrangement to contractors to deal with their financial difficulties [2.5] Instant rescheduling to up-front payments to suppliers rather than on-delivery of goods to address the bankruptcy of several notable suppliers [2.5] Negotiation of advantageous payment schedules with clients to resolve cash flow problem and to finance the continuity of current residential projects 	<ul style="list-style-type: none"> Maintaining a policy of up-front payments to suppliers has helped Magenta to build close relationships with suppliers, ensuring quality: <i>Magenta's relationships with suppliers goes beyond business and is akin to friendship</i>
Anticipatory ability	<ul style="list-style-type: none"> Understand and anticipate local/global market conditions*: <i>Not remaining current of developments in the industry, practice, regulations, and law placed companies in peril because of the high costs associated with ignoring or missing key elements relating to each of these areas</i> [1.3] 	<ul style="list-style-type: none"> Cognisant of the business opportunities and revenue growth to be had in the commercial sector [2.2] Identifying new suppliers of building materials* Continuation and refinement of those activities, processes, procedures (with *) adopted in the pre-crisis phase 	<ul style="list-style-type: none"> Continuation and refinement of those activities, processes, and procedures (with *) in earlier phases.

Note. *Italic denotes verbatim quote from respondent.*

Table continues...

Resilience dimensions /Crisis	Pre-crisis	During crisis	Post-crisis
Flexibility	<ul style="list-style-type: none"> • Identifying latest market trends by regular hotel and restaurant visits, and analysis of relevant magazines* • Understanding existing customers based on the collection of customer comments and feedback through an exploration of various social platforms such as Facebook, TV, newspapers, magazines* [1.4] • In product design, pricing, delivery, production arrangement for different market segments* • In promoting the company and its services & products across different platforms*: <i>These special arrangement have been effective because they provide a variety of platforms upon which our projects can be displayed, marketed, and shared with a wide-ranging audience</i> [1.1] • In collecting customer and market information from various sources including hotel and restaurant visits* • In resource allocation for the residential market* [1.2] • Full control for the duration of commercial project development stage*: <i>The development stage of a commercial project can take at least 6 months prior to commencement of construction, giving me the flexibility to work from home...</i> (for lining-up commercial projects during maternity leave) 	<ul style="list-style-type: none"> • Shifting between residential and commercial markets* • Having multiple back-up building material suppliers and workers* • Allocating resources for the commercial markets* [2.3] • Continuation and refinement of those activities, processes, procedures (with *) adopted in the pre-crisis phase 	<ul style="list-style-type: none"> • Having contingency plans in place, holding regular meetings, and communicating frequently with construction workers: <i>I would have communicated with the construction workers more often to obtain first-hand information about their situation...to observe important signals earlier, to help mitigate the impact of problems on the company</i> [3.1] • Continuation and refinement of those activities, processes, and procedures (with *) adopted in earlier phases

Table 5.5. Linking different dimensions of resilience capability to precursors and firm performance across three phases of turbulences.

Phases of turbulences	Resiliency dimensions	Precursors	Performance outcomes	
Phase 1: Pre-crisis	<i>Adaptability</i>	<ul style="list-style-type: none"> • Using communication apps for real time information exchange* 	<ul style="list-style-type: none"> • Dynamic capability (sharing customer & market information between stakeholders), CEO characteristics (creative), company characteristics (micro-sized organizational structure, limited resources) => adoption of information technology (without incurring additional operational cost) for sharing information between stakeholders 	<ul style="list-style-type: none"> • Quick decision making and problem solving in daily business operation
	<i>Agility</i>	<ul style="list-style-type: none"> • Having in place a number of business projects prior to taking maternity leave 	<ul style="list-style-type: none"> • Previous crisis experience => serving as a <i>good lesson</i> to develop advance planning for agile responses to future drastic situations • Channel management (solid relationships with clients), customer value and positive word-of-mouth, dynamic capability (reallocation and reorganization of resources for different projects => allowing immediate pre-arrangement of projects with current commercial clients • CEO characteristics (leadership, quick decision maker) => enabling quick decision making when crises arise • Company characteristics (micro-sized organizational structure, limited resources) => enabling quick decision to be made to address the potential challenges of being absent from maternity leave 	<ul style="list-style-type: none"> • Secured businesses and income • Sustainability • Profitability
	<i>Anticipatory ability</i>	<ul style="list-style-type: none"> • Understand and anticipate local/global market conditions* • Understanding existing customers based on the collection of customer comments and feedback through an exploration of various social platforms such as Facebook, TV, newspapers, magazines* 	<ul style="list-style-type: none"> • Market information management => collection of industry and economic information has enabled the company to identify business threats and opportunities in the industry • Market information management, CEO characteristics (design oriented, quality oriented)=> ensuring the quality of the products/services through customer information gathering 	<ul style="list-style-type: none"> • Started the first business venture • Keeping abreast with changes in the industry and economy locally and globally • Understanding the opportunities to be had in the commercial market • Understanding and anticipating current and potential customer preferences and needs for better products/services offer • Identifying areas for improvements

* Denotes the continuation of the resiliency dimensions with the same precursors in the coming phases.

Table continues...

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes	
	<i>Flexibility</i>	<ul style="list-style-type: none"> • Identifying latest market trends by regular hotel and restaurant visits, and analysis of relevant magazines* • In product design, pricing, delivery, production arrangement for the residential market* • In promoting the company and its services & products across different platforms* • Multiple sources of customer and market information* • Full control for the duration of commercial project development stage* 	<ul style="list-style-type: none"> • Market information management => gathering and analysing information about current market trends • CEO characteristics (design oriented, quality oriented), company characteristics (micro-sized organizational structure, limited resources) => ensuring resources are effectively utilized and allocated for the residential market for the purpose of maintaining product/service quality • Market communication, CEO characteristics (leadership, creative), company characteristics (limited resources) => creatively utilizing different platforms to target current and potential markets without incurring additional operating costs • Market information management => ensuring resources are effectively used to collect multiple sources of customer and market information • CEO characteristics (experience and qualification in interior design and architecture, design oriented, quality oriented, independent) => ensuring flexibility and sufficient time for project development prior to commencement of construction 	<ul style="list-style-type: none"> • Understanding the latest market trends and customer preferences • Serving markets according to different needs and requirements • Maintaining exposure in the public domain especially during economic downturn • Building brand image • Effectively promoting and marketing products/services to both potential and current customers • Full understanding of customer and market needs from different sources • Enabling to work from home • Having full control of the development progress • Clients were willing to postpone projects
Phase 2: During crisis	<i>Adaptability</i>	<ul style="list-style-type: none"> • Repositioning of a client company on the web from an architectural perspective* • Modifying business operating model through market expansion 	<ul style="list-style-type: none"> • Product, CEO characteristics (creative, experience and qualification in interior design and architecture) => creating another image from an architectural perspective • CEO characteristics (leadership), company characteristics (limited resources), design capabilities => expanding from the residential to commercial markets 	<ul style="list-style-type: none"> • Generating higher sales from this new image for clients • Creating customer value • New/repeat business • Word-of-mouth • Reducing the risk of single market concentration

Table continues...

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes
<i>Agility</i>	<ul style="list-style-type: none"> • Adjusting organizational structure • Amending payment policy and schedule for contractors/suppliers and with clients 	<ul style="list-style-type: none"> • CEO characteristics (leadership), and company characteristics (limited resources) => reducing headcount for cost saving • CEO characteristics (leadership), and company characteristics (limited resources), channel management => ensuring contractors had sufficient capital to sustain business operations and cash for buying materials, and paying workers 	<ul style="list-style-type: none"> • Cost saving • Freeing up capital for other business expenses • On time project completion • Maintaining positive word-of-mouth from clients • Strengthening the business relationships between stakeholders
	<ul style="list-style-type: none"> • Quick response to sharp decline in the residential property market 	<ul style="list-style-type: none"> • Design capabilities => enabling the flexibility to work in both residential and commercial projects • Dynamic capability (reallocation and reorganization of resources between different markets/projects), CEO characteristics (experience and qualification in interior design and architecture, quick decision maker, risk taker, independent), company characteristics (micro-sized structure) => quick action to expand into the commercial sector through resources reallocation and reorganization to the commercial market 	<ul style="list-style-type: none"> • Dealing with the slowdown of residential property market • Generating new businesses and income from the commercial projects • Resolving the cash flow problem • Financing the continuity of residential projects • Profitability • Sustainability
<i>Anticipatory ability</i>	<ul style="list-style-type: none"> • Immediate staff retrenchment for cost reduction 	<ul style="list-style-type: none"> • CEO characteristics (quick decision maker), company characteristics (micro-sized structure) => quick response to GFC (i.e., slow down of residential market) 	<ul style="list-style-type: none"> • Reducing the business operating cost • Maintaining cash flow to sustain the business • Business continuation
	<ul style="list-style-type: none"> • Rapid debt payment rearrangement to contractors for project continuation 	<ul style="list-style-type: none"> • CEO characteristics (quick decision maker), company characteristics (micro-sized structure) => quick response to financial difficulty of contractors 	<ul style="list-style-type: none"> • Enabling the continuation of the current projects • Maintaining on-time project completion • Building solid relationships • Business continuation
	<ul style="list-style-type: none"> • Instant rescheduling to up-front payments to suppliers rather than on-delivery of goods 	<ul style="list-style-type: none"> • CEO characteristics (quick decision maker), company characteristics (micro-sized structure) => quick response to bankruptcy of several notable suppliers 	<ul style="list-style-type: none"> • On-time delivery of building materials • Enabling on-time project completion • Building solid relationships • Business continuation
	<ul style="list-style-type: none"> • Cognisant of the business opportunities and revenue growth to be had in the commercial sector* 	<ul style="list-style-type: none"> • Market information management, CEO characteristics (leadership) => enabling the identification of business opportunities in particular sectors 	<ul style="list-style-type: none"> • Expanding into the commercial sector during crisis

Table continues...

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes
	<ul style="list-style-type: none"> • Negotiation of advantageous payment schedules with clients* 	<ul style="list-style-type: none"> • Channel management (solid relationships with clients), positive word-of-mouth and delivering added value, brand image and reputation, CEO characteristics (quick decision maker) => enabling a quick negotiation with clients during the time of crisis 	<ul style="list-style-type: none"> • Having advantageous payment schedules • On-time project completion • Business continuation •
	<ul style="list-style-type: none"> • Identifying new suppliers of building materials* 	<ul style="list-style-type: none"> • Channel management, market information management => ensuring on-time delivery in case of bankruptcy among suppliers or delay in goods delivery 	<ul style="list-style-type: none"> • Enabling immediate shift to another suppliers if problems arise
	<p><i>Flexibility</i></p> <ul style="list-style-type: none"> • In shifting between the residential and commercial markets 	<ul style="list-style-type: none"> • CEO characteristics (experience and qualification in interior design and architecture), dynamic capability (reallocation and reorganization of resources for different markets) => design capabilities => ability to work in both residential and commercial sectors 	<ul style="list-style-type: none"> • Enabling expansion into the commercial sector during crisis
	<ul style="list-style-type: none"> • In having multiple back-up suppliers and contractors* • In resource reallocation for the commercial market* 	<ul style="list-style-type: none"> • Channel management => serving as back-up in case of overflow or disruption • Company characteristics (limited resources), dynamic capability (reallocation and reorganization of resources for different markets) => utilizing resources efficiently and effectively 	<ul style="list-style-type: none"> • Enabling immediate shift to another suppliers or contractors if problems arise • Enabling expansion into the commercial sector during crisis
Phase 3: Post-crisis	<p><i>Anticipatory ability</i></p> <ul style="list-style-type: none"> • Having contingency plans in place, holding regular meetings, and communicating frequently with construction workers 	<ul style="list-style-type: none"> • Previous crisis experience (CEO characteristic), channel management => enabling advance detection of negative signals at arm's length and the importance of having contingency plans in place 	<ul style="list-style-type: none"> • Preparing for future drastic events by anticipating and developing agile response to crisis

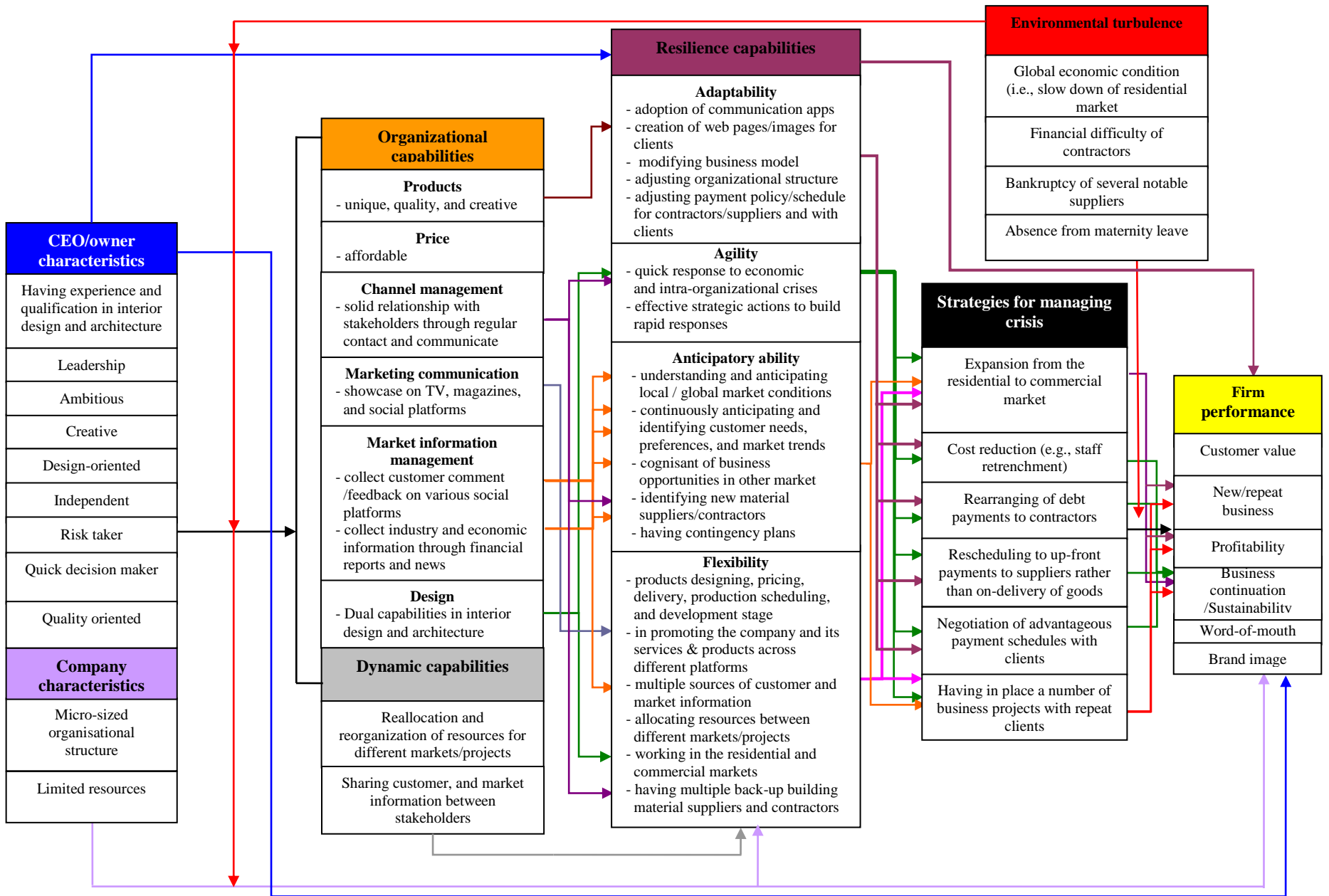


Figure 5.2: Causal network model of relationships between CEO/owner and company characteristics, organisational and dynamic capabilities, resilience capabilities, strategies, and firm performance

Far East Textiles and Clothing Company

Vignette

Competitive pressure, and changing consumer and economic conditions require firms to evolve and rethink their business models, more importantly to cultivate resilience through capability building for effective organizational strategies. In spite of the increasing dominance of fast fashion culture, rising cost of production in China, lack of skilled labor, and profit concentration on one label, Far East Textiles and Clothing Company, a supplier of quality apparel to European markets managed to survive, expand, and make impressive profit through market expansion, and backward and vertical integration. Far East's success can be attributed to their proactively utilized resilience capabilities such as flexibility in resource allocation and production arrangement, anticipatory ability to constantly exploring business opportunities and threats, adaptability of modifying business operating model, processes, activities and structure, agility in making proactive responses across different phases of crisis. Being a resilient company Far East's leadership, proactive culture and financial footing, coupled with other organizational capabilities, enabling the development of effective strategies in dealing with turbulent environment in order to ensure the growth, profitability, and sustainability of the company.

Case Summary: Far East

Company profile

Company characteristics

- Flat structure, leadership, design- and quality-oriented, proactive culture, financial footing, multi-skilled employees

Capability

- Product development - new and quality products designed by in-house designers
- Channel management - long-term relationships with material suppliers, production manufacturers, and customers
- Marketing communication - branding by sponsorship, direct marketing
- Marketing information management - gathers economic, market, and customer data from different sources
- Human resource management - employee training and remuneration
- Information technology - a centralized system for integrating, storing, analyzing, and disseminating information for effective and efficient decision making
- Research and design capabilities - research team within departments for new materials, fabric searching

Business model

- Diversification (expanding into new geographic location, growing existing market), backward (having own production plan) and vertical integration (retailing through partnerships with Chinese companies)

View of firm resilience

A company's ability to recover from, or to survive through economic downturns

Factors regarded as contributing to firm resilience capability for dealing with crises

- Company characteristics - strong management team, proactive culture, solid financial background
- Channel management
- Market information management
- Human resource management
- Information technology
- Research and design

Dimensions of resilience capability

1. Adaptability

- modifying business model
- adjusting production allocation activities
- adopting a cross-functional team
- regularly introducing new & quality products
- modifying products
- adopting latest technology
- aligning employee skills with current market needs

2. Agility

- quick response to market and economic threats/opportunities
- proactive strategic actions to build rapid response

3. Anticipatory ability

- searching new materials, material suppliers, production manufacturers, IT applications
- exploring business opportunities
- assessing and identifying potential partnerships with Chinese companies
- anticipating customer needs and market trends
- identifying current market skills level
- exploring and identifying new product ideas

4. Flexibility

- in product design, development, materials used
- in promoting and marketing products
- in production arrangement
- having multiple sources of customer and market information
- allocating resources and deployment
- multi-skilled employees
- having multiple material suppliers and manufacturers

Crisis #1: Dominance of fast fashion culture

Strategy: Focused on quality products at affordable price, introduced new materials, adoption of a centralized IT system for better forecasting customer demand

Performance Outcome: Customer value, satisfaction, profitability, repeat/new business

Crisis #2: Increasing cost of production, difficulties in sourcing suppliers for small order quantity

Strategy: Backward integration - to have their own production plant and moved outsourced production of high-end product to Turkey

Performance Outcome: Cost reduction, better control of quality and cost of production, divert the risk of outsourcing to suppliers in China

Crisis#3 : Concentration of profits on one label

Strategy: Acquired a German label, expansion into the Chinese market

Performance Outcome: New/repeat business, profitability, market shares, growth

Company background

Far East Textiles and Clothing Company (pseudonym), a supplier of fashion apparel, employs 80 people across two locations in Hong Kong and China. Founded in 1983, this privately owned company offers fashionable easy-to-wear quality clothing to European countries (e.g., Belgium, Denmark, France, Switzerland). Annual turnover is around US\$35 million. Founded as an exporter, Far East launched their first label in 1984 positioned as a modern fashion brand, followed by a glamorous and stylish label, and a children's collection in 1994. In 2010, the company acquired its latest brand for its so-called Elegant Attitude. Far East is committed and aims to supply premium quality lady clothing that is skillfully made, reasonably priced, and capable of surviving ephemeral fashion fads. While the company's vision of fashion encompasses provision of unique personalized characteristics and operational excellence, the company's values are geared towards offering a wide range of creative and quality products, coupled with management leadership which underpin this inspired business. As outlined below, the present case study begins with a brief introduction of the company, and its customer base, followed by an overview of the export industry. Both the threats and opportunities in the fashion industry and the ways in which this company has resolved these crises are discussed. Next, the organizational capabilities are reviewed, concluding with an overall analysis of the resiliency characteristics comprising Far East.

Production Process Model

Each season, Far East introduces new collections utilizing materials sourced from China, Hong Kong, Italy, and Taiwan. Garments are designed in-house to ensure that collections retain their creative essence. The collection development stage usually takes nine months and involves choosing fabric material, color selection, theme development, sample production, and finished garment. Sample collections are presented at client meetings, and exhibited at trade fairs and fashion shows in Europe. This approach enables Far East to understand existing customers and explore further sales opportunities in local markets. Orders are made through their Hong Kong office and production is outsourced to local factories in Hong Kong and China (80%), and suppliers in Turkey (20%). To ensure quality excellence, regular factory visits are arranged to monitor the production process and quality of garments.

The Company

Far East is a financially successful company, demonstrating an impressive sale performance in 2008 in the face of Global Financial Crisis. Winnie (manager of the knit department who has been working in Far East for 12 years) attributed this performance to *their strong financial management team*. Profits are reinvested in the growth of the company. Emphasis is also placed on developing multi-skilled employees to enable the mobility of staff and production of quality products/services that match market needs, and ultimately lead to satisfied customers, return business, and solid profits. Another reason for success can be attributed to devoted and committed staff. Far East holds the view that staff satisfaction and morale are integral precursors to overall business performance. And it is for this reason that profit sharing such as bonuses is a priority for the company, fostering an alignment of work performance and career advancement with long-term financial rewards.

Employee performance is measured by a 360 degree appraisal process, consisting of a panel with direct line-managers, team members, and respective employees. Participants and direct line-managers complete proformas for self-assessment. An objective is to achieve a comprehensive picture of how each employee is performing, revealing strengths and weaknesses. Results are used for personal development and improvement, highlighting training needs and objectives for future direction. The company employs this evaluation process for administrative decision-making process relating to salaries, promotions, and career advancement.

Structure and Culture

Since start up, Far East has adopted a flat organizational structure, encouraging open dialogue at weekly internal meetings in which problems or issues can be voiced and resolved. Winnie explained that *regular contact between staff is critical as the process of production is continuous and interrelated*. Individual communication responsibilities are well addressed at all levels so that the absence of a team member does not affect service delivery and continuity of business operations. In addition, social gatherings such as Christmas parties, team luncheons, employee birthday celebrations, and farewell/retirement parties, anniversary dinners are organized throughout the year, providing opportunities for staff and stakeholders to build solid relationships and long-term trust with each other.

With a bottom-up approach, quick decision can be made, enabling staff to be responsive to customer needs and enquiries. It is not uncommon for some staff to feel a sense of ownership because they feel empowered by this process and have opportunities to be part of decision-making process. As the company grows, Far East ensures that their business structure evolves in line with environmental changes. Internally, managers maintain an open door policy.

Open-minded and Proactive Culture

Far East incorporates a platform for employees to articulate and share thoughts about the company, products/services, latest trends in the industry, and also to appraise decisions and actions as their work often involves making quick decisions and rapid problem solving. Regular on-the-job training, staff retreats, team building activities, and management workshops are organized for developing team spirit, employee confidence, and job-related skills, particularly in relation to decision making. For example, when the supply of a material is unavailable, employees need to search for alternatives, requiring employees to rethink, assess, and act quickly to prevent delays in production processes and shipment schedules.

As a proactive company, Far East does not wait passively to respond to a competitor's actions, instead, the company searches actively for new materials, evaluates potential markets for expansion, seizes opportunities for investment, and allocates pertinent resources for future strategic activities. For instance, the increasing cost associated with small order productions, along with the imposing difficulty to outsource to China, triggered Far East to build its own production plant and to outsource part of its production to other countries such as Turkey to improve efficiency and for cost saving.

Customers and Markets

In 2000, Far east attempted to develop a menswear label, but failed to proceed to production because of inadequate client orders, forcing a reallocation and reorganization of resources to other growing and profitable areas. With only four labels targeting different market segments, Far East, as a supplier of quality apparel, has been enjoying financial success, selling quality clothing to both wholesalers and retailers in European markets. The four distinctive markets include: ***Label 1:***

targeting adults in the 40+ year age segment with basic, modern and contemporary style apparel; **Label 2**: attracting late 20-to-30 years of age female customers with a glamorous luxurious style; **Label 3**: children's clothing for people aged from one year of age to teenagers; and **Label 4**: an elegant style for young adults in the mid 20-year-of-age market.

The Export Industry

Hong Kong is a global centre for world trade. In 2011, Hong Kong was ranked the 10th largest trading entity; the freest economy (US Heritage Foundation) and the second easiest place to do business in the world (IFC, 2011; Hong Kong Census & Statistics Department, 2011). Hong Kong's economy has become increasingly service-oriented since 1980 contributing to 93% of GDP in which import/export, wholesale and retail trades remain two of the largest service sectors, accounting for 27%, in 2011 (Hong Kong Census & Statistics Department, 2011).

However, in 2011, the economic situation deteriorated significantly, mainly as a spillover from the tsunami and associated nuclear meltdown that hit Japan in which regional supply chains were disrupted, coupled with the persistently high unemployment and depressing housing market in US, and the Eurozone sovereign debt crisis, resulting in deceleration in industrial activities and trade flows in the second half of that year. According to the International Financial Corporation in 2011, world trade recorded its largest decline in more than 70 years (Doing Business 2011, IFC), and in Hong Kong, the value of total exports of goods decreased by 2.8% in October 2012, in which articles of apparel and clothing accessories fell notably by 15.9% when compared with the previous year (Census and Statistics Department, 2012). Clearly, the fragile recovery of the US economy and the sovereign debt problems in Europe continue to affect Hong Kong's export performance, which remains challenging for the near term, especially EU demand for clothing and textiles will likely stay on relatively weak through 2015 (Hong Kong Census & Statistics Department, 2012). Winnie stated that *today's operating environment is much harder than before, and companies in the fashion industry need to be aware of the rapidly changing business conditions*. Despite the marginal effects of the meltdown in the US and European economies, Far East was affected by a number of other factors

including fast fashion culture; increasing cost of production, and concentration of profits from one of their labels.

Trend or Fad? - The Dominance of Fast Fashion Culture

The fashion apparel industry has significantly evolved over the previous 20 years, especially during the preceding decade, shifting the culture of fashion from ready-to-wear to fast fashion (e.g., Zara, H&M) and phasing-out mass production; forcing fashion companies to compete not only on price, but also to respond rapidly to changing fashion trends and consumer demands. This new business paradigm has resulted in shorter product life cycles, encouraging consumers to revisit their wardrobes regularly, pressure on established supply chains, and companies needing to rethink and evolve their business models in order to survive in an heightened competitive environment.

As pointed out by Winnie, *the traditional fashion industry assesses the needs and wants of consumers based on forecasting consumer demand from historical data and trends, usually about is prior to the actual time of consumption...however, such estimation usually not accurate since demand is forecasted a lot earlier...even though we incorporate our experience in anticipating the demand, with this increasingly changing customer preference, it is getting harder than ever before...* The risks associated with inaccurate forecasts poses challenges predicting consumer demands, and being competitive in changing markets. To address these challenges, Far East incorporated the use of information technology (IT) in 2008 in order to stay current with the market and also to improve their forecasting ability. This system is used to store, integrate, and analyze information related to production, sales figures, and customer feedback, enabling staff to retrieve up-to-date data on a centralized system to enable quick decision making. The system is dynamic and evolving, helping Far East to *remain agile to market changes*, narrowing any gap between actual and forecast customer demand, and allowing a close match with the predicted needs of the market.

The conventional fashion calendar year primarily consists of a basic pattern of Spring/Summer and Autumn/Winter range collections. Fast fashion however, can have up to 20 seasons in a year, requiring relatively short production and distribution

lead times, but allowing a close match of supply with uncertain demand. Changes in operations associated with seasonal fashions and trends inflict additional pressures on traditional firms that are already operating in highly competitive business environments. Winnie said, *Far East recognizes that quality and longevity are of paramount importance and that ready-to-wear still has a position in the market.* Although Far East is unable to compete favorably across a diverse product range involving rapid stock turnover, the company manages to produce quality garments in over 2000 styles spreading over six seasons with production lead times of less than four months.

To Move or Not to Move? Increasing Cost of Production in China

As mentioned previously, companies in the fashion industry use time cycles or seasons as a way of enhancing their competitiveness. Consequently, development cycles are short requiring high levels of efficiency in both transportation and delivery. Notwithstanding, cost remains at the forefront of companies' buying decisions, forcing companies to take advantage of relatively lower costs of production in less developed countries, such as China, Turkey, Portugal, and Bangladesh, the countries of which account for 75% of all clothing exports in the world (Financial Times, 2004).

Based in Hong Kong, Far East takes advantage of its close proximity to China, including low labor costs, and established garment and textile production chains. These comparative advantages have changed in recent years, when the Chinese government imposed restrictions and reforms in the industry (e.g., 2010 increases in minimum wages in Guangdong, reduced VAT rebates in 2006, 2007) significantly increasing the cost of production. As a result, Far East found it difficult to source acceptable suppliers in China. Having said that, China continues to benefit on a massive scale having a sizeable domestic home market, and seems to remain a dominant producer in the garment industry for the foreseeable future. The recognition of manufacturers and suppliers in other less developing countries such as Bangladesh, India, Vietnam inter alia has not be neglected and manufacturers in these countries are slowly replacing Chinese manufacturing companies positioned at the low-end of the garment industry.

When compared with other companies such as Zara and H&M, Far East outsources a relatively small volume of production, rising costs of production can impact significantly impact on pricing strategies and profit margins. Far East has adopted a medium price range strategy. High-end pricing products would force their apparel out of the market, while low prices would lead to significant losses. To remain competitive, Far East embarked on a strategic move of backward integration, building their own production plant in China in 2008 before GFC, and outsourcing part of their production to Turkey.

First Production Plant

Although the majority of production is outsourced to manufacturers in China, in early 2012, Far East commenced production of samples and test runs of orders from their in-house production plant located in Guangdong. Outsourcing and backward integration is not without its problems. Despite the relatively low cost of production, the supply of human capital, especially experienced workers, is of major concern. Thus, Far East has embarked on an extensive program of training its employees to develop specific skills. Guangdong province has a predominance of unskilled and inexperienced people Winnie elaborates,

The decision of having in-house production is to better control the cost and quality of production, to accommodate small orders, and to prepare for future expansion in China Market ... Far East is determined to enter this market through partnerships with China companies and vertical integration. The objective is to extend our business geographics into the Asian market for the growth of the company in terms of both market share and profitability...in fact, we have already had an initial discussion with some [China] companies...hopefully to get it rolling in the coming year...

Far East made its initial standing in the China market in 2012, and currently, the Qingyuan production plant is only partially operational and not ready for bulk production owing to a shortage of skilled labor. It is for this reason that Far East is actively and rapidly recruiting labor and providing extensive skill-based training in preparation for the plant to be operational fully in early 2013.

Having Back-up Suppliers/Manufacturers

Far East started outsourcing high-end garment productions to Turkey in late 2012 because of the close proximity to target markets to encourage quick introduction to new products, to source alternative suppliers who imposed no restrictions on quantity, and Turkish manufacturers' capabilities of speed and flexibility to produce intricately high-quality garments. Winnie stated that,

the majority of our products require small shipments with wide-ranging styles ... outsourcing to nations like Turkey enables relative ease of procuring fabrics, lower cost of production, and faster new product launch to our market... Manufacturing companies in these countries are competent in complicated workmanship, low policy and duty costs arising from liberalized access to the European Union (EU), and relatively low shipping costs to our European markets due to closer proximity...no restriction on production quantity ... Turkey's strong competitiveness as a clothing supplier, makes it the ideal place for garment manufacturing when compared to its counterparts in other nations.

Far East demonstrates flexibility and agility when responding to production demands through the employment of both outsourced and in-house manufacturing facilities for productions of large scale low-cost garments in China, fulfillment of small orders in their own plants, and meeting the demands for high-end garments which are manufactured in Turkey. These capabilities allow Far East to integrate and reallocate existing resources effectively and to disperse the risk of concentrating on suppliers in only one country.

Too Much in One Basket?

A central concern for Far East involves the fact that the most of their revenue is generated from only one label, accounting for 90% of total profits. To address this problem, in 2010 management acquired an established brand and its associated market share. Winnie explained: *it was a good time because the cost of acquisition was comparatively lower in 2010, than a few years ago. Using an existing label is effective in terms of time, cost of development, and immediate market entry, enabling Far East to leap into a new market faster and widening its source of revenue.* Yet, the relentless slowdown of global economic conditions, placed further pressure on the

realization of forecasted profits. Constant reviews are made to develop instant responses to products adjustment, and marketing activity modifications. In the face of these economic conditions, top management regard the acquisition positively, despite the less than forecasted generated revenue, and remains optimistic for the future. To minimize the risk of devoting too many resources (capital, personnel, time) in a short period, Far East implemented and executed strategic and responses, one at a time.

Marketing Capabilities

Far East is characterized by seven prominent organizational capabilities that enable the company to deal with rapid changes in the fashion industry and support the continuity of business operation during different economic conditions. As discussed below, these key capabilities involve product development, channel management, marketing communication, marketing information management, human resource, information technology, and research and design.

Product Development

To remain competitive, Far East, as a designed-oriented company, launches new collections every year (adaptability), and emphasizes the delivery of quality clothing with in-house design, providing a comparative edge over competitors. In addition, Far East ensures their offerings match customer needs by continuously adjusting and modifying products based on customer feedback and comments (adaptability). Winnie elaborated that

Far East does not sacrifice quality in return for short-term products, unlike other fast fashion retailers, which focus on inexpensive materials and cost effectiveness ... Far East attracts customers with products made with quality fabrics and our own design, that require the company to launch new collections every season ... The research teams within each individual department, constantly look for new ideas and materials including knit, and woven garments ... Staff in these departments are specialized, familiar, and responsible for the design and selection of their respective products, rather than the company having a centralized department responsible for the entire collection ... Having a platform and holding regular meetings, means that employees can share, discuss, and assess innovative ideas concerning product development (anticipatory

ability, dynamic capability) and determine the feasibility of their own and these ideas.

Channel Management

Far East stresses the importance of working relationships with outsourced suppliers of products and materials, which are built upon long-term trust with stakeholders who share similar or common values. *Far East treats these suppliers and partners as if they are part of their family* where they hold regular discussions about the company's production plans and sales results, while sharing customer feedback and comments (dynamic capability). These solid relationship enable Far East to source new materials and fabrics from different countries (flexibility) for new products, identifying alternate suppliers and manufacturers for samples and garment production (anticipatory ability, flexibility), and quickly changing to another suppliers (agility) if production problems arise. Winnie elaborated that *holding regular conversations allow all parties to understand customer needs (anticipatory ability), ensuring production is smooth and on schedule, and that garments are of high quality ... leading to customer satisfaction, repeat business, and of course, high profits and return.* Interestingly, the interrelationships among suppliers are also notably positive. According to Winnie, *suppliers work closely together with each other allowing Far East's small orders, to minimize cost of production. It is not uncommon for suppliers to order fabric together to meet minimum order quantity requirements, sharing the cost of delivering goods and materials, and administrative costs of custom clearance.*

Marketing Communication

Marketing communications play a leading role in their use of sponsorship arrangements, direct marketing in promoting, and marketing products, as well as building positive image in the public domain.

Branding by sponsorship. Corporate social responsibility is given high prominence. Far East carries out brand awareness campaigns through their sponsorship program of local charity organizations, helping underprivileged children build better futures. The company supports local sport events and competitions, helping reinforce an image of *being a responsible organization offering quality products to customers.* As a business-to-business company, Far East does not commission promotional activities

such as TV or magazine advertisements. Instead, the company utilizes direct marketing methods, allowing direct communication with customers and the direct promotion of products to target markets.

Direct marketing. As noted previously, Far East employs direct marketing procedures as a way of approaching existing and potential markets. Sales teams use pre-developed product catalogues and sample garments to discuss new collections with potential buyers in meetings, and also to obtain feedback and commentary on quality, design, delivery, and on other required characteristics. Additionally, Far East remains current of customer preferences and market needs by participating in trade, fabric, and fashion shows (anticipatory ability), offering opportunities to reach out to other potential buyers and to expand existing markets. Complimentary gifts such as recycled bags and accessories are given to customers for promotional purposes and as a token of appreciation.

Market Information Management

Information on customers is garnered from different sources such as trade fairs, fabric and fashion shows, enabling Far East to monitor changes in customer demand, preferences, and needs (anticipatory ability). This information is stored on databases and cross-tabulated according to a number of criteria, such as markets, segments, and countries. Fashion and trade magazines are also examined to identify latest trends and news, and worthy events in the industry. End of season meetings are arranged with buyers to discuss positive and negative aspects of the services provided and products delivered. Information from these various sources is conveyed in the form of reports to stakeholders and reviewed at meetings. Monitoring customer satisfaction levels, undertaking product analyses focusing on areas for improvements (anticipatory ability, adaptability), developing rapid strategies and action plans to respond to market threats and opportunities such as moving partial outsourced production to Turkey, and rapid market expansion through acquisition (agility), and assessment of overall organizational development are also given a priority.

Human Resources (HR) Capabilities

Today's tight labor market is making it more difficult for organizations to find, recruit, and retain quality people. Far East's multi-skilled employees has enabled the

mobility of staff to transfer from one place to another (flexibility, dynamic capability), for example, reallocating some staff to China office to train the locals with the skills required in order to have a smooth start for the new production plant. Winnie explained that *Far East views its employees as a valuable asset*, and understands that effective human resource practices including employee training and development programs, and staff remuneration and rewards, affect individual employee performance and enable employees to contribute effectively to the overall company direction, and accomplishments of business goals and objectives. Additionally, provision of a positive and open-minded culture, and flat organizational structure encourages participation among employees, lower churn, and an increase productivity level, which in turn, enhance company's financial performance.

Employee training and development. New employees participate in induction programs and orientations where they meet other workers. Within these fora, direct line-managers demonstrate operational practices and related logistics practices relevant to their working department. A detailed training program has been tailor-made by an outsourced professional company and has been organized on a regular basis. An objective of this training is to encourage staff to learn new skills, take on board new knowledge, and improve their work capabilities by aligning their current ability with the updated market skills (adaptability), which further supports the implementation of business strategies (e.g. developing and producing in-house designed quality products). According to Winnie,

Formal and informal training such as on-the-job experience, basic skills training, coaching, and management development has been employed to enhance employee motivation, team spirit, and the retention of quality employees, but to reduce employee churn.

For example, Far East hired a consultancy firm to develop a customized training programs to foster particular employee skills (e.g., decision making, and time management) in respect to its business operations.

Besides, to further influence employees development, Far East also set-up cross-functional teams (dynamic capability) for the implementation of the new company system in which one staff member from each department is nominated and

collaborates with other cross-team members to ensure the development of systems. This process of training, education, and collaboration provide employees with opportunities to participate in carrying out strategic activities.

Remuneration and rewards. As noted earlier, the shortage of skilled and young labor imposed pressure on Far East to retain talented staff. Far East has met this challenge offering its employees higher than market-based salaries, bonuses, regular pay rises, and other incentives and inducements in recognition of their work. In addition, adopting performance appraisals that align with incentives, and the use of internal promotion systems has allowed Far East to focus not only on employee merit, but also to retain committed and quality staff. According to Winnie,

Far East pays bonuses and salary increments every year, even during economic downturns as we believe it is a way to share and engage our employees in the achievements and performance of the business ... they also communicate the company's values of to our employees, and rewards them for their contribution to the company's bottom line.

Information Technology Capabilities

In 2008, Far East approached an information technology (IT) consultancy firm to develop and tailor a new centralized IT system (adaptability) which aims to systemizing information from multiple sources, and reducing uncertainty about the external environment. This system has planning, controlling, and analysis capabilities, enabling meticulous monitoring of Far East's internal and external environment, supporting quick decision-making (agility), forecasting customer demand (anticipatory ability), and facilitating information exchange between departments (dynamic capability).

Prior to the introduction of the new system, Far East's information was stored at multiple locations, resulting in duplications, and time delays and inefficiencies in sorting, retrieving, and analyzing information needed for making quick and accurate decisions when responding to economic and market-based challenges. The access and timely utilization of up-to-date and accurate information has helped Far East to streamline its business operations and, in turn contributed to increased productivity and profits. Winnie noted that *this new system enables our company to better capture*

data from different sources ... boosting our efficiency and overall competitive position ... and performance.

Research and Design Capabilities

Good design rarely emerges propitiously, but is an outcome of the organization's culture, the skills and talent of teams involved, and leadership inter alia. Far East invests and relies heavily on their teams to develop and design high quality products that are both timely and responsive to customer needs (agility, adaptability, strategy - introduction of new products). Because of its own labels, Far East has both freedom and flexibility in product development and design (flexibility). To ensure new products are designed and launched faster than competitors (agility), Far East involves multiple stakeholders in the design process including customer feedback on new product ideas and suppliers' recommendations regarding new fabrics or materials (anticipatory ability). Winnie explained that,

Far East views the interaction and active involvement of other parties such as customers and suppliers in the product design process as a priority for the company ... collaborating with various participants allows us to develop products effectively and efficiently that match our customer needs ... ultimately leading to both the profitability and growth of our company.

From the above analysis, these capabilities seem to be interrelated. Human resource management (HR), information technology (IT), and research & design capabilities are viewed as the key antecedents of resilience capability as well as the enhancement of marketing capabilities. While marketing capabilities are utilized to reinforce the resilience building and vice versa. As such, not all the resilience capability derived from the organizational capabilities give rise to the development of strategies for crises. In the following, a discussion of strategies development utilized different dimensions of resilience capability, the key precursors for resilience capability, and their respective performance outcomes will be carried out.

With-case Analysis

The evolution of fashion and its associated industry has significantly influenced the operating practices of apparel companies today, driving businesses to review and

refine their business models constantly during different times of turbulence. The present case study examines how a company proactively and reactively utilized a combination of different dimensions of resilience capability to take advantage of opportunities through the application of different strategies during times of crisis. Table 5.6 shows ways in which Far East Textiles and Clothing deployed different dimensions of resilience capability during the three phases of crisis with numbered references to particular quotations associated with the findings.

Pre-crisis: Planning - proactive strategies with an emphasis on anticipatory ability and flexibility resilience capabilities

Having been exposed to various crises over the previous two decades, Far East is well-aware of the importance of advanced planning in order to act quickly when opportunities arise. As such, the main dimensions of resilience capability that were emphasized in this phase were anticipatory ability and flexibility. In the face of an increasingly competitive industry, Far East embarked on a series of strategic initiatives in which anticipatory ability resilience capability played a central role in their implementation. This dimension was applied in a proactive manner, enabling an examination of internal and external challenges, facilitating the development of strategic decisions for both threats and opportunities.

Anticipatory ability resilience capability in the pre-crisis phase enabled the company to proactively foresee and organize its activities in order to capture opportunities, including the identification of new outsourcing production companies [1.1] that agreed to deliver on small-order quantities, exploration of investment and business opportunities [1.2] for new income streams and growth; and assessment of potential partnerships with Chinese companies [1.3] for market expansion.

Company characteristics, in particular, leadership and proactive culture have enabled Far East to initiate changes in its business model through backward integration (adaptability). Coupled with the adoption of new technologies, the company has been able to anticipate positive and negative signals in the face of a changing fashion industry. Table 5.7 illustrates the precursors of resilience capability dimensions and their performance outcomes across different phases of crisis.

A flexible resilience capability enabled Far East to make changes to existing resources, processes, and procedures. Organizational flexibility resilience capability was shown in the areas of production rearrangement [1.4], having multiple production manufacturers [1.5], and resource allocation and deployment [1.6]. Long-term relationships with outsourced suppliers of production and materials were key precursors to this dimension, facilitating the management of small order productions, and shifting to alternate suppliers or manufacturers when problems arose. Financial footing also provided sufficient resources to enable flexible resource allocation between different strategic decisions, facilitating quick responses to market and economic changes.

The resilience capability stressed in this phase centered around planning - a representation of cognition of both internal and external eventualities, as well as being prepared for eventualities through holding an anticipatory ability. Reallocation and deployment of organizational resource to meet current operational needs and future strategic activities was another feature of the pre-crisis phase (dynamic capability).

During crisis: Refining - agile strategies in association with adaptability resilience capability and the proactive strategies developed in the pre-crisis phase

Opportunities come and go. Having advanced planning in place (anticipatory ability resilience capability) and resources set aside (flexibility resilience capability), Far East managed to reduce their exposure to crises by taking advantage of the economic downturn in 2010, enabling a foray and rapid expansion into new markets (agility, adaptability resilience capabilities) through acquisition of an established label at a relatively low cost [2.1]. In essence, when an acquisition plays a role as a catalyst to transform rather than simply complement an existing business model (Doz & Kosonen, 2010). In this case, the success purchase of an established German label became a catalyst that further triggered a reframing of the business model that transformed from multi-domestic into a global company through expanding into the Asian markets.

In this phase, agility resilience capability in the timing of responses determined the success of capturing opportunities before they were lost. The decision to immediately adjust production allocation through shifting partial production offshore to China [2.2]

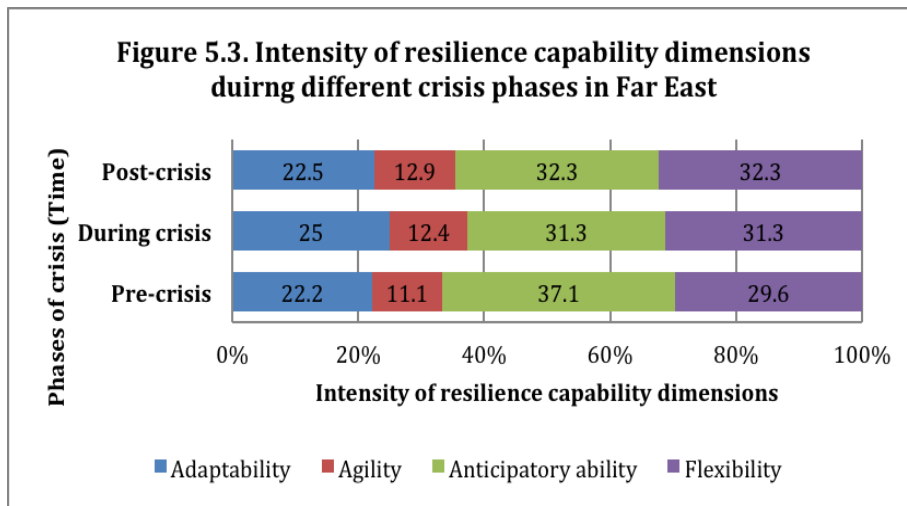
with concomitant staff relocation [2.3], laid the groundwork for full production in 2013 and resolved the demand of small order production. Far East's leadership has provided the direction and guidance in strategic activities, helping to respond swiftly to a number of external and intra-organizational crises, capturing business opportunities as they arose, consequently, leading to new revenue sources, new businesses, and immediate market shares.

The utilization of agility resilience capability in Far East was about respond rapidly and timely to threats and opportunities through frequent business model modifications (adaptability resilience capability). Yet, the success and effectiveness of strategies depended not only on the timing of responses, but also on the proactive strategies developed in the pre-crisis phase that acted as a backdrop for their implementation. In other words, anticipatory ability and flexibility resilience capabilities served as supporting yet critical roles (prerequisite), facilitating the development of agile strategies in turbulent environments.

Post-crisis: Continued refining - proactive agile strategies in association with adaptability resilience capability

Refining the business model (adaptability resilience capability) continued during this phase through agile strategies including having a Chinese production plant fully operational [3.1], partial outsourcing of production to Turkey [3.2], and expansion into the Chinese market through partnerships and vertical integration [3.3]. The notable precursors for agility resilience, again, was Far East's leadership, proactive culture (e.g., advanced planning), and financial footing that provided the support needed for building proactive agile responses to deal with threats and opportunities.

Having laid solid foundations and undertaking considerable groundwork during the previous two phases, Far East was able to implement a series of growth strategies that led to new business, high customer satisfaction levels, increased market share and profitability, and ultimately, superior competitive performance. Refinement of activities, processes, and activities based on different resilience capabilities continued in this phase, enabling Far East to respond quickly in the right place at time along with constant adjustments to its business model, processes, and procedures, and for its target markets to be served without disrupting company's daily operational routines.



In sum, the intensity and impact of each dimension of resilience capability varied across each phase of crisis, depending on the company's strategic position and objectives. Although Figure 5.3 shows relatively consistency in all four resilience capability dimensions across three phases of crisis, anticipatory ability and flexibility resilience capabilities were prominent in the pre-crisis phase, then reduced in intensity in the following phase, in which agility and adaptability resilience capabilities came to fore during the height of crisis. Interestingly, all four resilience capability dimensions remained rather consistent during the last two phases, indicating the amount of resources invested, and effort devoted were necessary for carrying out the company's intended strategic initiatives during and after crisis.

Conclusion

An in-depth analysis revealed how different dimensions of resilience capability come into play at different phases of crisis, in particular, some dimensions are served proactively (i.e., prerequisite) to support the development of strategies that enable the company to be agile to adjust and modify internal business conditions in order to capture market opportunities or to react to changes in turbulent environments.

Far East's resilience capability is evidenced by its ability to remain alert (anticipatory ability resilience capability) and to handle crises (e.g., increasing difficulties in sourcing suppliers for small orders). Critical antecedent factors are associated with company characteristics (leadership, proactive culture, financial footing), the quality of human capital, and decision making regarding the choice and application of information technology, the qualities of which have contributed to the development of

resilience capability. Figure 5.4 demonstrates the causal relationships between key company characteristics, organizational capabilities contributing to the development of resilience capability, strategies for managing crises, and firm performance.

Far East demonstrates four resilient qualities: An ability to anticipate internal and external changes, flexibility in resources allocation and deployment, and production arrangements, adaptability to production allocation adjustment, business model modifications, and agility in relation to making rapid decision to both threats and opportunities arising from different business conditions. These qualities have been employed to help shape organizational strategies for managing crises and contributed to improving the bottom line. From Winnie's point of view, *Far East, to a certain degree, is resilient to dramatic changes in market conditions and competitors. She defined resilience as a company's ability to survive and generate significant revenues during economic downturn ... A resilient company needs a strong management team, and committed and quality employees ... we would not be where we are today without these two elements ...*

Table 5.6. Dimensions of resilience capability, and their respective proactive and reactive plan of action across different phases of crises for Far East

Resilience dimensions /Crisis	Pre-crisis	During crisis	Post-crisis
Adaptability	<ul style="list-style-type: none"> • Frequently introducing quality products every year*: <i>Far East recognizes that quality and longevity are of paramount importance...and does not sacrifice quality in return for short-term products...</i> • Modifying and adjusting products based on customer feedback and comments* • Adoption of latest information technology (IT) to keep current with customer preferences and market needs, as well as improving the company's forecasting ability*: <i>Traditional fashion industry assesses the needs and wants of consumers based on historical data...usually about 12-to-18 months prior to the actual time of consumption...however, such estimation is usually not accurate since demand is forecasted a lot earlier... even though we incorporate our experience in anticipating the demand, with this increasingly changing customer preferences, it is getting harder than ever before...</i> • Aligning employee skills with current market needs* • Modifying business model through backward by building own production plant and vertical integration through partnerships with Chinese companies • Adopting a cross-functional team for developing and launching a new IT system* 	<ul style="list-style-type: none"> • Modifying business model through acquisition [2.1] • Adjusting production allocation activities through outsourcing * [2.2] • Adjusting human resource allocation* [2.3] • Continuation and refinement of those activities, processes, and procedures (with *) adopted in pre-crisis phase 	<ul style="list-style-type: none"> • Continuation and refinement of those activities, processes, and procedures (with *) adopted in earlier phases

Note. *Italic denotes verbatim quote from respondent.*

Table continues...

Resilience dimensions /Crisis	Pre-crisis	During crisis	Post-crisis
Agility	<ul style="list-style-type: none"> • Embarked on backward integration by building a production plant in China before GFC to improve efficiency, cost saving and for quick response to small order production and future market expansion: <i>The decision of having in-house production is to better control the cost and quality of production, to accommodate small orders, and to prepare for future expansion in China market...through partnerships and vertical integration...</i> • Discussion on the rapid expansion into China and other markets to capture the business opportunities and for the growth of the company: <i>Far East is determined to enter this market through partnerships with Chinese companies and vertical integration. The objective is to extend our business geographics into the Asian market for the growth of the company in terms of both market share and profitability... in fact, we had an initial discussion with some [Chinese] companies...hopefully to get it rolling in the coming year</i> • Establishment of cross-functional team to ensure the implementation of the new IT system 	<ul style="list-style-type: none"> • Acquisition of an established German label in 2010 to reduce the risk of profit concentration on single label: <i>It was a good time because the cost of acquisition was comparatively lower in 2010, than a few years ago...enabling Far East to leap into a new market faster and widening its source of revenue</i> [2.1] • Quick arrangement of partial production to China production plant to address the difficulties in sourcing suppliers for small order quantity [2.2] • Immediate relocation of a number of Hong Kong staff to China [2.3] • Rapid recruitment of personnel and provision of training to laborers in preparation for start-up of new production plant in China 	<ul style="list-style-type: none"> • China production plant in full operation in early 2013 to provide rapid support to market expansion into China [3.1] • Outsourcing partial production to Turkey in late 2012 for quick introduction of new products...<i>outsourcing to nations like Turkey enables relative ease of procuring fabrics, lower cost of production and faster launching of new products to our market...</i>[3.2] • Progressively entering into the Chinese market through partnerships and vertical integration [3.3] • Review of the performance of latest labels to build agile responses such as adjustments to products, and modification of marketing activities.
Anticipatory ability	<ul style="list-style-type: none"> • Actively searching for new materials from different countries for product development* • Identifying new suppliers of material and outsourcing production companies for rapid response to production problems*: <i>the research teams within each individual department constantly lookout for sourcing new ideas and materials</i> [1.1] • Exploring and identifying investment and business opportunities* [1.2] 	<ul style="list-style-type: none"> • Continuation and refinement of those activities, processes, and procedures (with *) adopted in the pre-crisis phase 	<ul style="list-style-type: none"> • Continuation and refinement of those activities, processes, and procedures (with *) adopted in earlier phases

Table continues...

Resilience dimensions /Crisis	Pre-crisis	During crisis	Post-crisis
	<ul style="list-style-type: none"> • Assessing and identifying potential partnerships with Chinese local companies* [1.3] • Understanding and anticipating customer preferences and market trends through interpreting and analysing information from multiple sources* • Regularly identifying the current market skill level of employees, and ways to enhance personal development and increase employee mobility*: <i>Far East views its employees as a valuable asset... formal and informal training enhance employee motivation, team spirit, and the retention of quality employees, but to reduce employee churn...</i> • Identifying new IT applications* • Exploring and identifying new product ideas with customers and suppliers*: <i>holding regular meetings, means that...employees can share, discuss, and assess innovative ideas concerning product development and determine the feasibility of their own and these ideas...</i> • Accurately estimating production throughput and output through regular meetings with material suppliers and production companies*: <i>holding regular conversations allow all parties to understand customer needs, ensuring production is smooth and on schedule, and that garments are of high quality...</i> 		

Table continues...

Resilience dimensions /Crisis	Pre-crisis	During crisis	Post-crisis
Flexibility	<ul style="list-style-type: none"> • Searching and identifying suitable outsourcing manufacturing companies to build rapid adjustment to changing market demand, lower cost of production, and faster new product launches*:<i>...manufacturing companies in these countries [e.g., Turkey] are competent in complicated workmanship, low policy and duty costs arising from liberalized access to the European Union (EU), and relatively low shipping costs to our European markets due to closer proximity, no restriction on production quantity...Turkey's strong competitiveness as a clothing supplier, makes it the ideal place for garment manufacturing when compared to its counterparts in other nations...</i> • In product design, development, and modification* • In materials used for developing new products* • In promoting and marketing products on various platforms* • In production arrangements between in-house production and outsourced manufacturers* [1.4] • In collecting customer, market, and economic information from various sources* • In having multiple material suppliers, and production manufacturers* [1.5] • In having multi-skilled employees* • In resource allocation and deployment for current and future strategic activities* [1.6] 	<ul style="list-style-type: none"> • Reallocating employees across different working stations* • Obtaining multiple sources of customer, market and economic information* • Continuation and refinement of those activities, processes, and procedures (with *) adopted in the pre-crisis phase 	<ul style="list-style-type: none"> • Continuation and refinement of those activities, processes, and procedures (with *) adopted in earlier phases

Table 5.7. Linking different dimensions of resilience capability to precursors and firm performance across three phases of turbulences.

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes	
Phase 1: Pre-crisis	<i>Adaptability</i>	<ul style="list-style-type: none"> • Regularly introducing quality products every year* • Modifying and adjusting products based on customer feedback and comments* • Adoption of latest information technology (IT) * • Aligning employee skills with current market needs* • Modifying business model through backward by building own production plant in China and vertical integration through partnerships with Chinese company • Adopting a cross-functional team for developing and launching a new IT system* 	<ul style="list-style-type: none"> • Product development, channel management, company characteristics (design, and quality-oriented) => maintaining company's core value of quality standard through in-house design • Product development, channel management, market information management => ensuring products match customer needs • Market information management, information technology (IT), company characteristics (financial footing) => using information technology (IT) to facilitate the storing, retrieval and analysis of data from various sources • Market information management, human resource management (HRM) => ensuring employees are equipped with the latest market skills • Company characteristics (leadership, financial footing) => having own production plant to address the increasingly difficulties in sourcing suppliers for small order • Company characteristics (leadership) => ensuring the development and implementation of a new IT system across the company 	<ul style="list-style-type: none"> • Customer value • New/repeat business • Profitability • Sustainability • Customer satisfaction • New/repeat business • Profitability • Sustainability • Better production quantity forecast • Less inventory holding • Keeping current with customer preferences and market needs • Improving the company's forecasting ability • Maintaining competitive workforce • Increasing employee mobility • Promoting efficiency • Better control of production • Cost reduction • Accommodating small order production • Preparing for future market expansion • Improve forecasting ability and decision making process
	<i>Agility</i>	<ul style="list-style-type: none"> • Embarked on backward integration by building production plant in China before GFC 	<ul style="list-style-type: none"> • Company characteristics (proactiveness, financial footing, leadership), dynamic capability (reallocation and redeployment of resources for current and future operational/strategic activities), Information technology (IT)=> proactive and rapid response to difficulties in sourcing suppliers for small order quantity and increasing cost of production 	<ul style="list-style-type: none"> • Promoting efficiency • Better control of production • Cost reduction • Accommodating small order production • Preparing for future market expansion

* Denotes the continuation of the resiliency characteristics with the same precursors.

Table continues...

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes
<i>Anticipatory ability</i>	<ul style="list-style-type: none"> • Discussion on the expansion into China and other markets 	<ul style="list-style-type: none"> • Company characteristics (proactiveness, financial footing, leadership) => proactive and rapid response to capture the business opportunities in China 	<ul style="list-style-type: none"> • Extending the geographics into the Asian market • New business • Market share • Growth
	<ul style="list-style-type: none"> • Establishment of cross-functional teams for rapid implementation of a new IT system 	<ul style="list-style-type: none"> • Company characteristics (leadership), market dynamic capability (collaboration within/between departments), Information technology (IT) => facilitating smooth and rapid implementation of the new IT system through cross team contribution 	<ul style="list-style-type: none"> • Successfully implementing a centralized IT system across the company including planning, controlling, and analysing customer, market and economic data
	<ul style="list-style-type: none"> • Actively searching for new materials from different countries for product development* 	<ul style="list-style-type: none"> • Dynamic capability (collaboration with/between firms in new product development), product development, channel management, company characteristics (design, and quality-oriented), Information technology (IT) => through collaboration with suppliers and in-house research team to search for new materials from different countries for new product development 	<ul style="list-style-type: none"> • Enabling the use of new materials for new products
	<ul style="list-style-type: none"> • Identifying new suppliers of material* 	<ul style="list-style-type: none"> • Market information management, channel management, company characteristics (design, and quality-oriented), Information technology (IT)=> enabling rapid response to product problems (e.g., delay in goods delivery) 	<ul style="list-style-type: none"> • Having multiple and back-up material suppliers • Ensuring on-time delivery of goods
	<ul style="list-style-type: none"> • Exploring and identifying investment and business opportunities* 	<ul style="list-style-type: none"> • Market information management, company characteristics (proactiveness), Information technology (IT) => expanding and promoting growth of the company 	<ul style="list-style-type: none"> • Understanding the business opportunities available in the market • Preparing for acting on the identified opportunities
	<ul style="list-style-type: none"> • Assessing and identifying potential partnerships with Chinese local companies* 	<ul style="list-style-type: none"> • Market information management, company characteristics (leadership, proactiveness), Information technology (IT) => expanding and promoting growth of the company in other geographic areas 	

Table continues...

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes
	<ul style="list-style-type: none"> • Understanding and anticipating customer preferences and market trends through interpreting and analysing information from multiple sources* 	<ul style="list-style-type: none"> • Dynamic capability (sharing and integration of customer/market information within/between firms), market information management, Information technology (IT) => utilizing IT to identify customer and market needs from various sources 	<ul style="list-style-type: none"> • Producing products that match with current customer and market needs
	<ul style="list-style-type: none"> • Regularly identifying the current market skill levels of employees* 	<ul style="list-style-type: none"> • Human resource management, market information management, Information technology (IT), company characteristics (financial footing, leadership) => providing training to employees to stay competitive with current market skills 	<ul style="list-style-type: none"> • Ensuring updated skill levels of employees • Maintaining a competitive workforce • Increasing employees mobility • Enhancing employee personal development
	<ul style="list-style-type: none"> • Identifying new IT applications* 	<ul style="list-style-type: none"> • Market information management, Information technology (IT), company characteristics (financial footing, leadership) => ensuring the use of updated IT applications 	<ul style="list-style-type: none"> • Improving the data management process with updated IT applications and systems
	<ul style="list-style-type: none"> • Exploring and identifying new product ideas* 	<ul style="list-style-type: none"> • Dynamic capability (collaboration within/between firms in new product development, sharing and integration of customer/market information within/between firms), product, channel management, Information technology (IT) => brainstorming and information sharing for new product ideas through regular communications with customers and suppliers 	<ul style="list-style-type: none"> • Generating ideas for new product development • Improving the possibility for new product development from customer and supplier perspectives
	<ul style="list-style-type: none"> • Accurately estimating production throughput and output* 	<ul style="list-style-type: none"> • Channel management, Information technology (IT), => regular contact with suppliers and manufacturers to discuss the time required for production throughput and output 	<ul style="list-style-type: none"> • On-time production and delivery to clients/customers • Client/customer satisfaction
	<ul style="list-style-type: none"> • Searching and identifying new outsourcing manufacturing companies* 	<ul style="list-style-type: none"> • Market information management, Information technology (IT), company characteristics (proactiveness) => building rapid response to small order production, rising cost of production in China 	<ul style="list-style-type: none"> • Rapid adjustment to changing market demand • Lower cost of production • Faster new product launches

Table continues...

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes
<i>Flexibility</i>	<ul style="list-style-type: none"> • in product design, development, and modification* • in materials used for developing new products* • in promoting and marketing products on various platforms* • in production arrangements between in-house production and outsourced manufacturers* • in collecting customer, market, and economic information from various sources* • in having multiple material suppliers, and production manufacturers • in having multi-skilled employees 	<ul style="list-style-type: none"> • Product development, company characteristics (design and quality-oriented), channel management => producing products with the flexibility in product design, development and modification • Product development, channel management, company characteristics (design and quality-oriented) => producing products with the flexibility in material used • Dynamic capability (reallocation and reorganization of resources for current operational/strategic activities), market communication, company characteristics (financial footing) => utilizing different marketing approaches in promoting and marketing products to target markets • Channel management => accommodating small orders with wide-ranging of styles • Market information management => maintaining multiple sources of customer, market, and economic information • Channel management => serving as back-up in case of production or delivery problems • Company characteristics (leadership), human resource management => developing employees with updated skills 	<ul style="list-style-type: none"> • Maintaining flexibility in developing products with quality materials and unique design • Enabling the use of different quality materials in new products • Enabling the reach out to current and potential market • Building brand image • New/repeat business • Managing small orders production through in-house and outsourced manufacturers • Developing a better pictures and understanding of current customer, market and economical situations • Enabling immediate shift to another suppliers or manufacturers if problems arise • Improving mobility of employees to work across different locations • Developing competitive workforce • Encouraging personal development • Staff retention/low turnover rate

Table continues...

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes	
Phase 2: During crisis	<i>Adaptability</i>	<ul style="list-style-type: none"> • in resource allocation and deployment 	<ul style="list-style-type: none"> • Dynamic capability (reallocation and reorganization of resources for current and future operational/strategic activities), company characteristics (proactiveness, solid financial background, strong management team) => maintaining the flexibility in resource reallocation and redeployment of resources 	<ul style="list-style-type: none"> • Enabling the provision of resources for current and future strategic activities
	<i>Agility</i>	<ul style="list-style-type: none"> • Modifying business model through acquisition • Adjusting production allocation activities through outsourcing* • Adjusting the human resource (HR) allocation* • Quick reallocation of partial production to China production plant • Immediate relocation of a number of Hong Kong staff to China 	<ul style="list-style-type: none"> • Company characteristics (leadership, financial footing) => to address the issue of profit concentration on single label • Channel management, company characteristics (leadership, quality-oriented) => to have a better cost control and quality of production • Company characteristics (leadership, multi-skilled employees) => preparing for the full operation of own production plant in 2013 • Company characteristics (leadership, quality-oriented), dynamic capability (reallocation and reorganization of resources for current and future operational/strategic activities), Information technology (IT) => rapid response to cost control and quality of production, small order productions and preparation for Chinese market expansion • Company characteristics (leaderships), dynamic capability (reallocation and reorganization of resources for current and future operational/strategic activities), Information technology (IT), => sharing personal experience with China employees 	<ul style="list-style-type: none"> • Expanding income source and market shares • Accommodating small order productions • Quality control • Ensuring the full operation of own production plant in 2013 • Accommodating small order productions through in-house and outsourced manufacturers • Test runs of small orders and sample production • Giving the training needed to staff in China • Preparing for the start-up of new production plant in China

Table continues...

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes
Phase 3: Post-crisis	<i>Agility</i>	<ul style="list-style-type: none"> • Rapid recruitment and provision of training to laborers in preparation for the start-up of new production plant in China 	<ul style="list-style-type: none"> • Developing the skills required to work in the China station • Preparing for the start-up of new production plant in China
		<ul style="list-style-type: none"> • Acquisition of an established German label in 2010 	<ul style="list-style-type: none"> • Human resource management, company characteristics (leadership) => preparing the local staff with the relevant skills before the China production plant in full operation • Dynamic capability (reallocation and reorganization of resources for current and future operational/strategic activities), product, company characteristics (leadership), Information technology (IT) => rapid response to reduce the risk of profit concentration on single label
		<ul style="list-style-type: none"> • China production plant in full operation in early 2013 	<ul style="list-style-type: none"> • Enabling the ease of procuring fabrics • Lower cost of production • Accommodating small orders production • Faster launching of new products to market • Continuing making presence in the Chinese market • Market shares • Profitability • Growth
		<ul style="list-style-type: none"> • Immediate outsourcing partial production to Turkey in late 2012 	<ul style="list-style-type: none"> • Company characteristics (leadership), Dynamic capability (reallocation and reorganization of resources for current and future operational/strategic activities), Information technology (IT) => providing rapid production support to market expansion in China • Company characteristics (leadership), Dynamic capability (reallocation and reorganization of resources for current and future operational/strategic activities), Information technology (IT) => rapid response to the increasing cost of production with Chinese manufacturers, and small order productions
		<ul style="list-style-type: none"> • Progressively entering into the Chinese market 	<ul style="list-style-type: none"> • Company characteristics (financial footing, leadership), Dynamic capability (reallocation and reorganization of resources for current and future operational/strategic activities), Information technology (IT)=> expanding into China market through partnerships and vertical integration
<ul style="list-style-type: none"> • Review of the performance of latest labels 	<ul style="list-style-type: none"> • Company characteristics (design and quality-oriented), Information technology (IT), => building agile response to the performance outcome of the new label 	<ul style="list-style-type: none"> • Adjustments to products to match local needs • Modifications of marketing activities 	

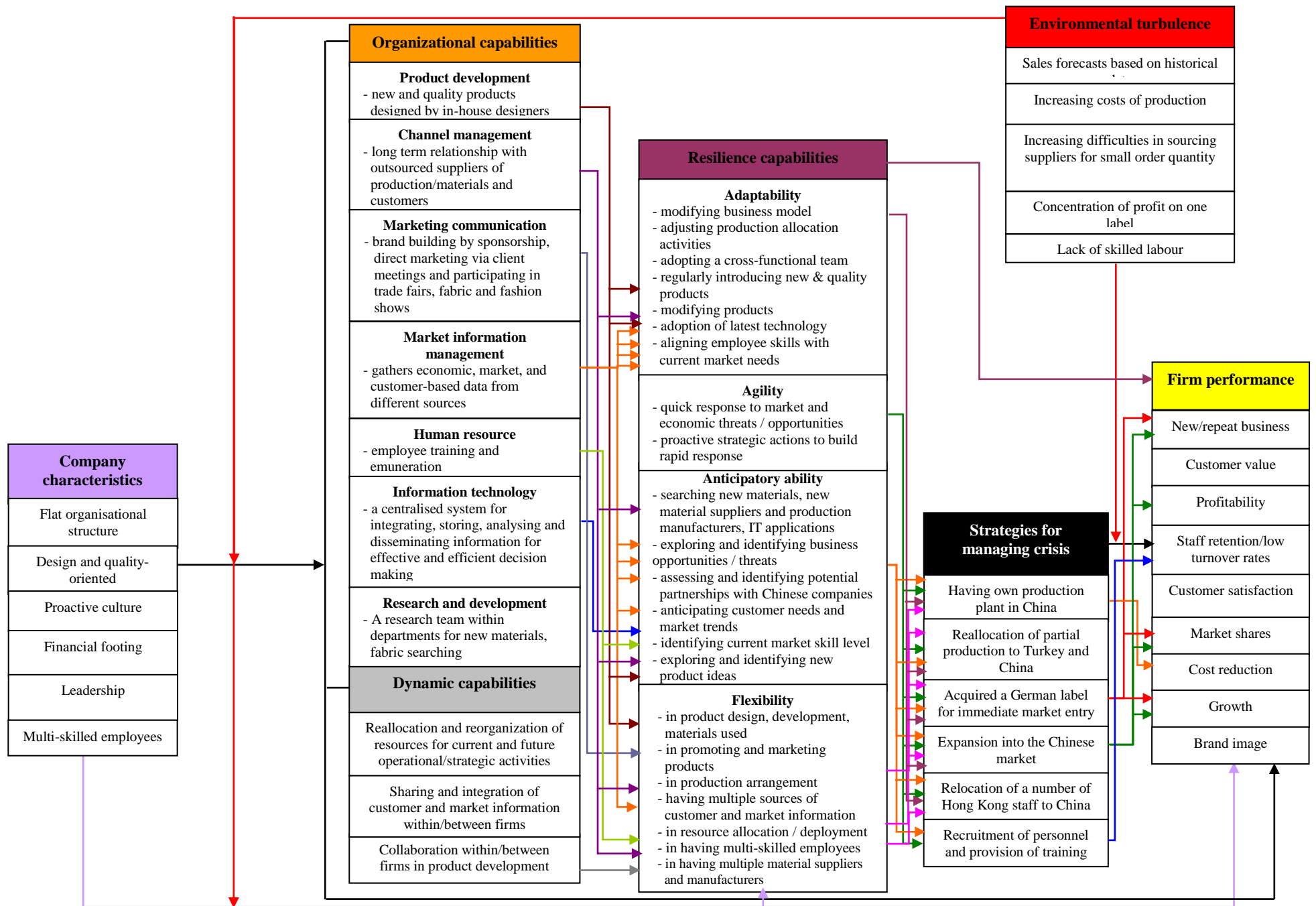


Figure 5.4: Causal network model of relationships between company characteristics, organisational and dynamic capabilities, resilience capabilities, strategies and firm performance

Westshore: A Tool Manufacturing Company

Vignette

To achieve success in today's competitive environment, firms must leverage and coordinate a wide range of capabilities and resources that can be accessed and employed within and across organizational boundaries. These abilities are function in tandem with a number of company characteristics, particularly, organizational culture and leadership. Westshore, an industrial and household tools manufacturer, demonstrates how a series of intra-organizational crises (e.g., the introduction of new management team) precipitated the development of resilience capability and associated rapid responses including adopting a new product development approach, and customer information gathering process (adaptability, anticipatory ability resilience capabilities) through involvement of engineering in the process (anticipatory ability resilience capability), introducing new brands to expand income source (agility resilience capability), and new product development using standardized components (flexibility resilience capability). These resilience capabilities enabled Westshore to remain competitive, and sustainable in this highly changing industry and market.

Case Summary: Westshore

Company profile

CEO characteristics

- Leadership - former and present management team (e.g., changes in company's core values, and strategic visions)

Company characteristics

- Changes in organizational culture, and structure (e.g., from flat to hierarchical organisational structure, centralised decision making), solid financial background, design and quality-oriented, committed employees

Capability

- Product/service development - Design quality, practical, and multi-functional products
- Channel management - Long term relationship with outsourced suppliers of product and components
- Marketing communication - Direct marketing via client meetings, online promotions, e.g., giveaway for referrals, new product trial samples
- Marketing information management - Collects users feedback, economic, and market-related information
- Research and development - Design and develop new products
- Information technology - Use of IT for decision making, and strategic planning (e.g. NPD)

Business model

Market diversification (expand into new market using a new brand name)
Partnerships (alliance with other suppliers to cross promoting products)

View of firm resilience

Ability to turn around the situation from threats to opportunities.

Factors regarded as contributing to firm resilience capability for dealing with crises

- CEO characteristics - former and present leadership
- Company characteristics - solid financial background, committed employees
- Information technology - use of IT for decision making
- Product development
- Channel management
- Market information management

Dimensions of resilience capability

1. Adaptability

- modifying business model through market expansion
- modifying customer information gathering process through involvement of external stakeholders
- adjusting logistics process by setting up a warehouse distribution channel close to target markets
- adopting a new production development approach using modular-based design
- adjusting production and organizational activities through outsourcing
- frequently introducing new/upgraded products through in-house and partnerships
- modifying products
- maintaining product variety
- frequently adopting new/tailor-made technology
- adopting new product development process

2. Agility

- immediate responses to internal and external crises
- rapid strategic actions for market expansion

3. Anticipatory ability

- market testing prior to new product launches
- anticipating and identifying new product ideas, customer needs, and requirements
- frequent research on market and industry conditions
- identifying new component suppliers

4. Flexibility

- in product design and development
- having multiple sources of customer, market, and economic information
- involving different stakeholders in NPD processes
- in resource allocation
- having multiple back-up suppliers
- in communicating and promoting products

Company profile

Crisis #1: Introduction of a new management and lower budget for new product development

Strategy: New product development using standardized components

Performance Outcome: Faster new product development, new/repeat business, profitability, sustainability, growth

Crisis #2: Lack of collaborative relationships between marketing and other departments and customer & market information are not utilized effectively

Strategy: Adoption of IT to facilitate the gathering and retrieval of updated and relevant data, involvement of engineers in the customer data gathering process

Performance Outcome: Faster new product development

Crisis#3 : Too focus on existing customers

Strategy: Existing into new markets using existing products with new brands

Performance Outcome: Widening income sources, market share, new business, profitability, growth

Company background

In 1996, Westshore Tools (pseudonym) commenced operations in Hong Kong with 40 full-time employees, and a warehouse distribution channel in Germany. Westshore is a trading company of electrical tools for agricultural, industrial, and household markets in Europe, and has an annual turnover of US\$20 million. The enterprise began its operations by selling agricultural products directly to companies, expanding its portfolio to include quality household products aimed at capturing the consumer market. Westshore also launched a mail-order service in 2002, followed by a publication of the company's first catalogue a year later, making its quality products relatively affordable for the general public. Taking full advantage of a high demand for quality tools, Westshore's business flourished, expanding to service the demands of new markets across Asia and Dubai, in 2012. Today, Westshore offers comprehensive quality tools and service to the general public and professionals across a range of specialist markets through the adoption of state-of-the-art technology, sophisticated packaging, and reliable distribution channels.

This case study begins by providing a background to the company in terms of its leadership, and culture, followed by a review of the Hong Kong merchandise trade industry. Next, the company's strategic responses in relation to number of crises are presented, concluding with an overview of the relationship between Westshore's characteristics, market dynamics, and resiliency capabilities.

Leadership and culture

The founding CEO of Westshore has played a central role in designing the company culture, influencing its strategic direction and decision making process that have had a substantial impact on the composition and characteristics of organizational teams and organizational performance. From foundation to 2010 when the original composition of the management changed, Westshore stressed the importance of innovation and new product development as core values of the company. These values appeared to have the effect of motivating employees to endorse a belief that originality was essential for company sustainability and continued success. An organizational climate of openness and informal communication was typical, along with a sense of an involvement, and empowerment. Innovative ideas were encouraged as the mode of operation for nearly 20 years, helping staff to generate and pull ideas together.

Individuals worked in a *holistical* manner (e.g., shared vision of developing novel products as the main objective of the company) and *calculated risk* taking was not discouraged.

In 2010, a new CEO was appointed, the appointment of which culminated in the adoption of what could be regarded as traditional management style focusing on centralized decision making. This transition in leadership was associated with lower levels of profitability, which have continued over the previous two years. According to Patrick, the current Research & Development (R&D) Manager:

Our company generated an impressive revenue stream under the direction and leadership of our former CEO ... the working environment and culture were great and flexible ... however, the global economic condition, and the introduction of a new management ... have certainly affected the strategic vision and core value of the company, resulting in lower funding of new product development and business profits.

Research & Development (R&D) Manager

Patrick has been employed at Westshore for over 10 years, and is responsible for marketing, the generation of new product specifications and ideas, writing proposals, communicating with suppliers for prototype development and testing, documenting all phases of the R&D process, and monitoring team metrics and objectives.

Patrick demonstrates a heightened interest in product design, having attained academic qualifications in design and technology, manufacturing engineering, computer aided engineering, and product design engineering. As an innovative product designer, Patrick strives to design products that are stylish and have form, and functional for everyday life.

Before joining Westshore, Patrick worked as a junior engineer in a mould making company for 7 years, a project engineer in a telecommunication company, and as a design engineer in a home appliance company. With an extensive working background and relevant educational qualification in the area of product design and engineering, Patrick developed a significant amount of product knowledge and skills

from an exposure to different types of commodities, enabling him to create his own - designs, and take-out a number of patents for his inventions.

Westshore New Product Development Process

As a small-to-medium electrical and electronic company with global reach, new product development is a central element of Westshore's strategies, since establishment. Patrick emphasised that *the highly competitive marketplace has shortened the product life cycles and intensified competition demand across companies in this industry ... companies now have to constantly provide low cost, high quality products to customers, in a timely manner.* This level of competition has forced Westshore to implement new production processes. For this purpose, the marketing and R&D departments collaborate to establish the requirements of new products based on customer feedback and market information obtained from different sources (dynamic capability). Planning at the initial phase of product development is integral. Patrick elaborated on the key roles, responsibilities, and tasks undertaken during this phase. Both marketing and R&D managers confer on the broad description of product characteristics, including functionality, form, price, expected completion date, specification of products, along with the requirements of the project such as allocation of organizational resources, target costs, technological performance, and market release date.

At the next stage, the R&D department prepares a proposal for CEO approval. The R&D department then discuss the intended product design concept with suppliers, feasibility, sourcing for assemblies, and rapid prototyping for customer and market testing and bulk production. The objective of rapid prototyping is to get the products into market earlier than competitors. Reviews, assessment, and feedback are used for developing upgraded versions of products.

Market testing prior to launching a new product serves several objectives, including forecasting a new product's sales performance over time, and assisting in the process of making real go/no-go decisions, and marketing and production planning decisions associated with the product launch.

The Merchandise Trade in Hong Kong

The Hong Kong external merchandise trade comprises domestic export and re-export data, covering movement of merchandise between Hong Kong and trading partners, by land, air, sea, and by post (Hong Kong Annual Digest of Statistics, 2012). Total merchandise trade accounted for approximately AUD880 billion, in which *Electrical machinery, apparatus and appliances, and electrical parts thereof* ranked as the top commodity for re-exports and second for domestic exports in 2011 (Census & Statistics Department, 2012).

In October 2012, the value of Hong Kong's merchandise exports decreased by 2.8% to approximately AUD\$37 billion when compared with the same period in 2011. Specifically, domestic exports and re-exports showed a decrease of 8.4% and 2.7%, respectively. Moreover, total export of *Electrical machinery, apparatus and appliances, and electrical parts thereof* fell by 8.3%. Notwithstanding, Germany (15%) and the United Kingdom (8.7%) recorded the largest decrements in exports. Declines were attributed to global economic conditions, as such, Hong Kong's trade outlook remains challenging.

The global financial crisis and eurozone sovereign debt have played a significant role in the collapse of a number of large financial institutions, downturns in economic activity, and decreases in consumer wealth and confidence. These crises contributed to significant declines in Westshore's clients and consumer budget, increased time to cash in from the sale of goods, higher inventory holding costs, and lower levels of firm profitability, ultimately, reducing the resources for strategic decisions, such as those required for new product development.

Introduction of a New Management Team - Impact on Organizational Culture

Although a number of strategic responses were made to deal with significant declines in revenue, such as reductions in inspections and headcounts, and outsourcing production, Patrick attributed a sizeable proportion of the decrease in revenue to internal organizational problems:

The operating business environment has become harder for our company since the global financial crisis hit hard in Hong Kong, not only because the global recession led to a decline in sales and longer customer

purchase cycle, but also the internal problems of our company... the new management team, and working relationship with the marketing department are, to a large extent, imposing additional pressures and constraints on the development, and success of new products in the market ... driving away from the core business direction of our company.

As noted earlier, Westshore's central business strategies rest on strong R&D capabilities and development of novel products for business success. The former management team provided sufficient resources throughout all critical phases of new NPD including from early idea generation to post-launch evaluation, ensuring that all functional activities were carried out for the purpose of NPD including R&D, marketing, operation, and having a steering committee. Patrick stated:

The former CEO was a gatekeeper for the entire NPD process, providing insights about the new products from a customer perspective... he also possessed extensive marketing experience and knowledge, facilitating the development of appropriate marketing activities to promote our products in the marketplace ... he showed his full support for new product development as evidenced by the allocation of sufficient resources ... maximum freedom and flexibility in product design. His leadership certainly contributed to Westshore's strong reputation and position in the industry.

The internal company changes in management in 2010 appear to have impacted on the direction and value of the company. Formerly, NPD was considered as a top priority of the company's strategy for almost two decades. By way of contrast, the new leadership seem to be more concerned with the numbers on the P/L statement, but also place demands on the reducing the time for developing new products. Because relatively less funding is allocated for NPD, the R&D department are forced to think of alternative means for reaching budgeted expectations and time constraints. Patrick said:

Although there has been a significant decline in profits in our company and funding of our [R&D] department, introducing new products remains a priority for us, and to stay competitive in the market we just need to play the game in a different way.

Mix and Match - New Product Innovation By Using Standardised Components

Development of new products *does not mean novel to the world*. Having said that engineers at Westshore tend to be more interested in producing state-of-art products than adhering to product specifications and guidelines. Developing inferior products to competitors or products that have low levels of demand, ultimately affect profitability. Relatively low levels of funding and short development time, and highly formal approval procedures have forced Westshore to develop new modular-based products that allow for a range of variations, leading to the attainment of company objectives (i.e., introduction of a number of new products every year, minimising costs associated with NPD). The modulated 'mixing and matching' approach has enabled the fast-tracking of new products to market, and development of different models with multiple distinctive component-based functionalities and performance levels.

Lack of Collaborative Relationship Between Marketing and Other Departments

Effective management teams and leadership are crucial for setting common direction, as are collaborative relationships among employees within and between departments. NPD is an uncertain process, requiring collaboration between and contribution from different functional groups. At Westshore, as noted earlier, an interdependency between R&D and marketing personnel is integral not only for production innovations, but also for the success of these products. Despite the importance of collaborative efforts, Patrick noted that misunderstanding, conflict, and lack of cooperative intention were not uncommon practise.

The early involvement of marketing personnel at the formative stage of a NPD did not always help to breach any information gaps at Westshore, with the R&D department acknowledging not receiving the assistance and information necessary for the advancement of innovations during the NPD process. Patrick reflected:

The marketing department seemed to expect that our R&D team would use whatever information was provided, but the information did not always reflect the whole picture including customer preferences and market needs ... as a matter of fact, the marketing department would disclose only a partial amount of relevant information ... necessitating our team members to go back and forth for more details ... the failure to disclose all the

necessary information from the beginning often lowered the organization's NPD effectiveness. While it seldom led to major project failures because our founding CEO was able to advise us when problems arose ... however, it certainly increased our workload time ... making it so much harder for us during the entire NPD process.

It is clear that interfunctional coordination - a smooth transfer of information between company activities, and within or between departments is challenging for most, if not all companies, including Westshore. For this reason, Westshore implemented a strategic process of digital integration of data for the specific purposes of coordinating the transfer of information and communication across different functional groups (dynamic capability). Engineers also attend regular client/customer meetings with marketing team members. Owing to the high relevance of customer information and customer feedback, interacting with customers/clients has allowed R&D to develop and fast track products in response to these needs, limiting the possibilities for misinterpretation of relayed information. Patrick stated that, *in the past, our engineers never talked to customers directly, they communicated only with the marketing people ... so for our engineers to be able to participate in customer meetings has certainly helped us to collect accurate and first-hand customer information ... as a result, significantly reduced our workload and time for obtaining information from our marketing department.*

Accordingly, engineering-customer collaboration in the NPD process is essential, enabling personnel to become acquainted with customer needs and effectively use of data for product development. For example, Westshore understands that customers look for money saving devices, preferring to buy products that are multi-functional and combine several features into one single product. This shift in product design and function has made it possible for Westshore to reduce the number of obsolete product lines and to make cost savings by reducing inventory.

Focusing on Existing Customers

In response to an increasingly maturing market and the company's growth orientation, Westshore embarked on capturing a higher share of the market. Under the new

leadership, most efforts were geared towards attracting new customers. Patrick explained:

There is no doubt that long-term and loyal customers have a major impact on Westshore's success ... at the same time, our current markets have become increasingly saturated ... As a way of shoring up decreasing profits resulting from the current global economic condition, and shrinking consumer purchasing power, our company developed a new brand using existing products to attract new customers ... however, our company did not change its marketing strategies to market the new brand ... having the same products with the same prices, selling at the same platform as the original one ...

Patrick emphasized that management should be leaders who govern the strategic vision of the company, and are able to take proactive and reactive actions when challenges arise. By way of contrast, he believed that the marketing personnel needed to continuously monitor and evaluate the effectiveness of the existing marketing activities for new target groups and determine the best ways to differentiate products from original brands to sustain the effectiveness and balance marketing efforts directed at winning new and retaining customers. Patrick stated that *if we don't come up with appropriate marketing strategies to communicate with our customers about our new brand and differentiate between existing brands, our new brand name products will not sell, either our customers don't know or it seems less attractive to go for the new one over an old yet recognised brand ...*

Marketing Capabilities

Westshore is characterized by six significant capabilities, fostering the development of resilience and strategic responses to different crises, as discussed below. Key capabilities relate to product development, channel management, marketing communication, market information management, research and development, and information management.

Product Development

As an innovative company, Westshore holds the position that they offer a wider range of quality products at affordable prices to their customers when compared with their

competitors. The company has over 1000 products ranging from home appliances, farming and gardening tools, car accessories to industrial specialities and leisure products that are marketed and promoted on different channels. Westshore maintains the product variety through their long-standing links with different suppliers (flexibility).

Despite the costly and time-consuming process of finding the right suppliers, Westshore recognizes that network partnerships have enhanced its competitiveness, allowing the company to constantly source and offer new products in the market quicker than competitors (strategy, agility). Patrick added that, *our list of products keeps on growing with a wide array of products from quality suppliers to keep abreast with the changing needs of the market (adaptability), but we cannot compete with the giant competitors like Bosch. We try to offer quality products at affordable prices for everyone.* These working relationships involves regular communication and contact, enabling all partners to anticipate and forecast future trends for different market segments (anticipatory ability).

As noted previously, Westshore differentiates itself from competitors by developing products that have multiple features and multi-functionality. This process of differentiation is geared towards making the brand appear superior to those of competitors while concurrently reducing the time and cost for production and launch. As indicated by Patrick, *this strategy is used because each additional feature provides another reason for the consumer to purchase our products that add desired functionality.* Furthermore, Westshore is able to maximize its flexibility in product design and development, enabling the company to develop and modify its products (adaptability) according to customer needs in relatively short periods of time (agility).

Channel Management

Westshore *treats suppliers as their own employees* and considers relationships with suppliers as one of the contributing factors to their success. Patrick added: *we don't change suppliers unless there are issues with existing ones...because it takes time to find a good one that meets our quality standards.* For a company that emphasizes unique product design and development, choosing to outsource product production to contract suppliers necessitates stakeholders to work closely together to harness the

combined knowledge of all parties in the development of new products tailored to customer specifications.

Westshore also has a distribution warehouse in Germany in close proximity to its target market, enabling fast delivery to clients. Taking advantages of outsourcing of production and related services not only allows Westshore to integrate cost reductions, product differentiation, and time-to-market, but also elevates the company's level of agility across the overall supply chain. Sharing information among stakeholders contributes favourably to this process (agility).

Having developed a number of 10-years plus loyal and trusting supplier partnerships through regular communication and frequent visits, suppliers are willing to share detailed cost structures and process information. In return, Westshore shares its future product development plans. Suppliers help in securing the supply of assemblies, further enhancing both the flexibility and agility in choice of components for existing products, and sourcing materials for new products (flexibility, agility).

Market Communication

Unlike other SMEs, Westshore's solid financial background provides both the resources for and flexibility in communicating and promoting their products. A range and combination of marketing approaches including giveaways, referrals, newsletters, business partnerships through affiliates, direct marketing are utilized.

Giveaways. Via online marketing, Westshore offers freebies such as promotional free samples and complementary product so that customers can become acquainted with a new or existing product or *test drive* a product prior to purchase. Patrick elaborated:

Our company gives quality stuff away for free besides using it as one way of branding our company. It's like an incentive, hopefully, they will come back and buy our products ... so far, it's been effective ... and we also receive some really good comments about what customers think about our product after using it ... in that way, we can better understand them as they love to tell us what they are looking for and what products we should offer in response to their needs (anticipatory, adaptability).

Referrals. Similarly, referral programs such as word-of-mouth from existing customers are used to attract new customers. Referees can select a bonus offering of their own choice for successfully referring a person. However, Patrick qualified this form of marketing, adding:

Getting people to refer their friends, family members, or colleagues is not always effective in bringing in new customers to our company, but we wont risk any chance since everyone else in the industry is doing it as well...

Newsletters. Regularly distributing newsletters to its subscribers via emails, allows Westshore to inform subscribers about bargains, end of lines, new products, special promotions, news and upcoming events, as well as contact information for general inquiries. Patrick said:

There is always something interesting to tell in this free of charge newsletters...so our subscribers will never miss out on any bargain... and sending newsletters to customers and prospects is another way to get people to know our products and promotional activities.

Business Partnership Through Affiliates. A business partnership program helps to generate sales from third parties. Affiliates simply select from Westshore's wide range of logos, banners, and links to products and promotions on their personal website, and each visitor or customer recommended is rewarded financially in a form of commission. This program is free of charge and no obligation is involved, as the major purpose is to *make money with your hobby*.

Direct Marketing. Direct marketing is Westshore's core marketing strategy in reaching out to customers. Customer-only publications are used for reinforcing customers and are targeted at buyers who have already exhibited some degree of commitment to Westshore through one or more purchases. The marketing team approaches customers directly with exclusive catalogues featuring Westshore's new products and seeks feedback about product features, functionalities, and other product or service-related attributes (anticipatory ability). Patrick said: *we appreciate comments from our customers ... and our customers tell us everything. For example, things that they like and don't like that's why we talk and discuss with them personally*

on a regular basis so that we can respond swiftly to their needs (agility) and we can target the more important users effectively (adaptability)...

Market Information Management

Westshore undertakes extensive research, having dedicated personnel, employing a range of market-based procedures. For example, current customers, regarded as representative of their respective target market are interviewed and invited to provide product reviews (anticipatory ability). Information including customer complaints and product features are stored on a centralised system and used for product development and modifications (adaptability, strategy). Despite the prolific information stored on computers, it appears that such data are not utilized effectively and limited only to existing customers. Patrick elaborated:

Our company is good at catching data about our current customers, however, we fail to identify opportunities for future strategic action or to use it for rapid decisions making (agility) since the information is not updated on a regular basis ... with the adoption of a new IT system, we hope the situation will change so that we don't have to go back and forth between departments ... also our company begins to put more resources in attracting new customers (reallocating resources)... new sources of information will be obtained and incorporated with the current data for better understanding of customer preferences, allowing us to produce products that better match their needs (anticipatory ability, adaptability, strategy).

Research and Development (R&D)

Conventionally, new product development takes place within firm boundaries, however, the mobility and availability of highly committed yet skilled employees have led to the erosion of closed-shop innovation. For almost 20 years, Westshore has allocated a considerable amount of investment to R&D to enable the development of quality products with distinctive features and affordable prices to their target market. Investment has concentrated on human capital such as technical personnel, and R&D strategies. This investment, in association with the collaboration with customers and suppliers in the development process appear, to be significant

precursors to Westshore's success (anticipatory ability, adaptability, dynamic capability).

Involvement of suppliers in the process can range from consultations regarding design ideas about components to partnering on systems to be supplied. Involvement of external partners in NPD has helped Westshore to maintain contact with all stakeholders, and to receive virtually instant feedback and input on ways to refine their product ideas prior to production (adaptability, agility). Patrick noted that,

The major benefit of involving suppliers in product development is making our suppliers aware of the intricacies and thinking behind new products early, so that we can incorporate ideas into prototypes and cost estimations ... Prototypes can then be made available earlier ... allowing our company to launch new products faster than our competitors ...

Information technology

Westshore understands the importance of information technology (IT) in supporting flexible decision making in this uncertain and unpredictable business environment. Upgrading IT infrastructure regularly has become essential to enable the collection and management of information from multiple sources and make information available company-wide in order to promote initiatives such as cross-selling more products to customers, and NPD. Having a tailored information technology infrastructure has enhanced the distribution of information across Westshore, but requires the coordination and cooperation between staff from different departments. Patrick added that, *since everyone has to contribute to the system to make it effective, we are able to retrieve the relevant and updated data for making rapid decisions in response to our own problems and needs.*

The external environment plays a significant role in driving a firm's operating performance. However, internal organizational conditions also determine how a company operates (business model), fostering the formation of resilience capability and regulating strategic decisions that can lead to positive business outcomes. In the following section, the application of different dimensions of resilience capability in Westshore for strategy development to crisis is discussed, with the identified key precursors and leading business performance.

Within-case Analysis

Changes in management leadership including the strategic decisions before and after the new management team was brought into the company, can impact business operational models, capability building, and the firm's resilience capability to deal with internal and external forces. Table 5.8 exhibits the verbatim evidence for the application of each dimension of resilience capability, and their course of actions taken across different phases of crisis.

Pre-crisis: Founding - with an emphasis on adaptability, anticipatory ability, and flexibility resilience capabilities

Having the same management leadership for over 15 years, Westshore has well founded its business model, organizational culture, operating practices, and procedures, with a clear focus on new product development. As a consequence, effort was directed toward adaptability to development and launching of novel products to target markets, anticipatory ability of identifying product ideas, customer needs and requirements, and flexibility in product design and development.

Anticipatory ability resilience capability has enabled the successful development and introduction of new and wide-ranging products (adaptability resilience capability) through an in-depth understanding of target markets. This resilience capability dimension was exploited in the areas of market testing for product feasibility and sales forecasts [1.1], establishing new product requirements through between department collaborations within the company (dynamic capability) to ensure that new product development match customer and market needs [1.2], and collecting customer and market information to anticipate and identify needs and new product requirements [1.3]. The key precursors for these proactive strategies were company characteristics (former leadership, design- and quality-oriented), product development, and market information management capability. Table 5.9 provides the detailed information about the linking of different resilience capability dimensions to driver and performance across three phases of crisis.

Flexibility resilience was also emphasized in this phase, highlighting Westshore's capability of being readily modify its resources, operating practices and procedures to support new product developments and introduction to the market. Specific

application of this dimension can be found in product design and development [1.4] with a range of product variation offerings through the development of network partnerships with suppliers [1.5], collaboration with different stakeholders along the new product development process [1.6], and communicating and promoting products on various platforms [1.7]. As such, company characteristics (design- and quality-oriented), product, channel management, market communication, and market information management were identified as the key driving forces underpinning flexibility resilience capability development, in this phase.

These two resilience capability dimensions reflect the establishment of a blueprint for operating the business, defining the strategic value and organizational culture, and setting the organizational direction in Westshore, since its establishment.

During-crisis: Refining - reactive strategies with an emphasis on adaptability and agility resilience capabilities

It appears that the former management team provided the current management with the financial footing to enable the pursuit of a wide range of strategic activities through the reallocation and reorganization of resources, and refinement of business model, operating processes and activities necessary for dealing with external and internal crises. Notwithstanding, in 2010, a transition in leadership culminated in a refocus of company objectives and strategic vision that had been evolving for over 15 years, encouraging employees to re-think their operational practices and procedures.

These changes also affected the communication flow between departments, resulting in delayed decision making. The adoption of new technology and re-modification of data gathering processes (adaptability resilience capability) fostered effectiveness and efficiencies, allowing Westshore to capture current market information from different sources (market information management capabilities, anticipatory ability, flexibility resilience capabilities), leading to timely decisions at company, and business unit levels (agility resilience capability).

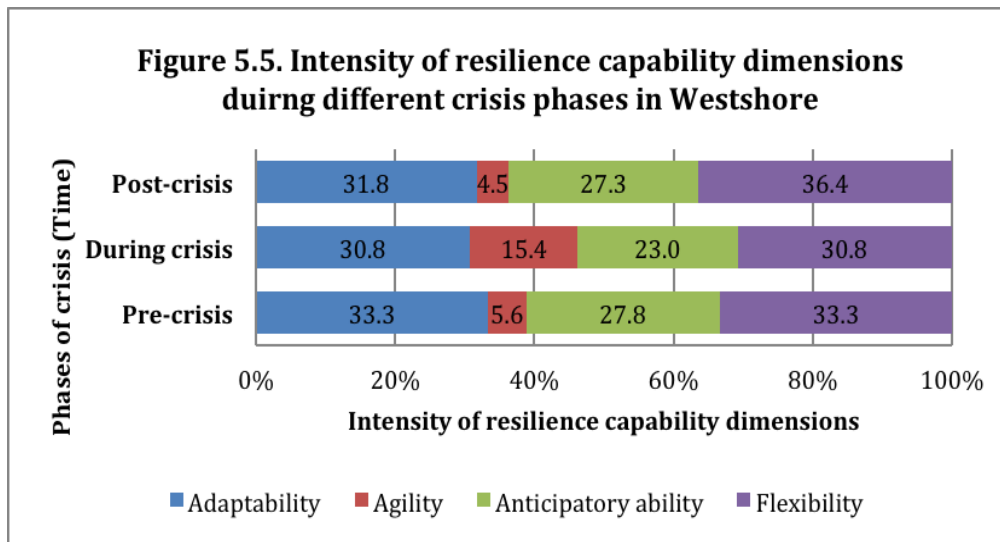
As evidenced in the increasingly intensity of adaptability and agility resilience capabilities in this phase, highlighting the refocus of company strategic objectives and vision through a series of strategic decisions such as the adoption and implementation

of new product development approach involving modular-based design [2.1], utilizing R&D skills & knowledge, and capitalizing on the long-term relationship with suppliers (channel management capability) for creating new products using a combination of standardized components instead of producing something profoundly new to the world. The decision of management regarding rapid market expansion through the introduction of a new brand [2.2] provided the company with a new revenue stream, new business, and associated growth while reducing the risk of focusing on only existing customers. Other strategies that enabled the expression of agile resilience capability included outsourcing of production and related services [2.3], and reductions in inspections and headcounts [2.4] for cost saving.

The application of adaptability and agility resilience capabilities enabled the immediate refining a long-standing company vision and direction, operating practices and procedures that facilitated the alignment of strategic decisions to internal and external changing conditions in order to stay competitive in turbulent environments.

Post-crisis: Conforming - with an emphasis on adaptability, anticipatory ability, and flexibility resilience capabilities

Although changes in the management team reshaped the strategic vision and direction of the organization, emphasis on new product development still remained a core value in Westshore, albeit *we just need to play the game in a different way (R&D manager)*. As such, adaptability, anticipatory ability and flexibility resilience capabilities were prominent in this phase (same as in the pre-crisis phase) and were utilized to introduce new products to target markets through various communication platforms, and to support other strategic decisions related to the NPD process. Refining process in the previous phase enabled Westshore to temporarily settle with a new approach of operating the company, yet refinement of activities, possesses, and procedures continued in this phase until the next wave of reformation.



Overall, the intensity of each dimension varied across three phases, indicating differences in strategic goals and objectives between former and present leaderships steering the operation of the company. Figure 5.5 illustrates that adaptability, anticipatory ability and flexibility resilience capabilities were the key dimensions driving strategy development in the pre-crisis under the helm of the former leadership. The focus shifted to adaptability and agility resilience capabilities when the new management team was introduced during the heat of crisis. Adaptability, anticipatory ability, and flexibility remained the key resilience capabilities in the post-crisis phase helping to maintain operational practices, the new strategic vision and direction at Westshore.

Conclusion

Different dimensions and levels of intensity of resilience capability are associated with various strategies that support the strategic vision of the company. Figure 5.6 shows the causal relationships between company characteristics, business models, capabilities, strategic actions, and performance.

Overall, Westshore shows how internal business conditions like external environment can affect a company's operating practices and serve as a key antecedent for the development of resilience capability. Resilience qualities include an ability to anticipate and forecast demands through an in-depth understanding of customer needs and preferences, flexibility in new product design and production arrangements, adaptability to product modification and introduction, and agility in regard to rapid

strategic actions for market expansion, and fast responses to internal and external crises. These qualities emerge within the context of a company having a solid financial background, robust leadership, and a culture of design and innovation. Coupled with long-term relationships with suppliers/customers, R&D, and IT capabilities, Westshore has been able to respond effectively in turbulent economic and market conditions, maintaining the sustainability of the company. According to Patrick, *a company is classified as resilient when it is able to turn threats into opportunities, leading to growth and superior profits that allow company to expand and diversify into new markets.*

Table 5.8. Dimensions of resilience capability, and their respective proactive and reactive plan of actions across different phases of crises for Westshore

Resilience dimensions /Crisis	Pre-crisis	During crisis	Post-crisis
Adaptability	<ul style="list-style-type: none"> • Frequent new (novel) product development*: <i>the highly competitive marketplace has shortened the product life cycles and intensified competition demand across companies in this industry...companies now have to constantly provide low cost, high quality products to customers, in a timely manner...</i> • Adoption of new product development processes through the collaboration between marketing, and research and development (R&D) departments* • Modifications on products based on customer feedback and comments* • Adjusting the logistics process by establishing a warehouse distribution channel close to target markets • Modifying the customer information gathering process by involving external stakeholders in the process. 	<ul style="list-style-type: none"> • Launching upgraded product models with multiple features and multi-functionality*: <i>This strategy is used because each additional feature provides another reason for the consumer to purchase our products that add desired functionality</i> • Frequent introduction of new products through partnerships with quality suppliers* • Adoption of tailor-made information technology (IT) for storing the data in a centralized system: <i>With the adoption of a new IT system, we hope the situation will change so that we don't have to go back and forth between departments...</i> • Implementation of digital integration of data information across different functional groups: <i>Since everyone has to contribute to the system to make it effective, we are able to retrieve relevant and updated data for making rapid decisions in response to our own problems and needs</i> • Adopting a new production development approach: <i>Although there has been a significant decline in profits in our company and funding of our[R&D] department, introducing new products remains a priority for us, and to stay competitive in the market we just need to play the game in a different way...[2.1]</i> • Modifying business model through introducing a new brand to new market [2.2] • Adjusting production and organizational activities through outsourcing [2.3] 	<ul style="list-style-type: none"> • Modifying business model through market diversification • Continuation and refinement of those activities, processes, and procedures (with *) adopted in earlier phases

Note. Italic denotes verbatim quote from respondent.

Table continues...

Resilience dimensions /Crisis	Pre-crisis	During crisis	Post-crisis
Agility	<ul style="list-style-type: none"> • Having production warehouses in Germany to reduce the time and cost of delivery to customers 	<ul style="list-style-type: none"> • Continuation and refinement of those activities, processes, and procedures (with *) adopted in the pre-crisis phase • Immediate response to reduce time and cost of new product development and time to market through adoption of a new development approach based on modular-based design [2.1] • Quick response to significant decline in revenue through expansion into new markets using existing products with new brands: <i>there is no doubt that long-term and loyal customers have a major impact on Westshore's success...at the same time, our current markets have become increasingly saturated...as a way of shoring up decreasing profits resulting from the current global economic condition, and shrinking consumer purchasing power, our company developed a new brand using existing products to attract new customers...[2.2]</i> • Rapid response to cost reduction and improve organizational efficiency through outsourcing production and related services [2.3] • Immediate reduction in inspections and headcounts to address a significant revenue decline [2.4] 	<ul style="list-style-type: none"> • Rapid response to increasingly maturing market and to generate new income source through expansion into the Asian and Dubai market in 2012
Anticipatory ability	<ul style="list-style-type: none"> • Market testing prior to new product launches for better sales forecasts* [1.1] • Establishing new product requirements through collaboration between marketing, and research and development (R&D) departments, based on customer feedback and market information* [1.2] • Identifying new component suppliers for new product development* 	<ul style="list-style-type: none"> • Involvement of engineers in customer information gathering processes*: <i>In the past, our engineers never talked to customers directly, they communicated only with the marketing people...so for our engineers to be able to participate in customer meetings has certainly helped us to collect accurate and first-hand customer information.. as a result, significantly reduced our workload and time for obtaining information from our marketing department</i> 	<ul style="list-style-type: none"> • Continuation and refinement of those activities, processes, and procedures (with *) adopted in earlier phases

Table continues

Resilience dimensions /Crisis	Pre-crisis	During crisis	Post-crisis
Flexibility	<ul style="list-style-type: none"> • Collecting customer and market information to anticipate and identify needs and requirements for new product development* [1.3] • Involvement of customers and suppliers in new product development processes through regular communication and contact to anticipate and forecast future trends for different market segments*: <i>The major benefit of involving suppliers in product development is making our suppliers aware of the intricacies and thinking behind new products early, so that we can incorporate ideas into prototypes and cost estimations...Prototypes can then be made available earlier...allowing our company to launch new products faster than our competitors...</i> • In product design and development*: <i>The former CEO was a gatekeeper for the entire NPD process,...he showed his full support for new product development as evidenced by the allocation of sufficient resources</i> [1.4] • In multiple sources of customer, market, and industry information* • Developing new products across a range of variations* [1.5] • In collaborating with different suppliers, and customers for new product development* [1.6] • In communicating and promoting products on various platforms and using different marketing approaches [1.7] • In having multiple long-term suppliers* 	<ul style="list-style-type: none"> • Continuation and refinement of those activities, processes, and procedures (with *) adopted in previous phase • In producing new products based on functionalities and modular-based design* • In allocating resources to new brands* • In having multiple back-up suppliers* • Continuation and refinement of those activities, processes, and procedures (with *) adopted in previous phase 	<ul style="list-style-type: none"> • Continuation and refinement of those activities, processes, and procedures (with *) adopted in earlier phases

Table 5.9. Linking different dimensions of resilience capability to precursors and firm performance across three phases of turbulences.

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes	
Phase 1: Pre-crisis	<i>Adaptability</i>	<ul style="list-style-type: none"> • Frequent new (novel) product development through in-house team • Adoption of new product development processes • Maintaining product variety through partnerships with quality suppliers* • Modifications on products based on customer feedback and comments* • Adjusting the logistics process by setting up warehouse distribution channel close to target markets • Modifying the customer information gathering process by involving external stakeholders in the process. 	<ul style="list-style-type: none"> • Product development, CEO characteristics (former leadership), company characteristics (design and quality-oriented) => focusing on developing novel products • Product development, R&D, CEO characteristics (former leadership) => streamlining the new product development process through collaboration between marketing and R&D departments • Product development, CEO characteristics (former leadership, design and quality-oriented) => keeping abreast with the changing needs of the market • Product development, channel management, company characteristics (design and quality-oriented), market information management, Information technology (IT) => better match with customer needs through product modifications • Channel management, CEO characteristics (former leadership), company characteristics (financial footing) => enabling quick delivery of goods to clients and customers • Market information management, CEO (former leadership) => enabling first hand information about customer needs and requirements 	<ul style="list-style-type: none"> • New/repeat business • Profitability • Sustainability • Reduction in time and cost for development, and production • Rapid new production development and products launch • Offering a wide-ranging quality products to the market • New/repeat business • Profitability • Sustainability • Customer satisfaction • New/repeat business • Profitability • Sustainability • On-time delivery of goods • Customer satisfaction • New/repeat business • Profitability • Sustainability • Products are better match with customer needs and requirements • Customer satisfaction • New/repeat business
	<i>Agility</i>	<ul style="list-style-type: none"> • Having production warehouses in Germany to reduce the time and cost of delivery to customers 	<ul style="list-style-type: none"> • CEO characteristics (former leadership), company characteristics (financial footing) => enabling quick delivery of goods to clients and customers 	<ul style="list-style-type: none"> • On-time delivery of goods • Customer satisfaction • New/repeat business • Profitability • Sustainability

* Denotes the continuation of the resiliency characteristics with the same precursors.

Table continues...

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes
<i>Anticipatory ability</i>	• Market testing prior to new product launches*	• Product development, market information management, channel management, Information technology (IT), company characteristics (design and quality-oriented) => anticipating product feasibility and forecasting sales demand	• New product introduction • Better sales forecasts
	• Establishing new product requirements*	• Dynamic capability (collaboration within/between firms in new product development process), channel management, product development, market information management, Information technology (IT), company characteristics (design and quality-oriented) => new product ideas are developed through collaboration between marketing and R&D departments and based on customer feedback and market information	• Products are created to match customer and market needs
	• Identifying new component suppliers*	• Product development, channel management, market information management, company characteristics (design and quality-oriented) => ensuring products are produced with new functions and enabling rapid response to product problems	• Products are developed with new functions on regular basis • Immediate shift to other suppliers if new components available or problems arise (e.g., delay in goods delivery)
	• Collecting customer and market information to anticipate and identify needs and requirements for new product development*	• Product development, channel management, market information management, Information technology (IT), company characteristics (design and quality-oriented) => ensuring products are developed through customer information gathering	• Products are developed based on customer requirements and market needs
	• Involvement of customers and suppliers in the new product development processes*	• Product development, channel management, market information management, Information technology (IT), company characteristics (design and quality-oriented) => anticipating and forecasting future trends for different market segments from customer and supplier perspectives	• New products are tailored to customer specifications based on the combined knowledge of all parties in new product development • Rapid new product development
<i>Flexibility</i>	• In product design and development*	• Product development, channel management, company characteristics (design and quality-oriented) => ensuring flexibility in designing products with different quality materials	• Maintaining flexibility in developing products with new design and components

Table continues...

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes	
	<ul style="list-style-type: none"> • In multiple sources of customer, market, and industry information* • In developing new product in a range of variations* • In collaborating with multiple stakeholders (customers and different suppliers) in new product development processes* • In communicating and promoting its products on various platforms and using different marketing approaches* • In having multiple long-term and back-up suppliers* 	<ul style="list-style-type: none"> • Market information management, dynamic capability (sharing customer/market information within/between firms) => maintaining multiple sources of information • Product development, channel management, company characteristics (design and quality-oriented) => ensuring the availability of different products for different customer needs • Product development, channel management, company characteristics (design and quality-oriented), dynamic capability (collaboration within/between firms in new product development processes) => facilitating the new product development • Marketing communication => utilizing different platforms to target current and potential markets • Channel management => adjusting customer and production changes and serving as back-up in case of production or delivery problems 	<ul style="list-style-type: none"> • Developing a better picture and understanding of customer, market and industry situations • Maintaining product variations for different markets • Enabling the use of different components in new product development • Faster prototype availability • Products are made according to customer needs and preferences • Faster product development and launches • Effectively promoting and marketing products to target markets • Brand building • Immediate shift to other suppliers if problems arise • Accommodating frequent customer and production changes 	
Phase 2: During crisis	<i>Adaptability</i>	<ul style="list-style-type: none"> • Adopting a new production development approach • Launching upgraded product models with multiple features and multi-functionality* 	<ul style="list-style-type: none"> • Product development, R&D, channel management, CEO characteristics (present leadership) => increasing number of new products development with limited budget • Product development, R&D, channel management, company characteristics (design and quality-oriented) => developing products to serve different market needs 	<ul style="list-style-type: none"> • Reduction in time and cost of new product development • Frequent new products introduction • New/repeat business • Profitability • Sustainability • New/repeat business • Profitability • Sustainability

Table continues...

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes
<i>Agility</i>	<ul style="list-style-type: none"> • Adoption of tailor-made information technology (IT) 	<ul style="list-style-type: none"> • Market information management, Information technology (IT), CEO characteristics (present leadership), company characteristic (financial footing) => ensuring information are updated and stored in a centralized system 	<ul style="list-style-type: none"> • Maintaining updated customer and market information in a centralized system • Reducing time to collect information from different departments • Enabling sharing of information across different departments
	<ul style="list-style-type: none"> • Implementation of digital integration of data information across different functional groups 	<ul style="list-style-type: none"> • Market information management, Information technology (IT), CEO characteristics (present leadership) => enabling effective use of data 	<ul style="list-style-type: none"> • Facilitating rapid decision making based on updated customer and market information
	<ul style="list-style-type: none"> • Modifying business model through introducing a new brand to new market 	<ul style="list-style-type: none"> • CEO characteristics (leadership), company characteristics (financial footing) => to address the issue of focusing on existing customers 	<ul style="list-style-type: none"> • Growth • Market expansion • Expand income source • Organizational efficiency
	<ul style="list-style-type: none"> • Adjusting production and organizational activities through outsourcing 	<ul style="list-style-type: none"> • Channel management, CEO characteristics (leadership) => enabling organizational efficiency 	
	<ul style="list-style-type: none"> • Immediate response to reduce time and cost of new product development and time to market through adoption of a new development approach based on modular-based design 	<ul style="list-style-type: none"> • Company characteristics (design and quality-oriented), CEO characteristics (leadership), Information technology (IT), R&D => declines in revenue led to rethinking of a new product development processes in order to reduce production time and cost 	<ul style="list-style-type: none"> • Cost saving • Higher number of new products development • Faster products launch
	<ul style="list-style-type: none"> • Quick response to significant decline in revenue through expansion into new market using existing products with a new brand name 	<ul style="list-style-type: none"> • CEO characteristics (leadership), Information technology (IT), dynamic capability (reallocation and redeployment of resources for current and new brands) => rapid response to address the risk of focusing on existing customers 	<ul style="list-style-type: none"> • Market share • Expand income source • New/repeat business • Profitability • Growth • Sustainability
	<ul style="list-style-type: none"> • Rapid response to cost reduction and improve organizational efficiency through outsourcing production and related services 	<ul style="list-style-type: none"> • CEO characteristics (leadership), Information technology (IT) => rapid response to significant decline in revenue 	<ul style="list-style-type: none"> • Cost reduction • Organizational efficiency
	<ul style="list-style-type: none"> • Immediate reduction in inspections and headcounts 	<ul style="list-style-type: none"> • CEO characteristics (leadership) => rapid response to significant decline in revenue 	<ul style="list-style-type: none"> • Cost reduction • Business continuation

Table continues...

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes	
Phase 3: Post-crisis	<i>Anticipatory ability</i>	<ul style="list-style-type: none"> • Involvement of engineers in regular client/customer meetings* 	<ul style="list-style-type: none"> • Product development, company characteristics (design and quality-oriented), CEO characteristics (leadership) => enabling engineers to obtain first-hand information for new product development 	<ul style="list-style-type: none"> • Updated customer information • Developing products according to customer specifications
	<i>Flexibility</i>	<ul style="list-style-type: none"> • Reallocating resources to new brand* 	<ul style="list-style-type: none"> • Dynamic capability (reallocation and redeployment of resources for current and new brand), CEO characteristics (leadership) => utilizing resources efficiently and effectively 	<ul style="list-style-type: none"> • Enabling the market expansion using new brands
	<i>Adaptability</i>	<ul style="list-style-type: none"> • Modifying business model through market diversification 	<ul style="list-style-type: none"> • CEO characteristics (leadership) => diverting the focus on existing customers 	<ul style="list-style-type: none"> • New/repeat business • New income source • Profitability • Growth • Sustainability
	<i>Agility</i>	<ul style="list-style-type: none"> • Market expansion into the Asian and Dubai market 	<ul style="list-style-type: none"> • Dynamic capability (reallocation and redeployment of resources for current and new brand), CEO characteristics (leadership), Information technology (IT) => quick action to expand into other markets through allocating and redeploying resources to new brands 	<ul style="list-style-type: none"> • New/repeat business • New income source • Profitability • Growth • Sustainability

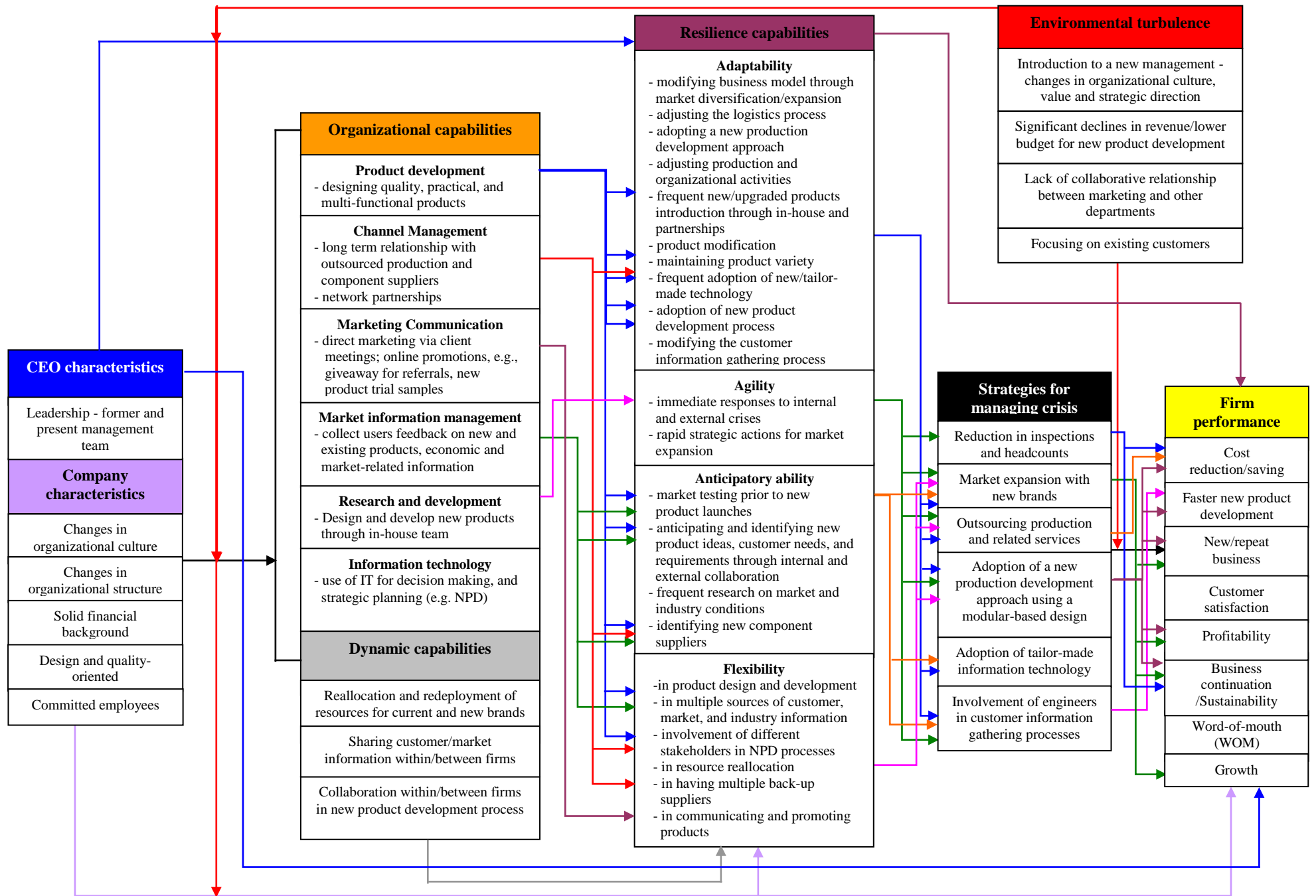


Figure 5.6: Causal network model of relationships between company, CEO, and company characteristics, organisational and dynamic capabilities, resilience capabilities, strategies and firm performance

Emass Textiles Manufacturing Company

Vignette

Family businesses prevail in most if not all economies around the world, holding unique characteristics such as the types of business activities undertaken, and perceptions regarding environmental threats and opportunities. Small businesses can be resilient, competing and expanding in turbulent environments despite having limited resources. An in-depth interview was undertaken with Samuel, the director/owner of Emass - a local family business, focusing on manufacturing clothing to Hong Kong, China, and USA. Interview material reveals four distinct resilient capabilities with emphasis on adaptability, agility, and flexibility that built around distinctive company (e.g., trust, support-based relationships, commitment to quality service, competitive pricing strategy) and owner characteristics (e.g., willingness to try, being opportunist), influencing the development of marketing capabilities, and strategic actions (e.g., development of niche markets), enabling the company to compete successfully with major competitors in this fast-changing industry.

Case Summary: Emass

<i>Company profile</i>
<p>Company characteristics</p> <ul style="list-style-type: none">• Family business with 3 owners, commitment to deliver quality service, operating culture based on trust and supportive relationships with family and industry partners, limited resources
<p>Owner characteristics</p> <ul style="list-style-type: none">• Growth-oriented, willingness to try attitude, opportunistic
<p>Capability</p> <ul style="list-style-type: none">• Pricing - competitive pricing strategy based on fabric, style, and quantity• Product/service - mass production to custom-made apparel for men's and women's markets, provision of value added and quality service to different market segments (e.g., sourcing different fabrics, fashion Accessories)• Channel management - solid relationship with stakeholders• Marketing communication - participating in trade shows, setting up meetings with companies• Market information management - searching market trends, participating in trade fairs/shows, collecting economic & industry information, and customer feedback & preferences
<p>Business model</p> <p>Readjustment on business model, diversification (expanding into new geographic location, and niche markets)</p>
<p>View of firm resilience</p> <p>A company's ability to generate new ideas, capture opportunities through expansion into new markets</p>
<p>Factors regarded as contributing to firm resilience capability</p> <ul style="list-style-type: none">• Company characteristics - family business structure, commitment to quality service, trust and support relationships with family and industry partners• Owner characteristics - growth-oriented, willingness to try attitude• Channel management
<p>Dimensions of resilience capability</p> <p>1. Adaptability</p> <ul style="list-style-type: none">• modifying business model through market diversification/expansion• adjusting the logistics process• adopting a new production development approach• adjusting production and organizational activities• modifying and adjusting products• accommodating to different customer requirements and needs• making adjustments to the range of products on offer and availability
<p>2. Agility</p> <ul style="list-style-type: none">• quick responses to financial and market crises• making proactive strategic decisions for future market diversification
<p>3. Anticipatory</p> <ul style="list-style-type: none">• regular research on industry and economic conditions• cognisant of business opportunities in other market• understanding and regular tracking customer preferences/market needs
<p>4. Flexibility</p> <ul style="list-style-type: none">• pricing, and arranging production schedules• promoting the company across different media outlets• collecting and tracking customer, market, and economic information• serving different markets• shifting to niche markets/geographic locations• reallocating resources between mass and niche market segments
<p>Crisis #1: Cash flow crisis and failure in delivery of fabrics and textiles from suppliers</p> <p><i>Strategy: Refinancing loans for cash flow problem, doing more with less, (i.e. be effective and efficient), closing the Chinese production plants to allow resources to be redeployed, building relationships with customers</i></p> <p><i>Performance Outcome: Customer satisfaction, quality service, growth</i></p>
<p>Crisis #2: Matured and shrinking US markets</p> <p><i>Strategy: Expansion into other geographic locations, and niche markets</i></p> <p><i>Performance Outcome: New business, profitability, growth, sustainability</i></p>

Company background

Established in 2001 and employs 20 people. Emass (pseudonym) is a textile manufacturing 1-2 generation family business. Emass has an annual turnover of US\$2 million, serving men's and women's markets in Hong Kong, China, and the US. Their headquarters is located in Hong Kong and production of textiles is in Dongguan City, China, and Vietnam. Emass provides a whole range of services from samples to small volume production runs to bulk order production. Emass also manufactures distinct uniforms tailored to meet the needs of a number of international enterprises. The company's strict quality control to fashion is applied to uniform production. This case study is structured as follows. A brief description of the company background and manager/owner characteristics, is followed by an overview of the global apparel & clothing industry. The subsequent section details respective strategic actions Emass has taken in response to the challenges and crises encountered. Emass' organizational capabilities are examined concluding with a discussion of factors that have contributed to the development of Emass' resiliency.

Organizational structure

Emass is a family business managed by two generations. The company employs 4 family and 16 non-family members. The founder, Mr. Chi is based in the US, overseeing the US market. His eldest son, Samuel, manages the Hong Kong operation. Samuel's younger brother, Alan is in-charge of China market, and Samuel's aunt is the company's chief financial officer.

Before Samuel took over the management position of the Hong Kong operation, Mr. Chi was the sole decision maker. With his extensive industry experience, Mr. Chi has extensive understanding of the needs of customers, emphasizing the delivery of quality service that meet individual requirements. Today, control of the company remains in the hands of the founder, and his two sons, Samuel and Alan. According to Samuel, *decisions are made independently and are based on the shared vision of the company ... we trust and support each other although we are situated in different countries ... we believe that it is the solid foundation that comes from the family bonding which thrives us to where we are now so we have the complete freedom, and flexibility to do what is best for our company ...*

Director and Owner of Emass' Hong Kong Operation

Born in Hong Kong, and studied in both UK and Canada, Samuel is the director and owner of Emass' Hong Kong operation. Upon the completion of Year 1 of undergraduate degree in Canada, Samuel returned to Hong Kong and joined an European clothing company as a merchandiser for 3 years prior to working in his family business. Samuel said that *having no interest in continuing my study, and being the oldest son in the family, I had no choice about taking over the family business one day*. He believed that *working for someone else would shorten the time for knowledge and skill acquisition as you will not be tolerated by your superiors or co-workers...*

Despite the company's ability to deal with different crises, including economic turbulent conditions, decline in profit margins, and having a single market focus. Emass failed to grow during its first few years of operation. With a *willing to try attitude as well as being an opportunist*, Samuel holds the views that *running a business should not be merely for survival, companies need to grow in order to keep abreast with the changing environment ... if we don't change and remain where we are, we will soon be faded out of the market. It is the reason we need to re-organize ourselves, and re-adjust the way we operate .from time to time... no doubt there are some good things from the old business practices such as commitment to quality service, so we are trying to incorporate these elements into our new business model ...*

The Business Model

At the start-up, Emass, manufactured garments for high-volume, price-sensitive men's and women's markets in the US. In 2008, the company quickly expanded into the custom-made, small volume apparel segment, producing uniforms for key service enterprises, and design clothing for local designers, and retailers in Hong Kong and China. Emass communicates regularly with stakeholders across different market segments, providing value added and quality services such as fashion accessories, fabric materials, and custom packaging. These characteristics enables the company to respond rapidly to individual requirements. The company appears to have adopted the same level of commitment to the entire supply chain management, ensuring that finished garments are delivered quickly and effectively, to markets.

The Global Clothing & Textile Industry

The global clothing and textile industry consists of textiles, clothing, footwear, and luxury goods. According to MarketLine (2012), the global clothing and textile industry had total revenue of almost US\$3,049.5b in 2011, representing an annual growth rate of 3.7% for the period 2007-2011. Apparel, accessories & luxury goods sales was the most lucrative market in 2011, with total revenues of \$1,778.5b, equivalent to 58.3% of the global market's overall value. The performance of the market is forecasted to accelerate by the end of 2016, with an anticipated growth rate of 4.2% for the five-year period 2011 - 2016, which is expected to drive the market to a value of \$3,748.7 billion by the end of 2016. Within the clothing and apparel industry, the womenswear sector is identified as the leading market segment with an anticipated revenue of US\$621 billion in 2012, representing a 12% annual growth rate. By way of contrast, in Hong Kong, the clothing industry reported a 6.7% annual growth rate in 2012, reaching HKD30.3b (Hong Kong Census & Statistics Department, 2012).

Being a small and highly externally-oriented economy, Hong Kong is inevitably affected by global economic conditions through both trade and financial channels. The fiscal fragility of the US and the intensification of the eurozone sovereign debt crisis did not only impose additional pressure to an already fragile recovery in the advanced economies, but also led to a decline in exports and production activities across Asia, as their economies are tied closely to the final consumption demands in advanced western countries.

Global Economic Conditions - Cash Flow Crises

Consumer spending in Asia continues on an upward curve in the face of global economic conditions. Consistent with the Chinese saying, whenever there are threats, there are opportunities. Samuel explained that *companies in Hong Kong have been struggling over the last few years ... rents and salaries remain at increasingly high levels, especially when we compare to our neighbouring countries ... also the appreciation of RMB in the last 3 years make the cost of operation even higher ... however, there are always business opportunities out there ... depending on whether or not you act on them ...*

The external economic conditions precipitated a cash flow crisis in Emass, resulting in delayed payments from clients/customers, failure in delivery of fabrics and textile from suppliers, resulting in interruption of production runs. According to Samuel, *cash flow is of particular concern for Emass ... Now, we are waiting longer to be paid, in turn, we are taking longer to pay our own bills ... because when we are not paid by customers, we would not be able to pay our supplier, and other parties that we have incurred financial obligations with ... especially when we have limited financial capital ... that could really destroy our cash flow position ...*

Refinancing to Solve Cash Flow Problems

Unlike larger firms which are able to compete by drawing upon financial resources, and redirect and channel more resources, cash flow problems remains the primary causes of SME failures. Practicing company-wide cost control is often a first solution for small companies. Despite owning their premises, reducing utilities-to-transportation costs, and maintaining a lean, efficient, and quality employees have not contributed to building the cash flow reserved to meet emergency needs. Samuel explained,

We are lucky as we do not have to worry about the rental, allowing us to save substantial money that can be put to expanding our business ... as we only have 20 staff in total ... there is no room for us to reduce headcounts, or electricity consumption for cost saving we need people to run the business especially with our focus on delivering quality and rapid services to our customers ... thus, approaching banks for short-term loans seemed to be the only solution we had at that time ... because we have good relationships with banks, so it didn't take long to get the loan, allowing us to ease the temporary cash flow distress and to keep our business running ...

Emass understands the importance of having in-depth knowledge of customers, with respect to especially to new customers even when they might be referrals from existing clients. This knowledge has helped the company develop sound credit and debt-collection policies, lowering the risk of having liberal credit terms, and enabling accelerated account collections.

Doing More With Less - Be Effective and Efficient

Minimizing costs is not sufficient for organic growth in tough economic times. Companies need to adopt business models that maximize the utilization of existing resources. Despite not having much room for cost reductions, Emass has managed to do more with less. For example, closure of their Chinese production plant in 2006 enabled Emass to reorganize its limited resources to reach out to customers (dynamic capability), outsource production increased for efficiency, develop marketing activities to communicate with current and potential markets, and identify business opportunities for growth. According to Samuel,

We try to be efficient and effective with what we do by focusing on what we are good at ... so we can use our limited resources to initiate and capture business opportunities ... also focusing on servicing our customers through quality service and better delivery terms ... allowing our company to respond faster to market and customer needs because we have better relationships with all stakeholders than we did in the past...

Matured and Shrinking US Market

Most SMEs seek to grow within their means, avoiding leveraging venture funding at the risk of losing control and focus of their business. Relying on a single market can place a company in a vulnerable position, in particular, when that market is well developed and mature. The GFC did not have negative impact on the sales revenue and profits of Emass. For Samuel, competing only on price and in only one geographic market would not have been enough to stay afloat in the market. For this reason, Emass immediately readjusted its operational business model to focus on diversification on niche markets in other geographic locations. Samuel runs a business with a focus that extends beyond survival, attributing this attitude to having been raised in western countries. Samuel said:

The GFC incident has certainly led to rethinking of our target markets as the US market seem to have matured and are shrinking ... market share is just transferring from one company to another ... profit margins are getting slim ... running a business for the purpose of survival would lead us to nowhere ... I know it is what other small companies do, but for us, growth is what Emass is now looking for ...

Back to The Home Base - Expanding into Hong Kong and China Markets

Market expansion is an important step enabling SMEs to develop and grow. Emass has attempted to expand its customer base both in the Hong Kong and Chinese markets as *the world is heading east now*. Taking Hong Kong as an example, the local economy grew solidly after GFC, domestic demand and private consumption expenditure strengthened as a result of stable job and income conditions, and strong investment spending. ... *having production plants in Asia, particularly, in China made it a wise decision to start from here because of the close proximity to our target markets (Hong Kong and China), as a result, we can deliver products rapidly to our customers ...*

China's rapidly increasing global economic power, including having one of the world's highest average annual growth rate has provided business opportunities for companies locally and internationally. Being locals and having established long-term relationships with Chinese suppliers, has facilitated business. Interestingly, Emass has not chosen to target price sensitive or mass markets, instead, has targeted niche markets such as uniforms or local designers and boutiques. Samuel stressed that,

We wanted to diversify our business and we wanted to do something different ... for example, we see that there is an increasing trend for people wishing to sell their design on various platforms, but having difficulty to find suppliers for small order productions ... opportunities are out there, we just need to understand the changes and trends of the market, and to map out our strategies in time ...

Marketing Capabilities

This section addresses five key marketing capabilities regarded as antecedents of resilience development. Five capabilities are identified including pricing, products/service, channel management, market communication, and marketing information management, influencing strategy formation and firm performance.

Pricing

Since establishment, pricing has possibly been the key element that has contributed to Emass' success. Offering competitive prices to its customers has always been a central objective. Prices are based on fabric type, styling, and quantity because *prices*

mean more than just an exchange of monetary value. It is the price that customers are willing to pay for a bundle of attributes associated with buying the product.

Samuel explained that:

We won't underprice in order to get more businesses ... we are just being reasonable, otherwise, customers would not come back again. We also provide a range of pricing options for the same style using different fabrics,, so our customers can compare quality with price and see which one they prefer ...

Products/Services

At start-up, Emass targeted only low end markets where price has played a key role in attracting and retaining customers. Expansion and diversification into manufacturing quality uniforms (flexibility, adaptability, agility), as well as serving individuals, groups, companies, and education institutions in Hong Kong and China with unique custom apparel in 2008 (adaptability). For instance, companies such as airlines and banks are increasingly concerned with how their staff are attired and uniforms are recognized brands or signals, making statements about a company image or progressive nature. Companies are known to change their uniforms on a regular basis in order to look fresh and current. According to Samuel,

That was the reason we made our standing in this niche market ... we pride ourselves in being one of the few remaining uniform companies offering high-quality apparel at competitive prices ... because we try our best to take the utmost pride in getting it right so as to satisfy and retain our customers.

As mentioned previously, the industry is very different now compared with the past, with customers shifting to place more orders for smaller quantities. As well, manufacturers are shipping more orders than ever before. Emass decided to tap into this segment, catering for small order quantities for designers and small boutiques (adaptability, agility) as a way of promoting local brands, and widening the company's income sources. This expansion in production arrangement has given Emass a competitive edge. Samuel elaborated:

... to keep abreast with the changes in the environment and encourage local designers... whereas it is number of styles, quantity, packaging

requirements ... we would try our very best to satisfy their needs ... all we need is to ask our customers to send us their samples, photos or drawings, then we will turn their design ideas into a real product within a short period of time, so as to get the products into the market faster ...

Channel management

Rather than having its own production facilities, Emass manages a number of independent producers. Relationships with suppliers are held with utmost esteem, helping to foster the success of the business and provide the company with a competitive advantage over its competitors. These relationships require close and frequent/regular communication to ensure that suppliers deliver in short lead times, adjust to unexpected market preferences and changes rapidly, and maintain competitive pricing in the industry. Samuel explained:

...our suppliers have been working for us since the first day of our business, we have developed solid working relationships, allowing us to capitalize on efficiencies and cost advantages ... our suppliers are able to accommodate our customer requests ... giving the best possible prices to our customers ... in return, we are able to ensure stable orders being placed with them on a monthly basis ...

Market communication

Being small does not limit the pursuit of different marketing activities. Emass well understands the importance of promoting the company to both current and potential customers. For example, one way in which Emass has approached companies in Hong Kong markets has been by participating in trade shows, as well as setting up meetings with companies (anticipatory ability, flexibility), enabling the company to penetrate into the distribution network of different markets, and establish networks with buyers and suppliers. Because these promotional activities are scheduled over the year, Emass has sufficient time to develop promotional materials and samples and to avoid over capacity for other business commitments (flexibility, adaptability). According to Samuel,

We only have limited human capital, so each of us needs to only be involved in these activities ... we think it is useful as all of us get the chance to meet our customers ... also those trade and fashion shows are

usually held at a specific period of time during the year ... so we can have a good balance between our marketing activities and everyday work ...

Market information management

Constrained by resources and ability, Emass does not utilize any IT to collect and analyse market information. However, it does not limit the need for tracking the market changes and customer preferences, especially for delivering quality and rapid service to customers. Although the company does not conduct any specific marketing-information gathering activities, owners of the company stay current with the Hong Kong and local economic and industry conditions through financial reports and news print media, and holding regular meetings with clients to understand and identify their needs and requirements. Time is also spent on researching market trends through window shopping, and participating in trade fairs and shows that are held in Hong Kong and China (anticipatory ability, flexibility).

Emass has illustrated how company and owner characteristics enabled a small family business with limited resources to expand, and growth in turbulent environments. Emphasizing a continuous commitment to quality service (company characteristics), and rapid customer response and support has allowed Emass to compete favorably with competitors through proactive and reactive strategies despite holding limited resources. The following section provides a review of the development of strategies using different dimensions of resilience capability with the key precursors and business performance.

Within-case Analysis

In response to increased global competition, rapidly changing customer demands, and increasing material costs, business is now required to do more with less resources. The present case study reveals how a small family-owned textile company has been able to be resilient in the face of challenges. Table 5.10 shows the qualitative evidence for each dimension of resilience and their respective plan of actions across three phases of crisis with number referencing in the analysis below.

Pre-crisis: Founding - with an emphasize on adaptability and flexibility resilience capabilities

A detailed analysis of interview material shows that owner characteristics (growth oriented, willingness to try attitude, opportunistic), coupled with a trusting and supportive environment (company characteristics) enabled the freedom, rapidity and effectiveness in strategic decision making. In this phase, adaptability and flexibility resilience capabilities were stressed in regard to the effective and efficient use of limited resources to support strategic activities for current (e.g., product modifications and adjustments) and future (e.g., market diversification) needs. Particularly, following the closure of the Chinese production plant, leading to freeing up and reallocating resources [1.1]; and the company being able to accommodate different requirements associated with the current mass market [1.2], offer different price options [1.3], and to promote its range of goods and services across different media outlets [1.4]. The focus of this phase was about maintaining the strategic vision of the founder and founding the core value of the company to compete favorably in this turbulent environment with limited financial and human resources. Table 5.11 demonstrates the linking of dimensions of resilience capability to precursors and associated business performance.

During-crisis: Refining - proactive strategies with an emphasis of agility resilience capability in association with adaptability and flexibility resilience capabilities

Given that close and supportive relationships (company characteristics) serve as a solid backdrop for running the business, having family members as managers/owners has helped to strengthen the company in this turbulent environment because of the shared values that permeate the organizational culture, and high level of commitment to the family enterprise. To address the challenges that arise from different business situations, agility resilience capability was demonstrated through making rapid decisions such as market expansion into niche markets [2.1], expansion into other geographic locations [2.2], and refinancing for cash flow problems [2.3].

Success of a small-to-medium businesses depends not only on resources, but also the skills and knowledge of decision makers. Two notable owner characteristics (*a willing to try attitude, being an opportunist*) have permitted the company to redefine

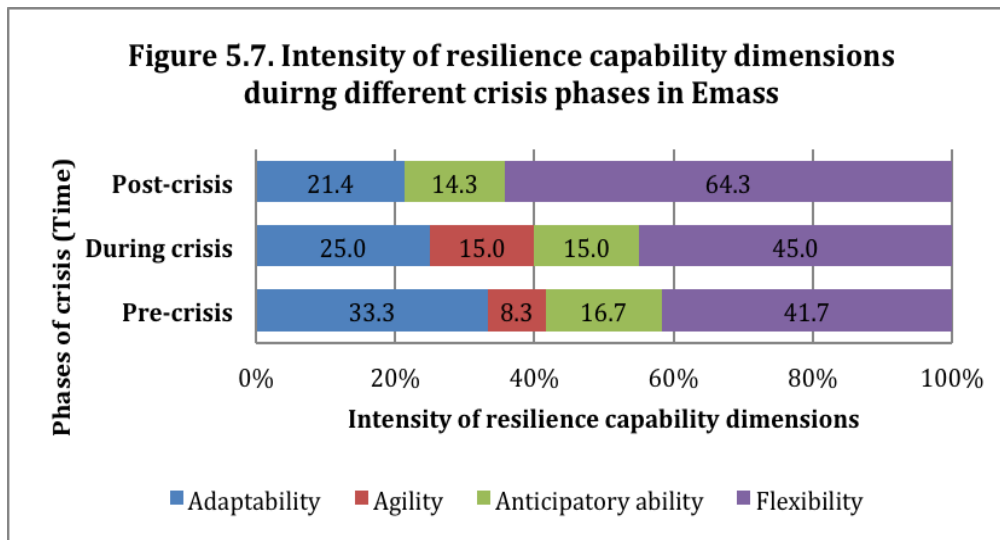
its operating business models, and reorganize limited resources for custom-made apparel segments in Hong Kong and China (adaptability, flexibility resilience capabilities), resulting in new business and income stream, growth and sustainability of the company.

Complimenting agile resilience capability, flexibility resilience capability was also employed as evidenced by shifting to niche markets [2.4], allocating resources between niche- or mass-market segments [2.5], and having production arrangement schedules that catered to different client requirements in terms of style, quantity, and packaging [2.5]. Both agility and flexibility resilience capabilities in this phase related closely to refinement of the business model by aligning with internal and external business operating situations.

Although company and owner characteristics play a leading role in capability building and driving the development of resilience capability, different organizational capabilities contributed differently to each dimension of resilience capability, such as pricing (e.g., pricing options) and allowing customer to compare prices of samples that are made with different fabric. Channel management capabilities gave rise to flexibility in production capacity (e.g., shifting between mass and small order productions), and adapting to customer needs and market changes.

Post-crisis: Conforming - with an emphasis of adaptability and flexibility resilience capabilities

To ensure the growth and sustainability of the company, Emass is fully committed to delivering value added and quality service to different market segments. With high level of adaptability and flexibility resilience capabilities being expressed in this phase, along with continued refinement of activities, processes and activities developed earlier have helped to the prolong the strategic vision of the company in the face of turbulence.



As shown in Figure 5.7, adaptability and flexibility resilience capabilities were emphasized in the pre- and post-crisis phases for preserving the core value of the company, i.e., delivering quality service to different markets. While agility resilience capability was prominent among these dimensions during the heat of crisis and was expressed through strategies for dealing with both challenges and crises, rather than for everyday operational purposes, flexibility resilience capability was stressed throughout the entire period with increasing strength since the pre-crisis phase.

Conclusion

The present case study illustrates that different dimensions of resilience capability can be utilized for the same organizational purpose, (e.g., provision of value added and quality service to different markets), depending on the company's core value and the owner's views regarding the business operations. Figure 5.8 shows the causal relationships between key company and owner characteristics, providing the foundation for the development of resilience capability, marketing capabilities, strategic actions, and business performance.

To conclude, family businesses, particularly those that are relatively small and holding limited resources can be adaptive, flexible, and agile. These enterprises can also demonstrate an ability to anticipate and cope with environmental turbulences. According to Samuel, resilience is defined as *a company's ability to come up with new ideas, and able to develop and launch new products into new markets in time*. In the case of Emass, resilient capabilities are part-and-parcel of organizational culture, and

family values and characteristics, and exploited through the provision of quality services and application of a competitive pricing strategy. These resilience qualities enabled the company to reposition itself quickly in response to environmental changes, expand easily to carve out new niche markets, maintain sustainability, and co-exist with large corporations.

The following section comprises a cross-case analysis of these four cases. Comparisons are made regarding organizational characteristics, marketing capabilities, dynamic capability, resilience capabilities, and associated business performance.

Table 5.10. Dimensions of resilience capability, and their respective proactive and reactive plan of actions during different phases of crises for Emass

Resilience dimensions /Crisis	Pre-crisis	During crisis	Post-crisis
Adaptability	<ul style="list-style-type: none"> • Modifying and adjusting products based on customers feedback for existing mass markets* [1.2] • Making adjustments to the range of products offer and ensuring availability that products can meet to unexpected market preferences and demands by establishing close relationships with suppliers*: <i>Our suppliers have been working for us since the first day of our business, we have developed solid working relationships, allowing us to capitalize on efficiencies and cost advantages...our suppliers are able to accommodate to our customer requests...giving the best possible prices to our customers...</i> • Modifying business model by closing the production plant in China • Adjusting production activities through outsourcing 	<ul style="list-style-type: none"> • Modifying business model through expansion into niche market [2.1] • Modifying business model through geographic expansion [2.2] • Accommodating to different requirements of mass and niche markets*: <i>We would try our very best to satisfy their needs...</i> • Continuation and refinement of those activities, processes, and procedures (with *) adopted in previous phase 	<ul style="list-style-type: none"> • Continuation and refinement of those activities, processes, and procedures (with *) adopted in earlier phases
Agility	<ul style="list-style-type: none"> • Closure of a Chinese production plant enabled effective use of limited resource and quick responses to both current and potential customers: <i>we try to be efficient and effective with what we do by focusing on what we are good at...so we can use our limited resources to initiate and capture business opportunities...also focusing on servicing our customers through quality service and better delivery terms...allowing our company to respond faster to market and customer needs because we now have better relationships with all stakeholders than we did in the past...</i> 	<ul style="list-style-type: none"> • Immediate response to focus on single market segment through expansion into niche markets including custom-made, small volume, apparel segments to widen the income source : <i>The GFC has certainly led to rethinking of our target markets as the US market seem to have matured and shrinking...market share is just transferring from one company to another...profit margins are getting slim...running a business for the purpose of survival would lead us to nowhere...We wanted to diversify our business and we wanted to do something different...</i>[2.1] • Diversification into in other geographic locations including Hong Kong and Chinese markets to divert the risk of focusing on only in US: <i>Having production plants in Asia, particularly, in China made it a wise decision to start from here because of the close proximity to our target markets (Hong Kong and China), as a result, we can deliver products rapidly to our customers...</i>[2.2] 	<ul style="list-style-type: none"> • No evidence

Note. *Italic denotes verbatim quote from respondent*

Table continues...

Resilience dimensions /Crisis	Pre-crisis	During crisis	Post-crisis
Anticipatory ability	<ul style="list-style-type: none"> • Constantly researching industry and economic conditions to exploring and identify any business opportunities* • Understanding and tracking customer preferences and market needs through window shopfronts, participating in trade fairs and shows* 	<ul style="list-style-type: none"> • Refinancing for cash flow problems: <i>Cash flow is of particular concern for Emass...Now, we are waiting longer to be paid, in turn, we are taking longer to pay our own bills...because we are not paid by customers, we would not be able to pay our suppliers, and other parties that we have incurred financial obligations with...especially when we have limited financial capital...thus, approaching banks for short-term loans seemed to be the only solution we had at that time...because we have good relationships with banks, so it didn't take long to get the loan, allowing us to ease the temporary cash flow distress and to keep our business running...[2.3]</i> • Cognisant of the business opportunities in niche markets in Hong Kong and China such as uniforms or local designers and boutiques: <i>We see that there is an increasing trend for people wishing to sell their design on various platforms, but having difficulty to find suppliers for small order productions...opportunities are out there, we just need to understand the changes and trends of the market, and to map out our strategies in time...</i> • Continuation and refinement of those activities, processes, and procedures (with *) adopted in previous phase 	<ul style="list-style-type: none"> • Continuation and refinement of those activities, processes, and procedures (with*) adopted in earlier phases
Flexibility	<ul style="list-style-type: none"> • In resource allocation for mass markets* [1.1] • In serving mass markets through provision of value added and quality service* [1.2] • In pricing options*: <i>We won't underprice in order to get more businesses...we provide a range of pricing options for the same style using different fabric materials, so our customers can compare quality with price and see which one they prefer...[1.3]</i> 	<ul style="list-style-type: none"> • In shifting to niche markets* [2.4] • In resource allocation between niche and mass markets* [2.5] • In serving niche markets with different requirements through provision of value added and quality service* • In having production arrangements to cater different production requirements* [2.6] 	<ul style="list-style-type: none"> • Continuation and refinement of those activities, processes, and procedures (with*) adopted in earlier phases

Table continues...

Resilience dimensions /Crisis	Pre-crisis	During crisis	Post-crisis
	<ul style="list-style-type: none"> • In promoting the company across different media outlets*: <i>We have limited human capital, so each of us needs to only be involved in these activities...we think it is useful as all of us get the chance to meet our customers...also those trade and fashion shows are usually held at a specific period of time during the year...so we can have a good balance between our market activities and everyday work...[1.4]</i> • In collecting and tracking customer, market, and economic information using different approaches* 	<ul style="list-style-type: none"> • Continuation and refinement of those activities, processes, and procedures (with *) adopted in previous phase 	

Table 5.11. Linking different dimensions of resilience to precursors and firm performance across three phases of turbulences.

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes	
Phase 1: Pre-crisis	<i>Adaptability</i>	<ul style="list-style-type: none"> • Modifying and adjusting products based on customers feedback for mass market* • Making adjustments to the range of products offer* • Modifying business model by closing the production plant in China • Adjusting production activities through outsourcing 	<ul style="list-style-type: none"> • Product/service, channel management, market information management => ensuring products are made to match customer and market needs • Product/service, channel management, market information management, company characteristics (commitment to deliver quality service) => ensuring products availability in unexpected market situations by establishing close relationships with production suppliers • Owner characteristics (willingness to try attitude, opportunistic, growth-oriented), company characteristics (limited resources) => ensuring limited resources are effectively and efficiently utilized for serving existing markets • Channel management, product/service, owner characteristics (commitment to deliver quality service) => enabling effective use of limited resources 	<ul style="list-style-type: none"> • Customer satisfaction • New/repeat business • Profitability • Sustainability • Cost saving by reducing overproduction • Better inventory control • Rapid response to over- or shortage of demand • Provision of value added and quality service • Customer satisfaction • Effective use of resource
	<i>Agility</i>	<ul style="list-style-type: none"> • Closure of a Chinese production plant and outsourcing production • Immediate resource reorganization for the rapid capture of new business opportunities that might arise* 	<ul style="list-style-type: none"> • Owner characteristics (willingness to try attitude, opportunistic, growth-oriented), company characteristics (trust and support undergird relationship with family members and industry partners, limited resources) => ensuring effective use of limited resource for delivering quick response to current and potential customers • Owner characteristics (willingness to try attitude, opportunistic, growth-oriented), dynamic capability => enabling future strategic actions with sufficient resources 	<ul style="list-style-type: none"> • Provision of value added and quality service • Customer satisfaction • Facilitating the implementation of strategic actions during crisis e.g., market diversification
	<i>Anticipatory ability</i>	<ul style="list-style-type: none"> • Constantly researching industry and economic conditions to explore and identify any business opportunities* 	<ul style="list-style-type: none"> • Market information management, owner characteristics (willingness to try attitude, opportunistic, growth-oriented) => enabling the growth of the company 	<ul style="list-style-type: none"> • Understanding the business opportunities available in the market • Preparing for acting on the identified opportunities

* Denotes the continuation of the resiliency characteristics with the same precursors.

Table continues...

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes	
Phase 2: During	<i>Flexibility</i>	<ul style="list-style-type: none"> • Understanding and tracking customer preferences and market needs through window shopfronts, participating in trade fairs and shows * • In pricing options* • In promoting the company across different media outlets* • In collecting and tracking customer, market, and economic information using different approaches * • In resource reallocation for mass market* 	<ul style="list-style-type: none"> • Market information management => ensuring products are made through customer information gathering • Pricing => remaining competitive in the price sensitive markets • Market communication, company characteristics (limited resources) => adopting different marketing platforms for promoting products to current and potential markets with limited capital and human resources • Company characteristics (commitment to deliver quality service), market information management => maintaining multiple sources of customer, market, and economic information • Dynamic capability (reorganization and reallocation of resources between different market segments), company characteristics (commitment to deliver quality service, limited resources) => maintaining the provision of quality service to clients by effectively utilizing limited resources • Company characteristics (commitment to deliver quality service) => maintaining company's core value of delivering quality service to customers 	<ul style="list-style-type: none"> • Producing products that match with customer and market needs • New/repeat business • Profitability • Sustainability • Enabling the reach out to target markets • New/repeat business • Developing a better picture and understanding of current customer, market, and economic situations • Delivery of quality service
	<i>Adaptability</i>	<ul style="list-style-type: none"> • In serving mass markets with different requirements* • Modifying business model through expansion into niche market • Modifying business model through geographic expansion • Accommodating to different requirements of new and existing market segments* 	<ul style="list-style-type: none"> • Owner characteristics (growth-oriented, opportunistic, willing to try attitude) => diverting the risk of focusing on single market • Owner characteristics (growth-oriented, opportunistic, willing to try attitude) => diverting the risk of focusing on single geographic location • Product/service, company characteristics (commitment to deliver quality service) => ensuring customer needs and requirements are met through delivery of quality service 	<ul style="list-style-type: none"> • Accommodating different customer needs through provision of value added and quality service • Expanding income stream • Growth • New/repeat business • Expanding income stream • Growth • New/repeat business • Customer satisfaction • New/repeat business • Profitability • Sustainability

Table continues...

Phases of turbulences	Resilience capability dimensions	Precursors	Performance outcomes
<i>Agility</i>	<ul style="list-style-type: none"> • Immediate response to focus on single market segment through expansion into niche markets 	<ul style="list-style-type: none"> • Owner characteristics (willingness to try attitude, opportunistic, growth-oriented), dynamic capability (reorganization and reallocation of resources between different market segments => response to single market segment 	<ul style="list-style-type: none"> • Expanding income stream • Growth • New/repeat business • Profitability • Sustainability
	<ul style="list-style-type: none"> • Diversification into in other geographic locations including Hong Kong and Chinese markets 	<ul style="list-style-type: none"> • Owner characteristics (willingness to try attitude, opportunistic, growth-oriented), dynamic capability (reorganization and reallocation of resources between different market segments => diverting the risk of focusing on only one geographical location 	<ul style="list-style-type: none"> • Expanding income stream • Growth • New/repeat business • Profitability • Sustainability
	<ul style="list-style-type: none"> • Refinancing for cash flow problems 	<ul style="list-style-type: none"> • Company characteristics (trust and support undergird relationship with family and industry partners, limited resources) => enabling the grant for short-term loan to solve the cash flow problem 	<ul style="list-style-type: none"> • Sustainability
<i>Anticipatory ability</i>	<ul style="list-style-type: none"> • Cognisant of the business opportunities in niche markets in Hong Kong and China such as uniforms or local designers and boutiques 	<ul style="list-style-type: none"> • Market information management, owner characteristics (growth-oriented) => understanding the business opportunities to be had in other markets 	<ul style="list-style-type: none"> • Enabling market expansion into Hong Kong and Chinese markets during the time of crisis
<i>Flexibility</i>	<ul style="list-style-type: none"> • In shifting to niche markets* 	<ul style="list-style-type: none"> • Owner characteristics (willing to try attitude, opportunistic, growth-oriented), company characteristics (trust and support undergird relationship with family and industry partners, limited resources) => facilitating the growth of the company through new market expansion 	<ul style="list-style-type: none"> • Enabling expansion into the niche markets
	<ul style="list-style-type: none"> • In resource allocation between niche and mass markets* 	<ul style="list-style-type: none"> • Company characteristics (limited resources), dynamic capability (reorganization and reallocation of resources for different market segments, limited resources) => enabling effectively and efficiently utilization of resources 	<ul style="list-style-type: none"> • Enabling market expansion into the niche markets during crisis
	<ul style="list-style-type: none"> • In serving niche markets with different requirements through provision of value added and quality service * 	<ul style="list-style-type: none"> • Product/service, channel management, dynamic capability (reorganization and reallocation of resources for different market segments), company characteristics (commitment to deliver quality service) => maintaining company's core value in delivering quality service to customers 	<ul style="list-style-type: none"> • Accommodating different customer needs through provision of value added and quality service
	<ul style="list-style-type: none"> • In having production arrangements to cater different requirements* 	<ul style="list-style-type: none"> • Channel management => accommodating small orders production 	<ul style="list-style-type: none"> • Managing small orders production through solid relationships with production manufacturers

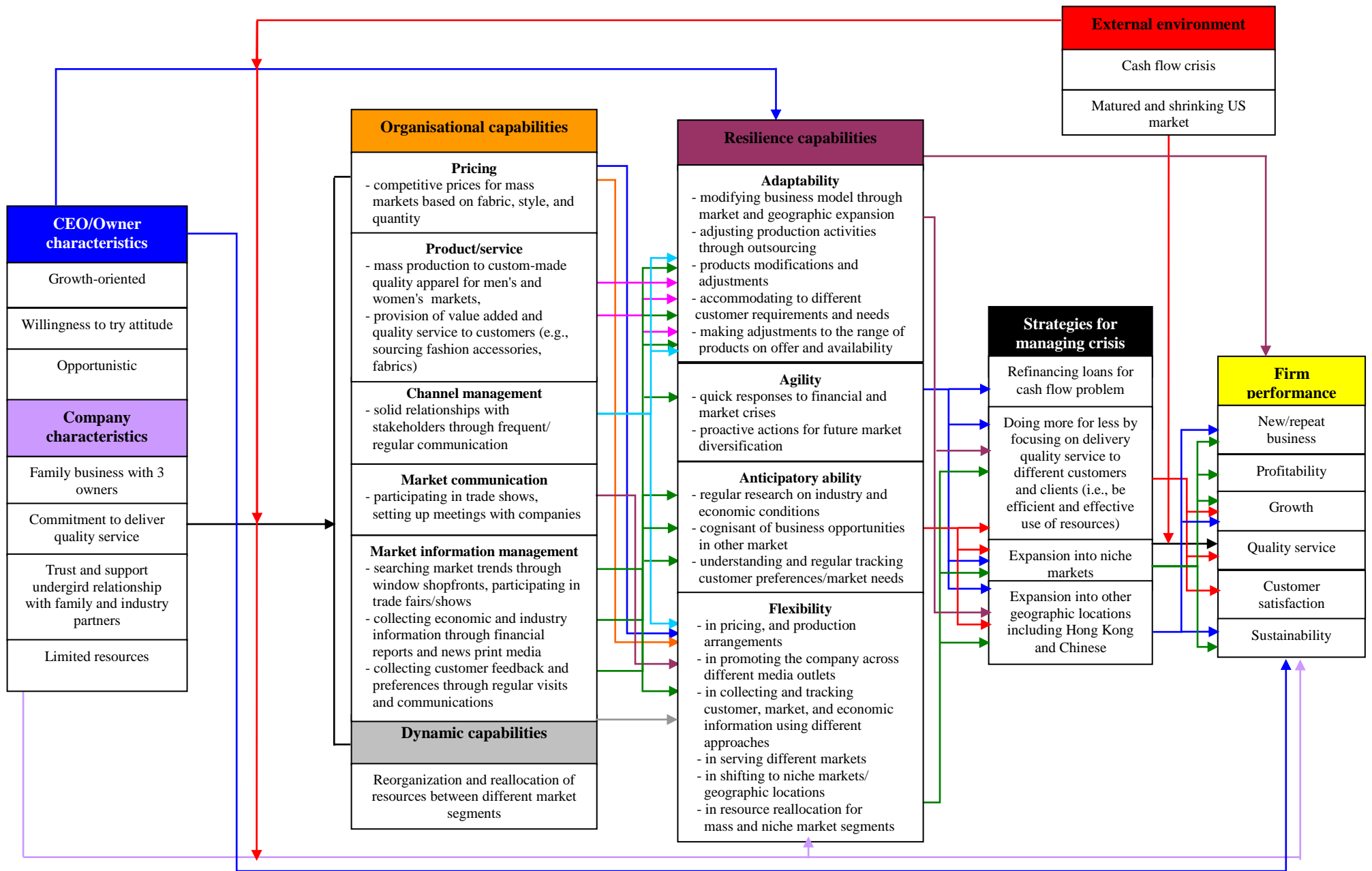


Figure 5.8: Causal network model of relationships between CEO/owner and company characteristics, organisational and dynamic capabilities, resilience capabilities, strategies and firm performance

Cross-case Analysis: Findings and Discussions

The objectives of cross-case analyses are to extend the findings of Study 1, and to build upon our current understanding of the ways in which organizational resilience capabilities are developed, expressed, and utilized during different phases of turbulence. Utilizing a cross-case analysis of the present four case studies, this chapter addresses four research questions derived from Study 1 (see Chapter 4, p. 134).

***Research Question 1:** In what ways do SMEs utilize resilience capabilities, if any, during times of turbulence?*

***Research Question 2:** Do particular resilience capability dimensions predominate during different phases of turbulence?*

***Research Question 3:** In what ways do SMEs develop resilience capabilities to deal with threats and opportunities in turbulent environments?*

***Research Question 4:** How do resilience capability dimensions contribute, if any, to business performance in turbulence environments?*

Research Questions 1 and 2 are addressed in relation to the resilience capabilities employed by SMEs during different phases of turbulence, specifically, these two questions focus on how enterprises utilize their resilience capabilities and how the relative intensity levels associated with their deployment might fluctuate over time. Research Questions 3 and 4 are discussed as a whole rather than how they emerge during specific periods of turbulence, concentrating on the precursors and performance outcomes associated with the application of resilience capability.

Utilization of Resilience Capability Dimensions During Different Phases of Crisis

As noted in the within-case analyses, turbulence can be characterized by three different phases: Pre-, during, and post-crisis.

Pre-crisis

On the basis of the present four cases (Table 5.12), during the pre-crisis phase, anticipatory ability and flexibility resilience capabilities appear to predominate, helping these enterprises to define their business models, processes, and procedures. As in the cases of Westshore and Emass, these dimensions were utilized to support and conserve founding organizational core values (e.g., service-oriented), organizational culture (e.g., openness to new business opportunities), and structure (e.g., decentralized decision process), in order to provide a level of stability (Nystrom et al., 2008) during changing environments. For instance, flexibility in serving different customer requirements, and understanding customer preferences and market needs (anticipatory ability resilience capability) were evidenced in Emass to support their established core value of delivering quality service, laying the foundations for operating their business in different environmental conditions. For Magenta, a relatively young firm, these dimensions were utilized to develop the company's operating procedures, indicating a level of exploration and experimentation. This finding supports organizational effectiveness is dependent upon the congruence between elements of the organization and the demands of the environment (McKee et al., 1989).

Table 5.12. Ways in which resilience capability dimensions were utilized by companies across the three phases of crisis

Phases of crisis	Magenta	Far East	Westshore	Emass
Pre-crisis	Defining: the development of organizational operating practices and procedures that confer the company's core value. Defining the company's target market and market position	Planning: reallocation and deployment of organizational resources to meet current operating needs and future strategic activities	Founding: the establishment of a blueprint for operating the business, by defining and conserving the established organizational values, culture, and direction	Founding: consolidating the strategic vision and core values of the founder
During crisis	Refining: the emergence of new or carving existing operating business model, operating processes and procedures through evaluation and refinement, but set against the backdrop of challenges associated with turbulent environments	Refining: refinement of the company's business operating model to foster growth and to enable agile responses to opportunities that arise	Refining: reformulating a long-standing company vision and direction. Refining operating practices and procedures with the context of changing internal and external conditions	Refining: refinement of the company's business model via an alignment with internal and external business operating settings
Post-crisis	Planning: building a heightened awareness of the internal and external environments through reflection and forward planning to deal with future challenges	Refining: continued refinement of the business operating model	Conforming: temporary settlement of the refined business operating model until the next wave of reformation	Conforming: adapting the refined business model with the founding strategic vision of the company

Unlike other established companies, Far East planned proactively in an attempt to influence its future (Southwick & Charney, 2013). As a result, Far East was able to capture opportunities as they arose by exploring and identifying investment and business opportunities (anticipatory ability resilience capability) from an emerging threats or opportunities (e.g., fast fashion culture) (Moorman & Miner, 1997), and flexible resource allocation and deployment to enable the company to meet current needs and anticipate future strategic actions (e.g., outsourcing production to Turkey). Consistent with Lengnick-Hall et al. (2011), resilient companies demonstrate an ability to thrive through capitalizing on unexpected changes and challenges, and defending their competitive position proactively, going beyond maintaining their original position (Sheffi, 2005c; Sheffi & Rice, 2005).

During Crisis

Hamel and Välikangas (2003) suggested that strategies decay from time-to-time, and that companies that persist with operating with old business models are increasingly likely to find it difficult to cope with change. Company business models need to be assessed for their appropriateness and fit, sometimes requiring rapid adjustments, particularly in the face of turbulence. Yet, in resilient systems, change creates opportunities for development, novelty, and innovation (Folke, 2006).

Resilience capability can be geared towards refining business models, operating processes, and procedures, inter alia. However, companies can respond either proactively or reactively (Miles & Snow, 1978). For example, both Magenta and Westshore adopted a reactive stance when it became necessary to quickly redefine their operating business models in relation to market expansion, and formulating a new product development (NPD) approach. This finding supports that changes in organizational strategies are made to reflect the changing environmental conditions (e.g., Miles & Snow, 1978; Miller, 1992).

By way of contrast, Far East and Emass initiated responses that addressed the risk of concentration their profits from a single brand or market by accepting and exploiting market opportunities and threats (e.g., Miles & Snow, 1978; Chakravarthy, 1982). Instead of waiting for a crisis to occur, these two companies had taken steps in advance of threats as well as in response to them by proactively modifying or

adapting their business models (e.g., acquisition of new brands, tapping into niche markets), averting the likelihood of any potential crises swiftly, and taking advantage of unexpected changes that were regarded as opportunities (Sharifi & Zhang, 1999, McCann, 2004; Jamrog et al., 2006). It is worth noting that all firms have demonstrated that adaptive responses required changes in resource acquisition or allocation for developing new strategies, consequently, enabling them to adapt to environmental threats and opportunities, and for the subsequent implementation of new for further changes (McKee et al., 1989).

Regardless of responses, turbulence can facilitate growth and be a trigger for switching *on* or *off* responsive behaviors associated with resilience capabilities (Southwick & Charney, 2013). Such behaviors can be geared towards mastering (McEwen, 2007) or avoiding a crisis (Southwick & Charney, 2013). These findings suggest that companies adopting either a proactive or reactive stance utilize anticipatory ability resilience in different ways. Proactive companies utilize this dimension to anticipate both threats and opportunities whereas reactive companies use it predominately for mitigating threats only.

Post-crisis

This phase concerned re-examining or revisiting business models. Notwithstanding, recognizing that post disruption environments can be different (Alesch et al., 2001), and a goal to create the future (Hamel & Välikangas, 2003), Far East was the only company that refined their business model (e.g., vertical integration) regularly during the post-crisis phase. Specifically, emphasizing continuous anticipation and adjustment (Hamel & Välikangas, 2003) in order to influence their environments (e.g., Pfeffer & Salancik, 1978; Southwick & Charney, 2013). This proclivity for continuous adaptations indicated that Far East was well aware of threats and opportunities to be had, showing a continual readiness to changes (Vokurka & Fliedner, 1998) that enables the company to keep abreast with changing environments through an alignment of internal and external business conditions.

Having had previous crisis experience, Magenta was well aware of the importance of planning in advance. Specifically, having contingency plans in place (anticipatory ability resilience capability) and flexibility in working in different markets provided

the company with a certain level of protection. As Insel and Quirion (2005) stated, previous adverse experience sometimes has a steeling effect for future drastic events. Positive experiences in themselves do not necessarily have a protective effect, with both cognitive and affective processing of experiences likely to exert an influence on whether or not resilience capability development occurs (Rutter, 1999).

Within this context, it should be noted that resilience capability dimensions are employed for different strategic reasons (refining, planning, or conforming) during different periods of crisis. The utilization of these dimensions is dependent upon organizational strategic objectives, vision, management leaderships, and assessment of the crises at different points in time. For instance, resilience capability was utilized for advanced planning for growth (Far East) and risk reduction (Magenta). This observation supports the equifinality and multifinality nature of resilience (Cicchetti & Blender, 2006).

Differential Intensity of Resilience Capability Dimensions During Different Phases of Turbulence

Resilience capabilities vary across companies, time, contexts, and circumstances (e.g., Garmezy, 1985; Garmezy & Rutter, 1985; Werner & Smith, 1992). Recognizing this fact leads to a fuller understanding of the implication of different types and levels of resilience capability dimension, at particular phases (Gunderson & Holling, 2001). As shown in Table 5.13, patterns of differential resilience capability dimensions are evident across the three crisis phases. Specifically, anticipatory ability and flexibility dimensions predominate in the pre-crisis phase, adaptability and agility dimensions during the peak of the crisis, and adaptability and flexibility dimensions during the post-crisis.

Table 5.13. For each company the dominant resilience capability dimensions expressed at each phase of the crisis

Phases of crisis	Magenta	Far East	Westshore	Emass
Pre-crisis	Anticipatory ability, flexibility	Anticipatory ability, flexibility	Adaptability, anticipatory ability, flexibility	Adaptability, flexibility
During crisis	Adaptability, agility	Adaptability, agility	Adaptability, agility	Adaptability, agility, flexibility
Post-crisis	Anticipatory ability, flexibility	Adaptability, agility	Adaptability, anticipatory ability, flexibility	Adaptability, flexibility

While contingency theory distinguishes between the concept of internal and external fit, proactive and reactive strategies to change organizational external and/or internal context (Van de Ven et al., 2013), the fundamental assumption is that there are no universally optimal strategies for firms regardless of what resources or circumstances they have (Meilich, 2006; Sauser et al., 2009). As discussed, the utilization of resilience capabilities varies in relation to phases of crisis, and are expressed through the firms adopted strategies in turbulent environments. Thus, contingency theory explains why different types of resilience capabilities are expressed as strategies during different phases of crisis.

In the pre-crisis phase, companies tend to maintain internal fit or consistency in key organizational components such as strategy, structure, systems, and culture (e.g., Miller, 1992). As evidenced by Magenta, Westshore, and Emass, adopting an internally focus strategy (Miles & Snow, 1978) by aligning organizational internal elements with day-to-day business operation routines (e.g., new product developments) provided stability and efficiency in these companies. These organizational activities are driven by organizational internal conditions (Stoica et al., 2003) such as resource availability, organizational capabilities, and culture, and appear to have *no direct reference to the influences external to the organization* (Venkatraman & Camillus, 1984, p. 517). Anticipatory of customer needs, market changes, introduction of new products, and flexibility in resource reallocation predominate, fostering the development of business operating models, practices and procedures, the identification of target markets, and consolidation of market position.

By way of contrast, the requirements to reduce uncertainty and instability necessitates an external fit between the demands of external environment and the design of internal structure (e.g., Miller, 1992), suggesting that companies need to plan in advance. Yet, a challenge for companies is to interpret their operating environment and devise strategies that enable them to manage uncertainty and exploit opportunities (e.g., McKee et al., 1989; Fox-Wolfgramm et al., 1998; McAfee & Brynjolfsson, 2012). Although a majority of SMEs do not plan for extreme events owing to the limited availability of scarce resources (Ingirige et al., 2008), Far East utilized anticipatory ability and flexibility resilience capabilities for developing proactive responses to mitigate threats and capture opportunities (Lengnick-Hall & Beck, 2005)

through the modification of their business model in advance. This observation is consistent with Brooksbank et al. (2003) who reported that high performing medium-sized firms plan proactively and allocate resources to enhance organizational capabilities as a way of managing intense future competition.

The development and application of such resilience capabilities enables companies to influence the effects of turbulent environments (Robinson, 2010), and to modify their environment by transforming a high-risk environments into protective situations (Kumpfer, 1999). The following two propositions capture the above arguments:

Proposition 1a: In the pre-crisis phase, companies that adopt a reactive stance utilize anticipatory ability and flexibility resilience capabilities to define business models through an alignment of their internal structures (i.e., internal fit of processes, people, planning)

Proposition 1b: In the pre-crisis phase, companies that adopt a proactive stance utilize anticipatory ability and flexibility resilience capabilities to align the demands of the external business environment to the design of their internal structures (i.e., external-internal fit).

As environments become increasingly turbulent, the adoption of different approaches (adaptability resilience capability) to manage dynamism and unpredictability, and having the capacity to respond rapidly and effectively become critical (Lin et al., 2006, McCann et al., 2009). In stable business environments, companies have less to lose from responding slowly than in market conditions that are volatile and unpredictable (Tallon & Pinsonneault, 2011). Accordingly, demonstrating adaptability and agility resilience capabilities in strategic decision making and the development of proactive or reactive strategies can be closely associated with varying levels of environmental turbulence.

During the height of the crisis, refining business strategies and related processes can take the form of rapid adjustments to existing or development of new business models that address both internal and external challenges (adaptability resilience capability). For instance, to address a significant decline in revenue, Westshore modified its new production development (NPD) processes to reduce the cost and time of the development processes. This adjustment was characteristic of a reactive strategy

associated with changes in the company's internal processes to enable a sound fit to the constraints of the company's external environments (Van de Ven et al., 2013). In contrast, Far East adopted a proactive strategy, such as the acquisition of an established brand label, and by leveraging complementary resources in order to change the external environment to better fit their goals and operations (Pfeffer & Salancik, 1978). Proposition 1c and d encapsulate this process.

Proposition 1c: During the height of crisis, companies adopt a reactive stance utilize adaptability and agility resilience capabilities to change their internal structures or processes to fit their external environment

Proposition 1d: During the height of crisis, companies adopt a proactive stance utilize adaptability and agility resilience capabilities to change their environment to match their goals and operations.

During the post-crisis, the resilience capabilities of adaptability and flexibility predominated and were associated with reconciling or bedding down processes, particularly by those companies identified as adopting a reactive stance. In this phase, companies such as Westshore and Emass redefined their business models, maintained adaptive responses (e.g., adoption of technologies, product/service offering and adjustments), and developed strategic options for implementation of day-to-day business operation routines. In comparison, companies that took a proactive stance such as Far East tended to appreciate market opportunity changes, and evolved over time, recognizing the need for the continuous or ongoing adaptation of their business (Hamel & Välikangas, 2003). In line with Kidd (2000), firms embrace changes as a matter of routine (Vokurka & Fliedner, 1998) are founded on structures and processes that facilitate speed, adaptation and robustness (Kidd, 2000). As a result, these resilience dimensions were utilized in strategic activities to help shape the company's external environment proactively through rapid partnerships with local Chinese companies. The following two propositions encapsulate this argument.

Proposition 1e: In the post-crisis phase, companies adopt a reactive stance utilize adaptability and flexibility resilience capabilities to bed down their redefined business models, and to adapt their responses and strategies for the implementation of day-to-day business operation routines.

Proposition 1f: In the post-crisis phase, companies adopt a proactive stance utilize adaptability and flexibility resilience capabilities as part of their strategic activities to continue shaping their external environments.

It is noteworthy that flexibility resilience capability was employed by all companies across the three phases of crisis, either as a primary capability or as part of a supporting role in strategic activities. The intensity of its utilization seemed to be dependent upon the types of responses needed to deal effectively with turbulence. According to Evans (1991), flexibility can be employed in advance preparation, after an event for adjustments, or through offensive or defensive actions to foreseen or unforeseen changes in internal and external environments. In other words, flexibility can be deployed at different decision points for operational, structural, and strategic intents (Carlsson, 1989; Grant, 1996a; Stevenson & Spring, 2007).

The differential intensity of dimensions across each of the three phases of crisis suggests that resilience capability is a multidimensional phenomenon (Gibson & Tarrant, 2010). Multiple dimensions are employed as part of the process of effective strategy development to deal with threats and crises. Specifically, these findings demonstrate that their application is associated with organizational strategic decisions including defining, founding, refining, planning, and conforming in turbulent environments. Furthermore, these findings demonstrate that resilience is not static or fixed, but rather a dynamic capability that evolves over time across a range of conditions (Gibson & Tarrant, 2010).

Although resilience is something realized after a disruption or event (Coutu, 2002), resilience capabilities can be present, developed, and employed before (Somers, 2009), during, or after uncertainties occur. Table 5.14 summarizes and defines the ways in which resilience capability dimensions are expressed during the different crisis phases. In the subsequent section, principal precursors of resilience capability dimensions and their associated performance outcomes are discussed.

Table 5.14. Ways in which resilience capabilities are utilized, definitions, associated dimensions, phases of application, and related forms of organizational work in turbulent environments

Ways of utilizing resilience capability	Definition	Associated resilience capability dimensions	Phase of application	Related forms of organizational work
Defining	Defining the business operating model that confers a company's core values and vision	Anticipatory ability, flexibility	Pre-crisis	<ul style="list-style-type: none"> • Cultivating the development of organizational operating practices and procedures within and across the company through aligning internal elements to day-to-day routines • Defining and identifying target markets and market position
Founding	Establishing a blueprint for operating a business by founding a strategic vision and core value(s)	Anticipatory ability, flexibility	Pre-crisis	<ul style="list-style-type: none"> • Maintaining, preserving, and incorporating founding core values, organizational culture and direction in the business operating model
Planning	Having advance planning in place to support the development of strategic actions for future business threats and opportunities	Anticipatory ability, flexibility	Pre-, post-crisis	<ul style="list-style-type: none"> • Identifying and capitalizing on threats and opportunities by planning proactively and allocating resources to enhance organizational capabilities to manage present and future competition and events
Refining	Developing a new or refining an existing business model to address both internal and external challenges	Agility adaptability, supported by anticipatory ability, flexibility	During, post-crisis	<ul style="list-style-type: none"> • Carving out and shaping existing business models, processes, and procedures in response to the crises • Reforming and refocusing the company's strategic objectives and vision
Conforming	Adapting the refined business operating model	Adaptability, flexibility	Post-crisis	<ul style="list-style-type: none"> • Adapting the redefined business operating model and reconciling or bedding down adaptive responses and strategies for day-to-day operation routines

Note. Three phases of crisis: Pre-, during, post-crisis

Precursors and Performance Outcomes of Resilience Capability in Turbulent Environments

SMEs face challenges associated with limited resources, venture capital, human capital which can pose as constraints for the development of resilience (e.g., Ingirige et al., 2008). Notwithstanding, the present four cases demonstrate that resilience capabilities can be fostered within the context of specific company characteristics (e.g., flat management structure, NPD processes that are design- and quality-oriented), CEO/owner qualities (e.g., design capability, leadership), marketing capabilities, (i.e., channel management, market information management, product/service development), dynamic capabilities (e.g., reallocation and redeployment of available

resources), and other organizational capabilities such as Information technology (IT) and human resource (HR). Irrespective of times of turbulence. Table 5.15 shows the principal precursors of resilience capability deployed by the four cases when developing strategies to deal with crises.

Table 5.15. For each company, the principal precursors of resilience capability dimensions for strategy development in the face of turbulent environments

Resilience capability dimensions	Magenta	Far East	Westshore	Emass
Adaptability	CEO and company characteristics, channel management capabilities, design capabilities	Company characteristics, channel management capabilities	CEO and company characteristics, channel management capabilities, Information technology capabilities (IT) , market information management capabilities, product/service development, research and development capabilities (R&D)	Owner and company characteristics, channel management capabilities, product/service development capabilities
Agility	CEO and company characteristics, previous crisis experience, design capabilities , dynamic capabilities	Company characteristics, human resource capabilities (HR), Information technology capabilities (IT) , dynamic capabilities	CEO and company characteristics, Information technology capabilities (IT) , dynamic capabilities, research and development (R&D) capabilities	Owner and company characteristics, dynamic capabilities
Anticipatory ability	CEO and company characteristics, previous crisis experience , channel management capabilities, market information management capabilities	Company characteristics, market information management capabilities, Information technology capabilities (IT)	Company characteristics, Information technology capabilities (IT) , market information management capabilities, product/service development capabilities	Owner characteristics, market information management capabilities
Flexibility	CEO and company characteristics, design capabilities , dynamic capabilities	Company characteristics, channel management capabilities, human resource capabilities (HR) , dynamic capabilities	Company characteristics, channel management capabilities, product/service development capabilities , dynamic capabilities	Owner and company characteristics, channel management capabilities, product/service development capabilities , dynamic capabilities

Note. Principal precursors are highlighted in bold.

Precursors of Resilience Capability Development

Company and CEO/Owner Characteristics and Resilience Capability Development

According to Horne and Orr (1998), all companies possess a degree of internal resilience that enables them to counteract economic and market-related forces and to dynamically reshape their entities to changing environmental conditions. In relation to organizational structure, higher levels of turbulence are associated with a reliance on flexible structures (e.g., Jennings & Seaman, 1994). As demonstrated by the present four cases, the inherited organizational characteristics such as having a flat organizational structure, small firm size, and absence of bureaucracy permitted these companies to respond flexibly and readily to changing conditions (flexibility resilience capability) (e.g., Qian & Li, 2003), to adapt their routines and strategies in a timely manner (adaptability, agility resilience capabilities) (e.g., Vossen, 1998), and move closer to their customers (anticipatory ability resilience capability) (e.g., Moriarty et al., 2008). These qualities contributed to enabling these firms to tolerate uncertainty in business environments (de Vries & Shields, 2006).

To a certain extent, organizational behavior in turbulent environments depends on the beliefs companies advocate (Beyer, 1981). The current four cases demonstrate that organizational culture and core values (e.g., being design- and quality-oriented) provided direction for formulating strategies during turbulent time. For example, Emass showed that expanding into niche markets did not necessarily limit the company's ability to compete favorably across two differing markets concurrently, (i.e., mass and niche segments). Commitment to delivering quality service (organizational core values) requires the development of close relationships with suppliers and customers, enabling the company to be responsive to customer needs when providing made-to-order products and services (adaptability, agility, anticipatory ability, flexibility resilience capabilities), ultimately, leading to a significant competitive advantage (e.g., Powell, 1992). Yet, the extent and process of resilience capability development also depended upon organizational capabilities and resource availability.

Unlike other SMEs that lack human and financial resources (e.g., Hill, 2001), Far East and Westshore showed that holding a solid financial footing enabled their companies to adapt to and incorporate the employment of the latest information technology (IT

management capability, adaptability resilience capability). Specifically, these two companies implemented new centralized information systems to facilitate market intelligence gathering, information analysis, and dissemination of information within and across their firms (anticipatory ability resilience capability, dynamic capability) that help to attune to changes in the environment (Barney et al., 2001). Importantly, these systems provided collaborative and highly flexible work processes that enhanced agility (e.g., Lin et al., 2006, Palanisamy, 2006) in the decision making process as a result of collecting real-time needs of their end users (Lee, 2004). This finding is in contrast to Reijonen and Komppula (2007) who argued that SMEs lack informal management information systems to manage diverse and multiple information sources for their business operations. It is worth noting, however, that merely having slack resources does not contribute to resilience capability development, it depends on how these resources are utilized and whether they are employed effectively and efficiently in response to strategic directives. The following proposition captures the above argument.

Proposition 2a: Particular organizational characteristics (e.g., having a flat structure, resources availability, culture and values) are precursors to the development of specific resilience capabilities, subsequently leading to strategy formulation for dealing with turbulent environments.

Notably, the central determinant of strategic behavior depends not only on the characteristics of the firm, but also on the leadership qualities of the entrepreneur including their personal background and objectives for the business (e.g., Pleitner, 1989; Sadler-Smith et al., 2003). Refining or abandoning old business models as well as having a willingness to take risks associated with the formulation of new business models are yet further examples of determinants of strategic behavior in the face of external threats and opportunities (e.g., Hamel & Välikangas, 2003).

Given that management processes and decision making in SMEs are shaped by the qualities and styles of entrepreneurs/owners (e.g., Sadler-Smith et al., 2003), the present findings reveal that resilience capability development is associated with particular styles of management, leadership, and personal characteristics of CEOs. For example, in response to client demands and market opportunities for innovative and creative business solutions, through the leadership and creative qualities of the

owner, Magenta adopted free communication apps (adaptability resilience capability) for information sharing. As well, the owner accepted invitations to showcase their products/services across divergent markets on television programs, and in magazines and newspapers (flexibility resilience capability). Additionally, the creation of web pages/images for clients (adaptability resilience capability) further demonstrated the creative change (Hill, 2001) and design thinking of Magenta necessary to compete effectively in turbulent business environments.

Similarly, for Emass, a number of significant owner characteristics came to the forefront such as being opportunistic and growth-oriented, and holding a *willingness-to-try attitude*. These qualities heralded the modification of Emass' business model during different times of turbulence. Particularly, the closure of a Chinese production plant (adaptability, agility resilience capabilities) in the pre-crisis phase and freeing up resources for current and future strategic activities (flexibility resilience capability, dynamic capability) during the heat of turbulence are stand-out exemplars. These strategic activities included the provision of rapid and quality services to current customers and market expansion into tailor-made uniform (e.g., for airlines, schools) segments in Hong Kong and China. This finding suggests that personal characteristics such as opportunism helped firms to capitalize on external circumstances through an adjustment of their organizational activities (e.g., resource management areas, market developments).

Proposition 2b: Particular CEO/owner qualities (e.g., creative, opportunistic, willingness to try attitude) are precursors to the development of specific resilience capabilities, subsequently leading to strategy formulation for dealing with turbulent environments.

Not only do the characteristics and attitudes of owners/entrepreneurs influence a firm response to changes in external environments, but so do background and previous experiences with crisis situations (e.g., Walsh & Kirchoff, 1998). Adaptability resilience capability to a given environmental change is a function of prior experience with change (Venkataraman & Van de Ven, 1998). This association between prior experience, growth intention, and performance was evident in the way Far East exploited business opportunities and the objectives of the company's strategic responses. Having prior crisis experience enabled Magenta to anticipate and mitigate

risks associated with future drastic events that could have impacted negatively on the rate of growth of the company. Proposition 2c describes this argument.

Proposition 2c: Prior experience with crisis situations is a precursor to the development of specific resilience capabilities, subsequently leading to strategy formulations for dealing with turbulent environments.

It is noteworthy, that integration of individual skills and knowledge into organizational processes, procedures, and activities was another contributor to resilience capability development (e.g., Horne & Orr, 1988). In the case of Magenta, the possession of dual capabilities in interior design and architecture, lead to unique design capabilities that enabled the company to work in both residential and commercial markets (flexibility resilience capability), following a rapid market expansion during a time of crisis (agility resilience capability).

While owners' personal skills play a key role in building resilience capability, Far East and Westshore revealed resilience capability development through a committed and multi-skilled workforce (flexibility resilience capability) (Lengnick-Hall et al., 2011). For instance, the research and development capabilities (R&D) of Westshore facilitated the implementation of a NPD approach (adaptability and agility resilience capabilities) to address a significant decline in revenue and product development funding. Resilience capabilities was also fostered through the implementation of strategic human resource (HRM) practices (Lengnick-Hall et al., 2011), and the utilization of human resource training and development programs, including staff remuneration and rewards to enhance strategic decision making (e.g., staff reallocation) in order to develop and have in place a flexible and adaptable workforce for dealing with different turbulent situations. This finding suggests that organizational resilience is embedded in people (Horne & Orr, 1998) and should be assessed at both individual and organizational levels (Riulli & Savicki, 2003). The following proposition addresses this argument.

Proposition 2d: Resilience capabilities are developed through integrating personal skills, organizational capabilities (e.g., research and development (R&D), and managing information technology, and HRM with strategic decisions targeted at dealing with turbulent environments.

Marketing Capabilities and Resilience Capability Development

Firms that maintain marketing activities in their core business are likely to sustain profitability in both good and bad times (Pearce II & Michael, 1997). The present findings indicate that only channel management, market information management, and product/service development capabilities contributed to resilience capability building. Companies no longer compete as stand-alone entities and it has become necessary for firms to develop interdependencies (Fiksel, 2003) that go beyond firm boundaries (Fiksel, 2003; Seville et al., 2006). Exploiting strategic relationships with customers and close collaboration with suppliers not only fosters the development of a high degree of flexibility and rapidity, but also streamlines the production process and reduces production lead times.

According to Lin et al. (2006), collaborative relationships with suppliers and customers (dynamic capability) facilitate agility development. As demonstrated by the present four cases, having long-term relationships with suppliers (channel management capability) enables immediate adjustments to production volumes and delivery schedules in terms of changing customer requirements and needs (adaptability, agility, flexibility resilience capabilities), while relationships with customers facilitate market information gathering (market information management capability, anticipatory ability resilience) for rapid NPD and launches (product/service development capability, agility resilience capability). Importantly, facilitating the integration of and coordination among stakeholders in organizational strategic activities are central features to share information (dynamic capability) and streamline business operations (Lin et al., 2006).

In relation to Westshore, outsourcing production to suppliers and introducing an engineering-customer collaboration in the NPD process (adaptability resilience capability, dynamic capability) necessitated stakeholders working closely together to harness the combined knowledge of all parties (anticipatory ability resilience capability) to support NPD tailored to customer specifications (adaptability resilience capability). Within this context, suppliers were expected to adapt to the needs of key customers, in turn, customers adapted to the capabilities of specific suppliers (Hallen et al., 1991), the adaption of which ultimately became a central feature of a collaborative working business relationship (e.g., Lee, 2004; Lin et al., 2006).

Establishing solid relationships with stakeholders helps to confirm that marketing is an adaptive and boundary-spanning function (McKee et al., 1989) within which different marketing activities can lead to different types of resilience capabilities.

Survival or failure is, to a certain extent dependent on how organizations fit to their marketplace. Companies that are best able to read and interpret signals in their environment (e.g., Reeves & Deimler, 2011) and adapt over time (Schindehutte & Morris, 2001) are two further contributors to survival. Today, companies are able to access information from multiple sources. As mentioned previously, all four cases were involved in multiple market information management activities (flexibility resilience capability) such as participating in trade shows/fairs, holding interviews with representatives of respective target markets, and collecting reviews from social communication platform. Although, Brooksbank et al. (2003) indicated that high performers tend to conduct a broader spectrum of marketing research that emphasizes a long-term perspectives, a level of anticipatory ability is dependent upon a company's level of competency and without doubt, the relevancy of that information.

Well aware of the risks associated with utilizing inaccurate data to predict consumer demands or lack of collaborative relationships between departments (interfunctional coordination), Far East and Westshore improved their forecasting abilities and decision making processes (anticipatory ability, agility resilience capabilities) by integrating IT across business units, that is, the utilization of centralized information systems (adaptability resilience capability). According to Sambamurthy et al. (2003), organizational responsiveness to change depends upon the coordination of activities within a company and the actions taken in relation to relevant information garnered and filtered (Kohli et al., 1993).

Instead of using IT to collect customer information, Magenta and Emass tended to establish personal relationships with clients or suppliers to harness information pertaining to product ideas, customer needs, and market trends. Overall, the current four cases reveal an ability to scan their environments in order to minimize threats and maximize new opportunities, to welcome changes in business processes and procedures, to emphasize flexibility and freedom in resource allocation and deployment, and to be innovative when meeting market needs. These characteristics

are contrary to Gilmore et al. (2001) who concluded that SMEs lack specific skills, competence for collecting and utilizing customer and competitor information (Reijonen & Komppula, 2008), and market information necessary (Gilmore et al., 2001) for strategic decision making (Huang & Brown, 1999).

Product/service development capability is characteristically evident in resilience capability development across all cases. However, not all cases utilized this capability for developing resilience capability to deal with turbulence. Strategic responses depend on the types of crisis or environment encountered by a company (Hrebiniak & Joyce, 1985). Particularly, the present cases tend to utilize such capability for daily operations. When dealing with a decrease in budget for NPD, Westshore worked towards maintaining a wide range of quality products to service the market. This finding is in line with Miles and Snow (1978) that firms focus on a wider product-market scope exhibit a high level of adaptability. Moreover, Westshore developed long-standing links with different suppliers, along with upgraded products through the application of refined NPD processes (adaptability resilience) and market testing (anticipatory ability resilience capability). Although a narrowly defined market indicates a low level of adaptability, (Miles & Snow, 1978), Emass was able to demonstrate both flexibility and adaptability through accommodating the divergent needs and requirements of their niche markets (e.g., Hallen et al., 1991), with the explicit goal to deliver value-added services (product/service development capability) quickly to the unique requirements of individual customer (agility resilience capability) (Goldman et al., 1995), rather than competing on low price. Proposition 3a captures the above argument.

Proposition 3a: Channel management, market information management, and product/service development capabilities are precursors to the development of resilience capabilities, subsequently leading to strategy formulation for dealing with turbulent environments.

Notwithstanding, resilience capability development concerns the nature of change in the structure and function of organizations over time, leading to different approaches to long-term resource planning and management (Holling, 1973). Consistent with Gulati et al. (2010), types of strategic responses to crises can be classified on the basis of resource allocation. As evidenced by the present four cases, the emergence of new

needs and exposure to challenges required these companies develop and apply dynamic capability in their business operations. For example, Magenta utilized communication apps to facilitate information sharing with different stakeholders for rapid decision making and reorganized resources for market expansion. Far East established a cross-functional team for new company system implementation in order to identify requirements of key users and reallocated resources for current and future strategic actions. Westshore developed collaborative relationships within and across firms for effective NPD processes and integrated information technology for information sharing to fast track products in response to customer needs. Emass reorganized and reallocated available resources to ensure quality service for different markets. Proposition 3b addresses the above argument.

Proposition 3b: Resilience capability development depends on having dynamic capabilities (e.g., reallocation and reorganization of resources, information sharing) in current and future organizational activities and actions.

Resilience Capability, Strategy, and Firm Performance

The present four cases demonstrate that resilience capability is expressed through the type of strategies adopted at different phases of crisis, and that the type of strategy implemented ultimately influences organizational performance. As shown in Table 5.16, different resilience capability dimensions are associated with different strategies promulgated (e.g., growth strategies; cost reduction/saving strategies; resource management strategies) to deal different types of crisis, resulting in specific indicators of performance.

In addressing a need to extend sources of revenue and reduce the reliance on a single market, the present four companies utilized all resilience capability dimensions for growth strategies (e.g., market expansion; market diversification), leading to new/repeat business, profitability, growth and sustainability. Such resilience capabilities were also used in Far East for cost control/production management strategies (e.g., reallocation of partial production; having own production plant in China) to proactively address the increasing cost of production, and difficulty in sourcing suppliers for small order quantity.

Alternatively, these four resilience capability dimensions were utilized for same strategy (i.e., resource management strategy) in Emass and Far East for different crises, resulting in different performance outcomes. In the face of limited resources, Emass adopted resource management strategy (i.e., closure of a Chinese production plant) to utilize available resources effectively and efficiently for delivering quality service, in turn, ensuring customer satisfaction (Lin et al., 2006) and business growth. In contrast, Far East adopted the same strategy (e.g., relocation of a number of Hong Kong staff to China, recruitment of personnel and provision of training) to prepare for the full operation of their own Chinese production plan in 2013. These findings further confirm the multifinality nature of resilience capability (Cicchetti & Blender, 2006) in which same resilience capability dimensions can be utilized for different strategies that yield specific performance outcomes.

Interestingly, to deal with cash flow problems, Magenta only utilized adaptability and agility resilience capabilities for tight cost control measures (e.g., laid off staff) and financial management strategy (e.g., rearrangement of debt payments) that resulted in business continuity during the crisis. Similarly, Westshore adopted the same strategy (e.g., adoption of a new production development approach) to address the immediate aftermath of declining sales and associated revenue, and increasing cost of manufacturing products. The strategy of which enabled Westshore to reduce cost and time of production, ultimately, business sustainability. This observation demonstrates that different resilience capability dimensions can be utilized for same strategies, further supporting the equifinality nature of resilience capability (Cicchetti & Blender, 2006).

As discussed previously, firms adopt proactive or reactive strategies to deal with threats and opportunities. Anticipatory ability and flexibility resilience capabilities were utilized in a proactive manner by Far East and Emass, but reactively by Magenta and Westshore to support their growth strategies during times of turbulence. Through the application of these resilience capabilities, these four were able to generate new and repeat business, increase their levels of profitability, and ultimately sustain their businesses through the crisis. Additionally, Far East and Westshore adopted proactive and reactive cost control/production management strategies respectively (e.g., having their own production plant, reallocation of personnel, outsourcing production,

adoption of new production approaches) that culminated in cost efficiencies, cost reductions and rapid NPD. These business strategies enabled each company to respond uniquely, efficiently and quickly to changes in the market, and to develop customized products and services in a cost effective manner. Proposition 4 addresses the above arguments.

Proposition 4: Business performance outcomes depend on the utilization of resilience capabilities expressed through the deployment of strategies tailored specifically with turbulent environments.

Table 5.16. Relationships between resilience capability dimensions, strategies, and firm performance during times of crisis

Company	Resilience Capability Dimensions				Specific Strategy	Firm Performance
	Adaptability	Agility	Anticipatory Ability	Flexibility		
Magenta	Growth strategy	Growth strategy	Growth strategy	Growth strategy	<ul style="list-style-type: none"> Market expansion 	<ul style="list-style-type: none"> New/repeat business Profitability Sustainability
	Cost control strategy	Cost control strategy	--	--	<ul style="list-style-type: none"> Cost reduction (i.e., staff retrenchment) 	<ul style="list-style-type: none"> Business sustainability
	Financial management strategy	Financial management strategy	--	--	<ul style="list-style-type: none"> Debt payment rearrangement 	<ul style="list-style-type: none"> Business sustainability
	Financial management strategy	Financial management strategy	--	--	<ul style="list-style-type: none"> Rescheduling to up-front payments 	<ul style="list-style-type: none"> Business sustainability
	Financial management strategy	Financial management strategy	--	--	<ul style="list-style-type: none"> Negotiation of advantageous payment schedules 	<ul style="list-style-type: none"> Business sustainability
	--	Contingency planning strategy	Contingency planning strategy	Contingency planning strategy	<ul style="list-style-type: none"> Having in place a number of business projects 	<ul style="list-style-type: none"> New/repeat business Profitability Sustainability

Note. "--" denotes that particular resilience capability dimensions was not utilized.

Table continues...

Company	Resilience Capability Dimensions				Specific Strategy	Firm Performance
	Adaptability	Agility	Anticipatory Ability	Flexibility		
Far East	Cost control / production management strategy	Cost control / production management strategy	Cost control / production management strategy	Cost control / production management strategy	<ul style="list-style-type: none"> • Having own production plant in China 	<ul style="list-style-type: none"> • Cost reduction
	Cost control / production management strategy	Cost control / production management strategy	Cost control / production management strategy	Cost control / production management strategy	<ul style="list-style-type: none"> • Reallocation of partial production to Turkey and China 	<ul style="list-style-type: none"> • Small order quantity was accommodated through in-house and outsourced production plants
	Growth strategy	Growth strategy	Growth strategy	Growth strategy	<ul style="list-style-type: none"> • Acquisition of a new German label 	<ul style="list-style-type: none"> • New/repeat business • Market shares • Growth
	Growth strategy	Growth strategy	Growth strategy	Growth strategy	<ul style="list-style-type: none"> • Expansion into the Chinese market 	<ul style="list-style-type: none"> • New/repeat business • Profitability • Growth
	Resource management strategy	Resource management strategy	Resource management strategy	Resource management strategy	<ul style="list-style-type: none"> • Relocation of a number of Hong Kong staff to China 	<ul style="list-style-type: none"> • Chinese staff were trained for the start-up of Chinese production plant
Resource management strategy	Resource management strategy	Resource management strategy	--	<ul style="list-style-type: none"> • Recruitment of personnel and provision of training 	<ul style="list-style-type: none"> • Prepared for the full operational production 	
Westshore	--	Cost control strategy	--	--	<ul style="list-style-type: none"> • Reduction in inspections and headcounts 	<ul style="list-style-type: none"> • Cost reduction/saving • Business sustainability
	Growth strategy	Growth strategy	Growth strategy	Growth strategy	<ul style="list-style-type: none"> • Market expansion with new brand 	<ul style="list-style-type: none"> • New/repeat business • Profitability • Growth • Business sustainability
	Cost control / production management strategy	Cost control / production management strategy	--	Cost control / production management strategy	<ul style="list-style-type: none"> • Outsourcing production and related service 	<ul style="list-style-type: none"> • Cost reduction/saving
	Cost control/product management strategy	Cost control/product management strategy	--	Cost control / product management strategy	<ul style="list-style-type: none"> • Adoption of a new production development approach using a modular-based design 	<ul style="list-style-type: none"> • Cost reduction/saving • Profitability • Rapid new production development and introduction • New/repeat business • Profitability • Business sustainability
	Information management strategy	--	Information management strategy	--	<ul style="list-style-type: none"> • Adoption of tailor-made information technology 	<ul style="list-style-type: none"> • Enhanced information management process
	Information / product management strategy	Information / product management strategy	Information / product management strategy	--	<ul style="list-style-type: none"> • Involvement of engineers in customer information gathering process 	<ul style="list-style-type: none"> • Rapid new product development and introduction

Note. "--" denotes that particular resilience capability dimensions was not utilized.

Table continues...

Company	Resilience Capability Dimensions				Specific Strategy	Firm Performance
	Adaptability	Agility	Anticipatory Ability	Flexibility		
Emass	--	Financial management strategy	--	--	<ul style="list-style-type: none"> • Refinancing loans to manage cash flow 	<ul style="list-style-type: none"> • Business sustainability
	Resource management strategy	Resource management strategy	Resource management strategy	Resource management strategy	<ul style="list-style-type: none"> • Doing more for less (i.e., be effective, efficient use of limited resources) 	<ul style="list-style-type: none"> • Growth • Customer satisfaction • Quality service
	Growth strategy	Growth strategy	Growth strategy	Growth strategy	<ul style="list-style-type: none"> • Expansion into niche markets 	<ul style="list-style-type: none"> • New/repeat business • Profitability • Growth • Business sustainability
	Growth strategy	Growth strategy	Growth strategy	Growth strategy	<ul style="list-style-type: none"> • Expansion into other geographic locations including Hong Kong and China 	<ul style="list-style-type: none"> • New/repeat business • Profitability • Growth • Business sustainability

Limitations and Future Research Directions

This study provides an in-depth understanding of the utilization of and precursors to resilience capabilities, and interrelationships between marketing capabilities, dynamic capabilities, resilience capabilities and related performance. As discussed below, this investigation involves six main limitations: having small, non-random and context-specific sample, utilizing single source and respondent design, adopting a cross-sectional study approach, examining resilience capabilities from a macro perspective, and focusing on how resilience capabilities were utilized instead of their actual and required level necessary for dealing with turbulences.

First, data were obtained from a small, non-random sample and were context-specific. Consequently, findings should be viewed and interpreted with caution. As is the case with most qualitative studies, the present research involves limitations in terms of replicability and generalizability of findings to other organizations or industries with different configurations, and geographical scope. Specifically, it could be argued that resilience capabilities might be present in different firms, industries, and contexts, given them in the SME sector.

Second, data were obtained from one source in each firm. While this procedure provides a wealth of data, it does not address the interdependencies of firms in the supply chain, especially how resilience capabilities of one firm impacts on the performance of other firms or how resilience capabilities can be leveraged across firms across the networked business environment. Realizing that companies do not operate alone, additional research using multiple firms in the supply chain should be conducted to achieve a cross-organizational perspective relating to understanding the dynamics of cross-firm resilience capability development and associated performance outcomes.

Third, using single respondent in the current study and relying on the retrospective interpretation and memories of interviewee's past experience and incidents raises concerns relating to accuracy and reliability of memories. Although owner-managers appeared to possess sufficient knowledge of their organization, there is a possibility that interviewees may not have provided an accurate account of their firms, consequently, raising the likelihood of bias. Thus, a multiple-respondent research design or use of multiple sources of data collection might have strengthened the validity of findings.

Fourth, the cross-sectional nature of this study does not allow for making casual inferences about the evolution of resilience capability, strategy, and business outcomes. Specifically, this study did not track changes over time or at multiple data collection points. A longitudinal study would be required to examine the specific nature of relationships at multiple points in time.

Fifth, the present study adopted a company-wide perspective when examining resilience capabilities. Findings reveal that resilience capabilities are applied not only for strategic decisions in response to crisis, but also for everyday business operations. This limitation provides an opportunity for future research to investigate resilience capabilities at different levels such as operational, structural and strategic levels, leading to an understanding and integration of internal and external environments necessary for enabling enterprises to become truly resilient in dynamic environments.

Finally, the focus of this thesis was predominately on how companies developed and utilized resilience capabilities for dealing with crises. As discussed previously, although all companies possess a degree of internal resilience (Horne & Orr, 1998), it is recommended that future research should take into account the actual and required level of resilience capabilities necessary for dealing with turbulent environments and achieving the corresponding performance outcomes. The results of such a study will be useful in determining a dosage effect. This is, the extent of each resilience capability dimension necessary to effectively manage dynamic situations and culminate on performance outcomes.

Conclusion

The present cross-case analyses demonstrate comparative characteristic of and unique to each SME were explored, particularly in relation to development, utilization of resilience capabilities and their associated firm performance during different phases of turbulent environment (i.e., pre-, during, post-crisis). Inter-relationships between precursors, resilience capabilities, strategies, and firm performance were also discussed in the light of relevant literature (Figure 5.9).

Resilience capabilities are multidimensional, comprising four characteristics of adaptability, agility, anticipatory ability, and flexibility that are articulated proactively and reactively during different times and across different contexts. As evidenced by the utilization and expression of multiple, and at times, different, dimensions in the process of effective strategy development during pre-, at times of, or post crisis environments. Additionally, the intensity and influence of each dimension of resilience capability fluctuates, demonstrating a relative level of significance during different phases of turbulence. That is, different resilience dimensions are enacted during specific phases of crisis, depending upon the strategic vision and values of the company, and the CEO's views regarding the business operations.

Critical antecedent factors can be internal or external and are associated with CEO (e.g., leadership, personal experiences, psychological traits), and company characteristics (e.g., organizational culture), dynamic capabilities (e.g., information sharing within & across firms), marketing capabilities (e.g., channel management, market information management, product/service development capability), human

resources capabilities (e.g., provision of training), and information technology capabilities (e.g., implementation of centralized information system), the qualities of which contribute to the development of resilience capabilities in SME.

The equifinality and multifinality nature of resilience capabilities suggest that business performance outcomes vary in terms of the strategies adopted. Particularly, different performance outcomes can be a result of utilization of same resilience dimensions or different dimensions yielding similar outcomes, depending on the organizational strategic responses to deal with a dynamic environment.

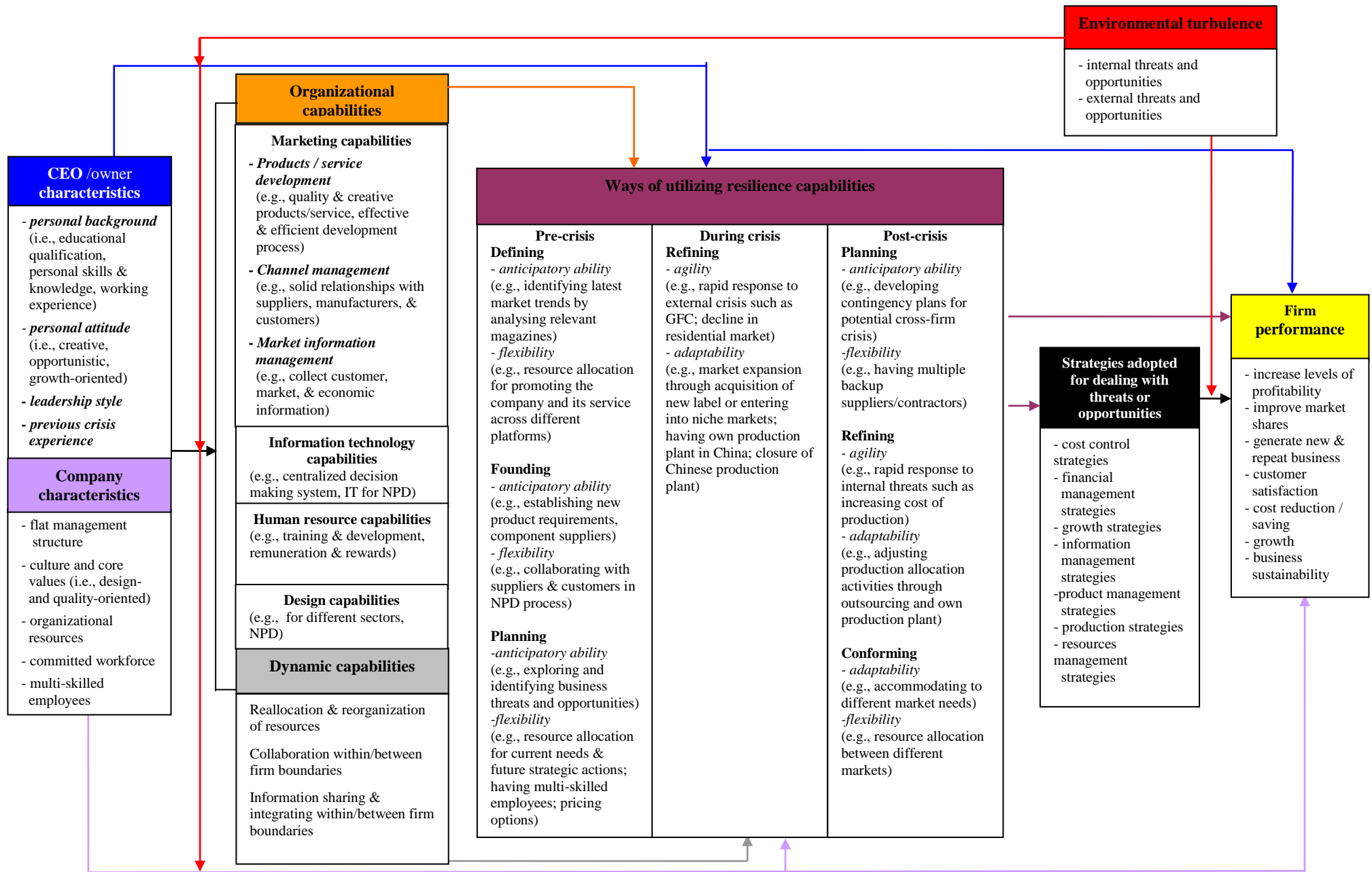


Figure 5.9. Causal network model derived from cross-case analyses

Chapter 6

Conclusion

Overview

Chapter 6 synthesises the main considerations highlighted in the previous chapters and draws together the key elements of resilience capability as reported in Studies 1 and 2. This synthesis pays particular attention to the definitional debate, and the development and utilization of resilience capabilities in strategy development for dealing with turbulent environments. This chapter also revisits research questions posed in this thesis, and identifies the unique contributions of this research work at theoretical, methodological, and practical levels..

This thesis, comprising two inter-related studies investigates the resilience capabilities of Hong Kong-based SMEs. Specifically, the overall objective is to empirically examine the multidimensionality of resilience capability, and how each dimension is developed, utilized, and evolves over time and in various contexts (Gibson & Tarrant, 2010). Study 1 utilizes a quantitative approach to explore the interrelationships between resilience capabilities and firm performance, and the moderating impact of environmental turbulence on these relationships. The two research objectives are:

Research Objective 1: *What is the relative contribution of resilience capabilities to firm performance during times of turbulence?*

Research Objective 2: *How does environmental turbulence moderate relationships between resilience capabilities and firm performance?*

Extending the findings of Study 1, Study 2 involves an in-depth qualitative examination of the ways in which SMEs utilize resilience capabilities in strategy

development for dealing with threats and opportunities. The objective of Study 2 is to address the issues that arose from Study 1 with the aim of providing an understanding of how resilience capabilities enable SMEs to survive and thrive in turbulent environments, allowing for the possibility of new theory to emerge. Company and CEO/owner characteristics, dynamic, marketing, information technology, and human resource capabilities are considered to be sources of resilience capabilities, enhancing strategy development, and subsequently, contributing to firm performance.

Study 2 addresses four research questions:

Research Question 1: *In what ways do SMEs utilize resilience capabilities, if any, during times of turbulence?*

Research Question 2: *Do particular resilience capability dimensions predominate during different phases of turbulence?*

Research Question 3: *In what ways do SMEs develop resilience capabilities to deal with threats and opportunities in turbulent environments?*

Research Question 4: *How do resilience capability dimensions contribute, if any, to business performance in turbulence environments?*

The following section discusses the significant theoretical, methodological, and practical contributions to emerge from this thesis

Theoretical Contributions

This thesis advances our knowledge of resilience capability with the emergence of a cross-disciplinary perspective and contingency theory approach. First, the present thesis contributes to the definitional debate on resilience capability in business settings, particularly, the ontological nature of resilience capability. Resilience capability is defined as a multidimensional phenomenon (Ponomarov & Holcomb, 2009; Gibson & Tarrant, 2010) that is expressed through organizational strategies, comprising the characteristics of adaptability, agility, anticipatory ability, and flexibility, the characteristics of which are conceptually and empirically distinct.

Second, building on the view that resilience capability is desirable during times of uncertainty (Carpenter et al., 2001), or employed post disruption (Wildavsky, 1998; Coutu, 2002), the current thesis demonstrates that resilience capabilities can also be

present, developed, and employed prior to (Somers, 2009), during (Carpenter et al., 2001), or following a crisis (Wildavsky, 1988; Coutu, 2002). This thesis suggests that it is insufficient to characterize resilience capabilities as critical elements for firm performance only during times of turbulence, rather, attention also needs to be paid to pre- and post-crisis environments.

Third, this thesis advances our current understanding of resilience capabilities in relation to their intensity of application and significance during different phases of turbulence, be it pre-, at times of, or post-crisis environments. In other words, findings demonstrate that the influence of each dimension of resilience capability fluctuates across three phases of crisis. Importantly, this thesis shows that changes in environments affect the development and utilization of resilience capabilities. Further, this thesis identifies five principal purposes of and ways in which resilience capabilities are utilized including, defining, founding, planning, refining, and conforming, applied either in a proactive or reactive manner (e.g., Miles & Snow, 1978; Seligman, 2011; Van de Ven et al., 2013). Moreover, resilience capabilities appear to be expressed through the process of effective strategy development in response to environmental turbulence. These findings and observation support the view that resilience capabilities are time and context specific (e.g., Garmezy, 1985; Evans, 1991; Werner & Smith, 1992; Vokurka & Fliedner, 1998; Sambamurthy et al., 2003), with different types of capabilities coming to the fore at different times (Gibson & Tarrant, 2010) via the strategies that are developed and implemented.

Fourth, research (e.g., Grewal & Tansuhaj, 2001; Tallon & Pinsonneault, 2010) argue that resilience capabilities are less likely to lead to better firm performance in stable environments or even have an adverse impact on firm performance prior to a crisis. Yet, the present thesis shows that although not all dimensions are necessarily equally important in different environmental settings, resilience capabilities are significant predictors of SME firm performance in both stable and turbulent environments. Moreover, this thesis contributes to the resilience and strategy management literature by demonstrating that environmental turbulence as a moderating factor strengthens the relationship between resilience capabilities and firm performance. This finding suggests that environmental turbulence might not be necessarily detrimental to

business performance. In fact, resilience capabilities have the potential to contribute to firm performance during times or phases of turbulence.

Finally, this thesis bridges the gap in extant literature (e.g., Coutu, 2002; Hamel & Valikangas, 2003) through the development and testing of a conceptual model of resilience capabilities, environmental turbulence, and firm performance (Study 1). Study 2 extends this model proposing important antecedents or precursors. For example, company structure and culture, and channel management capabilities contribute to the development of resilience capabilities. As shown by Figure 5.9 (p. 267), the proposed model provides a benchmark, and hypothesized relationship that should be tested in different contexts. A central take home message is that resilience capabilities can be developed and employed within or across firm boundaries before, during, and following a crisis.

Methodological contributions

In terms of methodological contributions, this thesis involves a cross-sectional survey and in-depth case studies, examining resilience capabilities in terms of four dimensions (adaptability, agility, anticipatory ability, flexibility) and across different environmental conditions. This empirical investigation goes beyond conceptual considerations, demonstrating how, when, and in which contexts resilience capabilities are implemented and measured. Furthermore, the moderating impact of turbulence on the relationships between resilience capability dimensions and firm performance are tested. Another important methodological consideration concerns the focus on SMEs. The preponderance of research in this area has been on large corporations (e.g., Starr et al., 2003; Reinmoeller & van Baardwijk, 2005; Gulati et al., 2010) and conceptual papers (e.g., Hamel & Valikangas, 2003; Riolli & Savicki, 2003; Gibson & Tarrant, 2010; Vogus & Sutcliffe, 2007).

Practical contributions

The major findings of this thesis have much to offer to SME decision makers and practitioners. First, it is important for SME decision makers to be aware that resilience capabilities are expressed through organizational proactive and reactive strategies, and are critical for firm performance in both relatively stable and turbulent environments. Second, it is central to SMEs to understand the intensity of resilience

capability dimensions fluctuates across different environmental conditions. This implication helps practitioners to understand the importance of utilizing different resilience capabilities at given time for specific threats and opportunities. Importantly, resilience capabilities are not implemented at only one-time (Hamel & Välikangas, 2003), rather, they are capabilities that evolve and applicable over time and contexts (Gibson & Tarrant, 2010).

Finally, owing to the interconnected business world and associated risks, SMEs should recognize that resilience capabilities can be enhanced or affected by other counterparts in the supply chain. Additionally, it is important that SME decision makers foster the development of identified critical qualities (e.g., develop solid relationships with suppliers & customers, adoption of information technology) for resilience capabilities in order to thrive and grow in dynamic environments.

In conclusion, this thesis contributes substantially to the field of strategic management, entrepreneurship, and resilience by developing, testing, and extending a conceptual model of resilience capabilities, incorporating dynamic capabilities, marketing capabilities, information technology capabilities, human resource capabilities, environmental turbulence, and firm performance. The present research supports studies (Ponomarov & Holcomb, 2009; Gibson & Tarrant, 2010), suggesting that resilience capabilities should be viewed as a multidimensional construct that can be understood in the light of four conceptually different dimensions (i.e., adaptability, agility, anticipatory ability, flexibility). Each type of capability can be utilized alone or in tandem with other capabilities for everyday business operations or for dealing with current and future potential threats and opportunities. It is also essential to be aware of critical precursors to the development of resilience capabilities which in turn, help to improve chances of survival and firm performance through effective strategy development and implementation. Although the model makes a unique contribution to our understanding of the interrelationships between precursors, resilience capabilities, environmental turbulence and firm performance, the purposed conceptualization does however, raise the importance of future research replicating these findings.

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Appendix 4.1. Plain Language Statement**Invitation to Participate in a Research Project (Survey)*****Project Title:***

- Resilience Capabilities in the Face of Environmental Turbulence: The Case of Hong Kong Small To Medium Enterprises

Investigators:

- Ms. (Carmen) Yiu Ha CHU (PhD student, Management, RMIT University)
- Professor Kosmas Smyrnios (Project Supervisor: Professor, Management, RMIT University, kosmas.smyrnios@rmit.edu.au, (613) 99151633)

Dear...

We would like to warmly invite you to participate in the research project conducted by RMIT. My name is Carmen CHU and I am doing research towards a PhD under the direction of Professor Smyrnios in the School of Management at RMIT University.

Purpose of the research

The purpose of this survey is to investigate the extent to which a firm's resilience capabilities influence firm performance in the face of environmental turbulence (e.g., the GFC).

Participants are requested to answer all questions based on their knowledge/experience. This study aims at developing a greater understanding of the relationships between resilience capabilities, environmental turbulence, and firm performance.

While respondents are encouraged to respond, your decision to participate in this research is voluntary and completely up to you. The data will also be kept securely for a period of five years in the School of Management and only the investigators will have access to information. If you do not feel comfortable at anytime during or after the survey, you may terminate your participation for any reason. All resultant data from your response to the survey will be discarded should you request the principal researcher to do so.

This survey will take approximately 20 minutes to complete and a **\$50 supermarket cash coupon** will be given after the completion of the survey. Your input will be very much appreciated and will contribute to the knowledge about the continuity of business. If you have any queries regarding this project please contact my supervisor, Professor Kosmas Smyrnios, Phone: 03 9925 1633, Email: Kosmas.Smyrnios@rmit.edu.au. A free copy of the report detailing the results of the survey will be available upon request.

THANK YOU FOR YOUR PARTICIPATION

Prescribed Consent Form for Persons Participating In Research Projects Involving Interviews,
Questionnaires, Focus Groups or Disclosure of Personal Information

COLLEGE OF **Business**
SCHOOL/CENTRE OF **Management**

Name of Participant: _____

Project Title: **Resilience Capabilities in the Face of Environmental Turbulence: The Case of Hong Kong Small To Medium Enterprises**

Name(s) of Investigators: (1) **(Carmen) Yiu Ha CHU** Phone: _____
(2) _____ Phone: _____

1. I have received a statement explaining the interview/questionnaire involved in this project.
2. I consent to participate in the above project, the particulars of which - including details of the interviews or questionnaires - have been explained to me.
3. I authorise the investigator to interview me or administer a questionnaire.
4. I acknowledge that:
 - (a) Having read the Plain Language Statement, I agree to the general purpose, methods and demands of the study.
 - (b) I understand that my participation is voluntary and that I am free to withdraw from the project at any time and to withdraw any unprocessed data previously supplied.
 - (c) The project is for the purpose of research and/or teaching. It may not be of direct benefit to me.
 - (d) The confidentiality of the information I provide will be safeguarded and only disclosed where I have consented to the disclosure or as required by law.
 - (e) The security of the research data is assured during and after completion of the study.

Participant's Consent

Name: _____ Date: _____
(Participant)

Name: _____ Date: _____
(Witness to signature)

Participants should be given a photocopy of this consent form after it has been signed.

Any complaints about your participation in this project may be directed to the Chair, Business College Human Ethics Advisory Network, College of Business, RMIT, GPO Box 2476V, Melbourne, 3001. The telephone number is (03) 9925 5596 or email address bro@mit.edu.au.

Appendix 4.2. SME Survey

PART 1: COMPANY BACKGROUND		Agility	<i>Not at all</i>	<i>To a large extent</i>	
1. What is your position title (e.g., CEO, Manager)? _____		Our company quickly responds to changes in overall consumer demand.	1	2 3 4 5 6 7	
2. Are you also the owner of this company? <input type="checkbox"/> Yes <input type="checkbox"/> No		Our company quickly reacts to new product or service launches by competitors.	1	2 3 4 5 6 7	
3. In which year was your company established: _____ year.		Our company quickly introduces new pricing schedules in response to changes in competitors' prices.	1	2 3 4 5 6 7	
4. Number of equivalent full time (2 part time = 1 full time) employees in your company: _____ employees.		Our company quickly changes (i.e. expands or reduces) the variety of products / services available for sale.	1	2 3 4 5 6 7	
5. Your company is in _____ industry.		Our company quickly switches suppliers to take advantage of lower costs, better quality, or improved delivery times.	1	2 3 4 5 6 7	
6. Our company's decision is made at: <input type="checkbox"/> Management level <input type="checkbox"/> Operational level <input type="checkbox"/> Both		Our company quickly adopts new technologies to produce better, faster, and cheaper products/services.	1	2 3 4 5 6 7	
PART 2: RESILIENCE CAPABILITY DIMENSIONS- To what extent does your company possess the following characteristics?		Our company quickly expands into new regional or international markets.	1	2 3 4 5 6 7	
Anticipatory Ability	<i>Not at all</i>	<i>To a large extent</i>	PART 3: ENVIRONMENTAL TURBULENCE - To what extent do the following environmental characteristics best describe your industry of operation?		
Our company regularly monitors changes in our markets.	1	2 3 4 5 6 7	Competitive Intensity	<i>Not at all</i>	<i>To a large extent</i>
Our company regularly monitors competitor's actions.	1	2 3 4 5 6 7	In our industry, anything that one competitor can offer, others can match readily.	1	2 3 4 5 6 7
Our company regularly monitors consumer preference changes.	1	2 3 4 5 6 7	There are many "promotion wars" in our industry.	1	2 3 4 5 6 7
Our company regularly monitors regulatory/legal changes.	1	2 3 4 5 6 7	Price competition is a hallmark of our industry.	1	2 3 4 5 6 7
Our company regularly monitors economic shifts	1	2 3 4 5 6 7	Competition in our industry is cutthroat.	1	2 3 4 5 6 7
Our company regularly monitors technological advancements	1	2 3 4 5 6 7	Our competitors are relatively weak.	1	2 3 4 5 6 7
Flexibility	<i>Not at all</i>	<i>To a large extent</i>	Technological Uncertainty	<i>Not at all</i>	<i>To a large extent</i>
Our company is flexible in allocating marketing resources to market a diverse line of products.	1	2 3 4 5 6 7	In our industry, the technology changes rapidly.	1	2 3 4 5 6 7
Our company is flexible in allocating production resources to manufacture a broad range of product.	1	2 3 4 5 6 7	Technological changes provide big opportunities in our industries.	1	2 3 4 5 6 7
Our company is flexible in product design to support a broad range of potential product.	1	2 3 4 5 6 7	In our industry, it is very difficult to forecast where the technology will be in the coming year	1	2 3 4 5 6 7
Our company has an ability to adapt our product strategies to match products/services with targeted market segment.	1	2 3 4 5 6 7	In our industry, a large number of new product ideas have been made possible through technological breakthroughs in our industry.	1	2 3 4 5 6 7
Our company redeploys organisational resources effectively to support our firm's intended strategies.	1	2 3 4 5 6 7	In our industry, technological developments are rather minor.	1	2 3 4 5 6 7
Our company modifies the resources we can use in developing, manufacturing, and delivering its intended products to targeted markets.	1	2 3 4 5 6 7	Market Turbulence	<i>Not at all</i>	<i>To a large extent</i>
Adaptability	<i>Not at all</i>	<i>To a large extent</i>	Our customers tend to look for new product/service all the time.	1	2 3 4 5 6 7
Our company frequently adopts new marketing techniques.	1	2 3 4 5 6 7	Our company is witnessing demand for our products/services from customers who never bought them before.	1	2 3 4 5 6 7
Our company frequently introduces new products/services.	1	2 3 4 5 6 7	Our company caters too many of the same customers that we used to in the past.	1	2 3 4 5 6 7
Our company frequently modifies our products/services.	1	2 3 4 5 6 7	In our industry, customers' product/service preferences change quite a bit over time.	1	2 3 4 5 6 7
Our company frequently adopts new technologies and skills.	1	2 3 4 5 6 7			

PART 4: FIRM PERFORMANCE - Please evaluate the performance of your business the past year relative to your competitors.

	<i>Much worse than our competitors</i>	<i>Much better than our competitors</i>		<i>Much worse than our competitors</i>	<i>Much better than our competitors</i>
<u>Profitability</u>			Our company's delivery of value to our customers is...	1 2 3 4 5 6 7	
Our company's return on investment (ROI) is...	1 2 3 4	5 6 7	Our company's delivery of what our customers want is...	1 2 3 4	5 6 7
Our company's return on sales (ROS) is...	1 2 3 4	5 6 7	<u>Market Effectiveness</u>		
Our company's ability to reach the financial goals is...	1 2 3 4	5 6 7	Our company's growth in sales revenue is...	1 2 3 4	5 6 7
<u>Customer Satisfaction</u>	<i>Much worse than our competitors</i>	<i>Much better than our competitors</i>	Our company's acquisition of new customers is...	1 2 3 4	5 6 7
Our customer satisfaction level is...	1 2 3 4	5 6 7	Our company's sales to exiting customers	1 2 3 4	5 6 7

Any other comments:

THANK YOU FOR YOUR VALUABLE TIME AND PARTICIPATION.

Appendix 5.1. Plain Language Statement**School of Management**GPO Box 2476
Melbourne VIC 3001
AustraliaTel. +61 3 9925 5919
Fax +61 3 9925 5960**Invitation to Participate in a Research Project (In-depth Interview)*****Project Title:***

- Resilience Capabilities in the Face of Environmental Turbulence: The Case of Hong Kong Small To Medium Enterprises

Investigators:

- Ms. (Carmen) Yiu Ha CHU (PhD student, Management, RMIT University)
- Professor Kosmas Smyrnios (Project Supervisor: Professor, Management, RMIT University, kosmas.smyrnios@rmit.edu.au, (613) 99151633)

Dear...

We would like to warmly invite you to participate in the research project conducted by RMIT. My name is Carmen CHU and I am doing research towards a PhD under the direction of Professor Smyrnios in the School of Management at RMIT University.

Purpose of the research

The purpose of this interview is to investigate the extent to which a firm's resilience capabilities influence firm performance in the face of environmental turbulence (e.g., the GFC). Participants are requested to answer all questions based on their knowledge/experience. This study seeks to develop a greater understanding of SME resilience capabilities in the face of turbulent environments.

While respondents are encouraged to respond, your decision to participate in this research is voluntary and completely up to you. The data will also be kept securely for a period of five years in the School of Management and only the investigators will have access to information. If you do not feel comfortable at anytime during or after the interview, you may terminate your participation for any reason. All resultant data from your response to the interview will be discarded should you request the principal researcher to do so.

This in-depth interview will take approximately 1 hour to complete. Your input will be very much appreciated and will contribute to the knowledge about the continuity of business. If you have any queries regarding this project please contact my supervisor, Professor Kosmas Smyrnios, Phone: 03 9925 1633, Email: Kosmas.Smyrnios@rmit.edu.au. A free copy of the report detailing the results of the organization will be available upon request.

Yours sincerely,

Yiu Ha Carmen Chu
BSc, MMMM

Professor Kosmas Smyrnios
PhD, MAPS

THANK YOU FOR YOUR PARTICIPATION

Prescribed Consent Form for Persons Participating In Research Projects Involving Interviews,
Questionnaires, Focus Groups or Disclosure of Personal Information

COLLEGE OF Business
SCHOOL/CENTRE OF Management

Name of Participant: _____

Project Title: Resilience Capabilities in the Face of Environmental Turbulence: The Case of Hong Kong Small To Medium Enterprises

Name(s) of Investigators: (1) (Carmen) Yiu Ha CHU Phone: _____
(2) _____ Phone: _____

1. I have received a statement explaining the interview/questionnaire involved in this project.
2. I consent to participate in the above project, the particulars of which - including details of the interviews or questionnaires - have been explained to me.
4. I authorise the investigator to interview me or administer a questionnaire.
4. I acknowledge that:
 - (f) Having read the Plain Language Statement, I agree to the general purpose, methods and demands of the study.
 - (g) I understand that my participation is voluntary and that I am free to withdraw from the project at any time and to withdraw any unprocessed data previously supplied.
 - (h) The project is for the purpose of research and/or teaching. It may not be of direct benefit to me.
 - (i) The confidentiality of the information I provide will be safeguarded and only disclosed where I have consented to the disclosure or as required by law.
 - (j) The security of the research data is assured during and after completion of the study.

Participant's Consent

Name: _____ Date: _____
(Participant)

Name: _____ Date: _____
(Witness to signature)

Participants should be given a photocopy of this consent form after it has been signed.

Any complaints about your participation in this project may be directed to the Chair, Business College Human Ethics Advisory Network, College of Business, RMIT, GPO Box 2476V, Melbourne, 3001. The telephone number is (03) 9925 5596 or email address bro@mit.edu.au.

Appendix 5.2. In-depth Interview Protocol

Semi-structured Interview Protocol

1. **Overview of the case study project (objectives, issues, topics being investigated)**
2. **Interview questions**
 1. Can you tell me a little about your company
 2. What do you think about today's business environment in terms of threats and opportunities, such as....?
 3. How have these threats affected or impacted on your company?
 4. How did your company respond to crisis such as the GFC in 2008? What are the some of the attributes that enable your company to survive? What contributed to the survival of your company?
 5. In what ways have you met these challenges
 6. Has your company almost had a near death experience.... Almost wound up, bankruptcy....
 7. What do you consider to be the strengths and weaknesses of your company.
 8. What do you understand by the concept of resilience....
 9. Would you consider your company to be resilient, and if so, what makes it resilient.
 10. Does your company have any plans/strategies to cope with the threats/opportunities you mentioned earlier? How? Explain.
 11. How could your company have done things differently? Did your company use other strategies such as IT/IS to help survive through crisis? Explain.
 12. Did/does your company reconfigure, restructure, reallocate, or integrate resources from time to time to keep pace with this changing environment? Explain.
 13. Any other comments.