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Organizational Resilience through Crisis Strategic Planning

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This Ph.D. thesis is dedicated to all resilient things of our planet, Earth!

ABSTRACT

Resilience, in an organizational sense meaning the ability to withstand crises and disturbances, has become a keyword during the last ten years. It is associated with established activities like risk and crisis management and business continuity planning or with strategic management, but it allows for new perspectives and insights into the conditions for doing business. Applied to the whole supply chain it also provides tools for managing and aligning the logistics flows in an appropriate way. But why is resilience essential for success or survival?

In context to the Swedish textile and clothing (T&C) industry, the average number of firms that went bankrupt during the recent crisis (2007-09) escalated twofold compared to the average over 2000-10 due to tremendous pressure on the Swedish credit system. The structural industrial statistics also plummeted in these crisis years aggravating other inherent or internal problems as a 'ripple effect'. The small and medium sized enterprises (SMEs) were the most affected of all, facing major threats to their financial performance and ultimately to their survival, at times of economic crises. In such a context, study of organizational resilience (ORes), to survive and thrive becomes increasingly significant.

To address this issue the thesis concentrates on understanding the resilience development process through crisis strategic planning in context to Swedish textile-related SMEs amidst economic crises. It investigates and answers how resilience development can be considered as a precursor for business success, how to develop and monitor resilience, and identifies its antecedents and key strategic initiatives and their differential degrees of influence. No prior studies describing organizational resilience and crisis strategic planning in an integrated processual approach using both short-term and long-term strategies through planning and adaptation were found in the literature.

The thesis adopts a critical realist-grounded theory (CR-GT) approach along the metaphysical level as the structure for the resilience development process follows a causal relationship between the object (the organization), its structure (competences and strategies), the causal power (crisis strategic planning) for attaining an event/outcome (resilience) in a particular context (economic crisis).

For addressing this issue of devising an outcome-based processual approach, a multivariate financial indicator called the Altman's Z-score (used basically for calculating bankruptcy potential in firms) was used for quantifying resilience. For investigating the causal mechanism epistemological relativism along the grounded theory approach was chosen for theory generation. A mixed methodology was adopted based on quantitative statistical analyses, at first, followed by a detailed qualitative work based on surveys, interviews, case studies and secondary data for data triangulation.

Analysis of data was conducted through certain thematic coding principles. A four-step hermeneutic spiral was followed by systematically combining the pre-understanding, empirics and extant literature to develop a theoretical framework through constant modification. Overall, the resilience development was highlighted along a processual framework adopted along the CR-GT view of causation.

The findings are manifold. Firstly there is a need to develop economic resilience in SMEs to shift from just component-view to a more holistic systemic view of organizations, upheld by an integrated crisis strategic planning (CSP) approach, for facing dynamic environments. Secondly, the CSP process prescribed in the thesis is quite integrated and holistic, taking a view from all angles, viz. organizational structure (capabilities and strategies), processual approach etc. Such a resilience development process through CSP is based on a six-step process: (i) identification of environmental context, (ii) impact analysis, (iii) leadership analysis, (iv) capability analysis, (v) formulation/selection and implementation of strategies, and (vi) evaluation and review of strategic options, utilizing a suite of strategic tools and techniques and is particularly simple for application in an SME setting. Third, operationalization of such a causal mechanism based upon implementation of strategic tools is based upon using a multivariate financial indicator like Altman's Z-score to outline the relation between ORes and business 'health', thus quantifying it. Finally, in order to develop a resilient organization it is important to engage and utilize effectively the key resources and assets (financial, material, social, networks) by developing dynamic capabilities (strategic and operational flexibilities, redundancy, robustness) and organizational learning (culture, employee wellbeing, attentive leadership and decision-making). These competences must be employed for the appropriate strategy development (selection, implementation, and evaluation) framed on both growth and continuity strategies, both planned and adaptive in nature. The research develops a holistic analytical framework of organizational structure for resilience development based on these two criteria. It also tests this framework for Swedish textile-related SMEs amidst economic crises. The findings in this contextual delimitation suggest that the

resilient SMEs possess better financial resources, relational networks, operational & strategic flexibilities. The economically resilient firms mostly showed *planned* resilience in economic crises based on long-term strategies through business continuity planning (BCP) and in terms of growth strategies through market penetration, diversification and transformational initiatives. These firms also showed better short-term crisis management (CM) through higher operational flexibility while the less resilient ones lacked in strategic readiness due to resource scarcity. This is beneficial for firms to understand the key areas in which to invest and develop a multi-strategic CSP model, categorizing firms along different resilience types – planned or adaptive.

Keywords: Organizational resilience, crisis strategic planning, economic crisis, Sweden, textile and clothing, small and medium -sized enterprise

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Borås, August 2013

Rudrajeet Pal

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LIST OF APPENDED PAPERS

This dissertation is based on the following peer-reviewed publications (referred to in the text by their numbers). The articles are reprinted with the permission of the copyright holders.

1. Pal, R. & Torstensson, H., 2011, Aligning critical success factors to organizational design: A study of Swedish textile and clothing firms, *Business Process Management Journal,* 17 (3), pp. 403-436

2. Pal, R., Torstensson, H. & Mattila, H., 2011, Organizational resilience and health of business systems, *International Journal of Business Continuity and Risk Management,* 2 (4), pp. 372-398

3. Pal, R., Torstensson, H. & Mattila, H., 2013, Antecedents of organizational resilience in economic crises – an empirical study of Swedish textile and clothing SMEs, *International Journal of Production Economics,* XX (XX), pp. XXX-XXX
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4. Pal, R., Andersson, R. & Torstensson, H., 2012, Organizational resilience through crisis strategic planning: A study of Swedish textile SMEs in financial crises of 2007-11, *International Journal of Decision Sciences, Risk and Management,* 4 (3/4), pp. 314-341

5. Pal, R., Westerlind, R. & Torstensson, H., 2013, Exploring the resilience development process by implementing the crisis strategic planning framework: A Swedish textile SME perspective, *International Journal of Decision Sciences, Risk and Management,* XX (XX), pp. XXX-XXX
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AUTHOR'S CONTRIBUTION

Article 1:

Rudrajeet Pal wrote the entire article and is the corresponding author. The co-author, Håkan Torstensson, contributed by providing his valuable feedback during the review process and also proofread the article.

Article 2:

Rudrajeet Pal wrote the entire article and is the corresponding author. The co-authors provided input from their fields of expertise and commented on the text.

Article 3:

Rudrajeet Pal wrote the entire article and is the corresponding author. The co-authors provided input from their fields of expertise and commented on the text.

Article 4:

Rudrajeet Pal wrote most parts of the article and is the corresponding author. The co-authors provided input from their fields of expertise and commented on the text. Author shared the data collection and analysis parts with Roy Andersson. Håkan Torstensson proofread the article.

Article 5:

Rudrajeet Pal wrote the entire article and is the corresponding author. The co-author, Reimar Westerlind provided his valuable inputs during the data collection phase. The other co-author, Håkan Torstensson commented on the text and also proofread it.

LIST OF TABLES AND FIGURES

Glossary and abbreviations

3-DCE: Three dimensional concurrent engineering

ACI: Agility capability indicator

B2B: Business to business

B2C: Business to customer

BCP: Business continuity planning

BCM: Business continuity management

BTD: Breadth-on-top-of-depth

CAV: Centrum För Arbetsvetenskap

CE: Concurrent engineering

CEO: Chief executive officer

CFO: Chief financial officer

CI: Continuous improvement

CM: Crisis management

CMT: Crisis management team

CR-GT: Critical realist-Grounded theory

CSF: Critical success factor

CSP: Crisis strategic planning

DRP: Disaster recovery planning

EBIT: Earnings before interest and tax

EBITDA: Earnings before interest and tax, depreciation and amortisation

EDI: Electronic data interchange

ESI: Early supplier involvement

ERP: Enterprise resource planning

EU: European Union

FDI: Foreign direct investment

GAAP: Generally accepted accounting principles

GTM: Grounded theory method

GVC: Global value chain

HPO: High performance organization

HR: Human resource

HRO: High reliability organization

HRT: High reliability theory

IFRS: International financial reporting standard

IOR: Inter-organizational relationships

ISM: Integrated strategic management

IT: Information technology

KM: Knowledge management

M&A: Mergers and acquisition

MAD: Multiple approach design

MCDA: Multi-criteria decision aid

MDA: Multivariate discriminant analysis

NPD: New product development

OECD: Organization for economic co-operation and development

ORes: Organizational resilience

PCA: Principle component analysis

RBV: Resource based view

RO: Research objective

ROI: Return on investment

RP: Relationship process

RQ: Research question

RVO: Resilient virtual organizations

SAD: Single approach design

SCA: Sustainable competitive advantage

SCB: Statistiska Centralbyrån (Statistics Sweden)

SCRAM: Supply chain resilience assessment and management

SM: Strategic management

SME: Small and medium-sized enterprises

STEEP: Social, technological, economic, environmental and political

SWOT: Strength-weakness-opportunity-threat

TCF: Textile, clothing and fashion

TC: Textile and clothing

TQM: Total quality management

VSM: Viable system model

Definitions

** The definitions listed below could be one out of many definitions of each term, by various authors, but the one mentioned here is how they have been used most often in context to the thesis.*

3-DCE – It is the holistic viewpoint that considers the key functional interfaces within the organization and includes suppliers and customers, and how the product, process and supply chain work together to efficiently and effectively meet the customer's needs (Ellram *et al.* 2007).

BUSINESS CONTINUITY PLANNING AND MANAGEMENT – Business continuity management (BCM) involves systematic processes to counter the effects of crises and turbulences, both operationally and strategically, for preserving competitive advantage and improving resilience (Herbane *et al.* 2004). Steps include identifying internal and external threats to organizations and anticipating failures, taking planned and rehearsed actions to protect the business and its stakeholders, synthesizing appropriate hard and soft assets for value preservation, and subsequently develop resilience (Herbane *et al.* 1997, Elliott *et al.* 2001, Herbane *et al.* 2004, Herbane 2010a, Engemann and Henderson 2012). It draws upon crisis management (CM) and disaster recovery planning (DRP), but also extends its strategic role into a holistic view by incorporating both proactive and reactive strategies for benefiting diverse stakeholders.

CRISIS – A crisis is any specific, unexpected, and non-routine event that leads to high levels of uncertainty and threat or perceived threat to an organization's goals.

In the context of the study conducted in this thesis, crisis means 'economic crises'. The term economic crisis is applied broadly to a variety of situations in which some financial assets and hence performance of many organizations in the economy or of any particular sector suddenly loses a large part of their nominal value. Economic crises include stock market crashes, financial bubble bursts, currency crises, sovereign defaults etc.

CRISIS MANAGEMENT – Crisis management (CM) is the process by which an organization deals with a major event that threatens to harm the organization and its stakeholders by underpinning the following: (i) preparing resources and organizational structures necessary to respond effectively during the crisis or recover from it, (ii) building the capability to identify threats and vulnerabilities, and (iii) designing a plan for addressing these threats (Vargo and Seville 2011). Thus it involves crisis identification, crisis confrontation and finally reconfiguration (Burnett 1998).

CRISIS STRATEGIC PLANNING – Crisis strategic planning (CSP) marries crisis management (CM) and strategic planning (both deal with the future, with weaknesses (vulnerabilities) and threats (risks), both involve creating a plan, and organizational structures and resources to carry out the plan) (Vargo and Seville 2011). CSP also highlights the linkage between defensive/preventive capabilities of CM and disaster recovery planning (DRP) and offensive market positioning through strategic management (SM) to develop comprehensive organizational response repertoire (Mitroff *et al.* 1992, Pauchant and Mitroff 1992, Preble 1997).

CRITICAL REALIST-GROUNDED THEORY – Critical Realist-Grounded Theory (CR-GT) approach is not based on deductive or inductive logic, but on a reflective form of scientific knowledge creation data that is interactively fused with the creation of theory. So the theory is of the data – not separate from it; if new data supports the theory, it becomes part of it; while if the new data does not support it, then that data becomes part of a new theory with different structures, causal mechanisms, and perhaps demi-regularities (Lee 2012).

CRITICAL SUCCESS FACTORS – Critical Success Factors (CSFs) are defined as 'the limited number of areas in which results, if satisfactory, will ensure competitive performance for the organization' (Rockart 1979, Rockart and Bullen 1981) to achieve performance goals and competitiveness. These are "the few key areas where 'things must go right' for the business to flourish and for the manager's goals to be attained" (Rockart and Bullen 1981).

DISASTER RECOVERY PLAN – A disaster recovery plan (DRP) is a documented process or set of procedures to recover and protect a business in the event of a disaster (both man-made and natural). DRP is a sub set of business continuity approaches mostly related to reactive planning taken before, during and after a disaster to emphasise recovery or continuation of technology infrastructure in an organization.

DISRUPTION – Disruption is an event which causes an "unplanned, negative deviation from the expected delivery from the organization's objectives".

DYNAMIC CAPABILITIES – It is the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments (Teece *et al.* 1997). It also refers to the capacity to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets.

GROUNDED THEORY – Grounded theory method (GTM) is a systematic methodology involving the discovery of theory through the analysis of data, thus containing both deductive and inductive thinking. Rather than beginning with a hypothesis, the first step of GTM is data collection through a variety of methods. From the data collected, the key points are highlighted using proper coding mechanisms. These codes are then grouped into similar 'concepts' and from these concepts 'categories' are formed, which are the basis for the creation of a 'theory' (Allan 2003).

ORGANIZATIONAL RESILIENCE – Organizational Resilience deals with the ability to circumvent disruptions through proactive anticipation, absorb/withstand them through system robustness, adapt and learn through reconfiguration (of organizational design) or reactively recover from them. This describes the different facets of resilience as (i) avoidance – preventive aspects of resilience based on anticipation, (ii) survival – ability to withstand or adapt to disruptive events both passively and actively, and (iii) recovery – ability to survive major disturbances with reduced performance (Madni and Jackson 2009).

From an economic perspective, organizational resilience is about two fundamental transition behaviors viz. (i) feed-forward behavior – ability to maintain a growing or constant financial health over time subjected to negative and/or destructive events, and (ii) effective recovery – ability to make a quick positive transition (recovery) from one state to the next (finally to the healthy state) and be able to sustain that.

RESILIENCE – It is about surviving and thriving during turbulences and crises.

RESOURCE BASED VIEW (RBV THEORY) – Resource-based view (RBV) of a firm is the basis for developing sustainable competitive advantage by identifying and engaging valuable and heterogeneous intangible and tangible resources at the firm's disposal (Penrose 1959).

SME – The category of small and medium-sized enterprises (SMEs) consists of enterprises which employ fewer than 250 persons and which have either an annual turnover not exceeding 50 million euro, or an annual balance sheet total not exceeding 43 million euro. Small enterprises are defined as enterprises which employ fewer than 50 persons and whose annual turnover or annual balance sheet total does not exceed 10 million euro[1].

STRATEGIC MANAGEMENT – Strategic management is an on-going process required to identify the purpose of an organization and its plans and actions to achieve it. This requires constant market evaluation and control by assessing its competitors and formulating and implementing goals and strategies to compete against existing and potential competitors along with periodic evaluation of it. It mostly determines the long term performance of a business organization.

TURBULENCE – Any volatile, unpredictable business condition faced by a firm in its operating environment that has higher chances of affecting the firm's standard operating procedures is considered as turbulence. Sources of turbulences can be exogenous (e.g. technology developments, changing consumer tastes, political, economic, natural etc.) as well as endogenous (e.g. internal financial control systems, effective management structures etc.)

[1] European Commission http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/ (accessed 07.08.2013)

1. Introduction

The introduction of this thesis starts by outlining the background description of the research topic and is followed by a discussion of the problem area. This substantially motivates the author to derive the purpose and research questions of this thesis. This is followed by outlining the studied context and demarcations, and finally highlighting the research delimitations. The thesis outline then gives a brief summary of the contents of the following chapters.

1.1. Background

Organizations in global value chains are increasingly affected by widely unexpected turbulences and crises those have appeared with increasing frequency in the recent times. Christopher and Holweg's 'supply chain volatility index' shows considerable increase, from 0.166 as the previous peak in 1973 to 0.254 in 2008, in overall turbulence in the business environment due to several factors like exchange rate fluctuations, raw material volatility, increase in commodity and raw material prices, interest rates and shipping costs, share market fluctuations etc. (Christopher and Holweg 2011). Also the five year moving average updated till 2012 indicates a constantly more turbulent supply chain environment (Christopher and Holweg 2011). Moreover, 10 of the largest 15 bankruptcies in history have occurred since 2001 showing the increasing rigors of turbulent economic conditions (Dobbs *et al.* 2005). Hamel and Välikangas (2003) state that, *'of the 20 largest U.S. bankruptcies in the past two decades, ten occurred in the last two years'*, while the year-to-year volatility in the growth rate in earnings have also increased by nearly 50%. Companies' survivals amidst numerous business shocks, like technological discontinuities, geopolitical and economic turbulences, changing policymaker mediations and regulations, shifts in industry structures and consumer behaviour have become even more unpredictable (Hamel and Välikangas 2003).

In recent times, the global economic recessions and uncertain trade conditions have created major challenges for many western economies and the industries embedded in them, particularly to the small and medium-sized enterprises (SMEs), in terms of difficulties in raising funds and controlling costs, as well as shrinking profitability, heavy reliance on few customers, increasing account receivable problems etc. (Chan 2011). SMEs are particularly vulnerable to both continuous shifts in the economy and unpredictable events, being more sensitive to financial fluctuations in cash flow, changes in legislation, supply network relationships (i.e. power issues) and to changing customer requirements and demands, and even collapse of national financial systems (as it happened recently in Greece) and are particularly less prepared to these events (Acs *et al.* 1990, Ingirige *et al.* 2008, Bhamra and Dani 2011).

In such market turbulence marked by frequent economic crises, how to thrive or at least hone survival instincts, and act upon them effectively to lead success/survival, has thus become imperative for organizations. In this context, the major driving premise of this thesis is that of the prevailing perspectives of resilience in business and management studies (Hamel and Välikangas 2003). Resilience has been conceptualized and adapted to the business world in a number of ways, some have focussed on the corporate attributes that yield resilience by understanding its drivers and how to sustain it through positive adjustments (e.g. Weick and Sutcliffe (2001), Weick and Sutcliffe (2007)); some have aimed at expanding the concept in the field of supply chain management and designing, as done by Sheffi (2007), Falasca *et al.* (2008), Pettit *et al.* (2010), Christopher (2004), Peck (2004) and others; while some researchers have looked into its customer-centric perspectives like Gulati (2010). Different schools of thought have viewed into the concept of resilience as a company's ability to either continuously anticipate or react deeply to the changes and/or turbulences from diverse perspectives, either by focussing on the resource-based view (RBV), organizational assets and dynamic capabilities (e.g. Barney (1991), Teece *et al.* (1997), Grant (1991b)) and how they can be modulated to yield resilience (in Dalziell and McManus (2004), McManus *et al.* (2007), Vogus and Sutcliffe (2007), Lengnick-Hall *et al.* (2011)); business models and strategic initiatives (e.g. Hamel and Välikangas (2003), Starr *et al.* (2003), Vogus and Sutcliffe (2007)) or from the organizational dynamics

perspective (e.g. Riolli and Savicki (2003), Fiksel (2003), Smith and Fischbacher (2009), Luthans *et al.* (2006)). In the business and management research, resilience is also associated with established activities like risk management (e.g. Starr *et al.* (2003), 2004)) and crisis management (e.g. Herbane (2010b), Preble (1997), Mitroff (1988), Mitroff *et al.* (1992)) and business continuity planning (e.g. Herbane *et al.* (2004), Herbane (2010b), Preble (1997)) allowing newer perspectives and insights into the conditions for doing business.

With the growing importance of resilience development in organizational context for success/survival during crises and turbulences, there is an increased need to understand and investigate organizational resilience in crisis periods.

1.2. Problem Area and Research Gap

From an academic perspective, in the field of management studies it is very important to avoid increased terminological complexity. Researches on how organizations respond to environmental changes by moderating resources and dynamic capabilities, and/or how they construct and sustain competitive advantage are well explored (Dreyer and Grønhaug 2004, Wang and Ahmed 2007). In operational research, three dimensional concurrent engineering (3-DCE) approaches (Fine 1998, Fine *et al.* 2005) provide a considerably strong viewpoint for firms to devise success factors and achieve competitive advantage (Salvador *et al.* 2002). However, as advocated by Bobbitt and Ford (1980) there are some additional variables that influence the overall performance of the organization. Marr (2007) substantiated these as the intangible elements such as value system, knowledge, organizational culture etc., critical for the future success of businesses (Repenning and Sterman 2002, Molnar 2004). Thus it becomes anticipatory even though the scope of 3-DCE covers a significant breadth of issues it does not possibly encompass all factors contributing to firms' successful performance, especially in a dynamic environment (Senge 1990b). This highlights the need of researches to capture the holistic interactions of organizations with their surrounding environment in a systemic view beyond the component view of 3-DCE (Senge 1990b, Dooley 1997).

Most mainstream perspectives related to organizational adaptation and change (Miles and Cameron 1977, Miles and Snow 1978, Chakravarthy 1982) do capture various natures of firm responses to diverse kinds of market turbulences to suggest long-term survival and growth. While some works in this line have proposed organizational routines for developing *adaptive fits* for diverse environmental conditions (e.g. Chakravarthy (1982)), some have introduced the concept of more abrupt and temporary jolts (Meyer 1982) and hyper-turbulences (D'Aveni 1994) in the environment and how to deal with them. More recently, Boisot and Child (1999) have proposed ways to deal with environmental complexities, while Eisenhardt and Martin (2000) have tried to suggest various organizational routines to match different environmental conditions. Further, Lengnick-Hall and Beck (2005), Lengnick-Hall and Beck (2009) have proposed the need for *robust transformations* besides *adaptive fits* for devising a continuum of organizational responses by orchestrating various capabilities to face different paces of market turbulence. Their proposition for developing *resilience capacity* also explains how the experience of diverse environmental conditions helps organizations to execute various routines to realize performance outcomes. However, these researches prescribe strict either-or interaction between organizational routines and environmental conditions for yielding higher performance (as in Lengnick-Hall and Beck (2005)), which is not always relevant. Not always does it capture the full range of firms' responses to various environmental conditions (varying in pace) through dynamic orchestration of their organizational capabilities and also along a multi-strategic initiative highlighting diverse facets of resilience development (through anticipation, preparedness, adaptation, responsiveness and recovery as highlighted by Madni (2007), Madni and Jackson (2009)). Thus it becomes important for business practitioners to understand how to create a multi-strategy based response repertoire developed along a disaster cycle of pre-disaster, disaster and post-disaster phases (Ghandour and Benwell 2012).

In the organizational context, business continuity management (BCM) has evolved as a systematic process to counter the effects of crises and ensure operational continuity for preserving competitive advantage and improve resilience (Herbane *et al.* 2004). Such BCM principles have increasingly developed as a strategic precursor for understanding and responding to a wide range of threats through value preservation by drawing upon crisis management (CM) and disaster recovery planning (DRP), but also extending its strategic role into a holistic programme for benefiting diverse stakeholders (Herbane *et al.* 2004, Engemann and Henderson 2012). However, such a shifting view of BCM from being purely functional to a strategic role is fairly new and as Herbane *et al.* (2004) proposed integrating strategic planning to crisis management highlights the inexorable linkage between defensive/preventive capabilities of crisis management and offensive market positioning through strategic management to develop a comprehensive organizational response repertoire (Mitroff *et al.* 1992, Pauchant and Mitroff 1992, Preble 1997). The business continuity perspective also needs more attuning in terms of planning, organizational learning and its incorporation into strategic framework of organizations thus enhancing the need for research on organizational resilience. A key to such economic crisis resilience is altogether upheld by crisis management, business continuity management and strategic planning forming the construct of an integrated crisis strategic planning (CSP) framework as proposed in extant literature by Preble (1997), Burnett (1998), Vargo and Seville (2011) by combining effective planning with flexibility and adaptation (Herbane *et al.* 2004).

However economic crisis resilience, so far, has been mostly studied on macro- or meso- levels (e.g. in Briguglio *et al.* (2009), Rose (2004), Simmie and Martin (2009)) for harnessing community resilience. Firm-level economic resilience during crises have mostly been at qualitative level reflecting on how firms deal or have dealt with crises, hence emphasizing studies related to the realm of organizational behaviour and dynamics with a theory building perspective (Bhamra *et al.* 2011). Investigation of 74 papers on 'resilient SMEs' in Bhamra *et al.* (2011) found only 3 relevant ones dealing with resilience from the organizational strategy point of view while another 3 dealing with resilience and organizational performance. Methodologically, so far case study and model development have been considered only in 20-25% researches within the area of resilience while surveys have not been preferred much (Bhamra *et al.* 2011). This highlights a gap in the domain of resilience research in using survey and case study based data collection techniques for subsequent model development and supporting data triangulation for gathering empirics. From the theoretical perspective, the study of resilience development process along the path of identifying the operating environment (trends and turbulences), the organizational capabilities (antecedents of resilience) and devising a comprehensive strategic response repertoire has been neglected though Lengnick-Hall and Beck (2005) has already proposed the need for it. So the assessment of firms' crisis strategic planning becomes an inherent choice for studying economic crisis resilience as also highlighted by Ismail *et al.* (2011) and Vargo and Seville (2011) in their frameworks respectively.

Translating the need for resilience research for SME development, it is important to highlight the research lacuna as concepts, findings and outcomes related to 'crisis management', 'business continuity management' or 'disaster recovery' in key small-business journals, and such businesses are still underrepresented even though SME significance has been ever increasing in the wider economy (North *et al.* 1998, Herbane 2010b). Without doubt the assessment of a firm's business continuity planning, crisis management and growth strategies become a relevant choice for studying economic resilience, as resilience is not only about surviving crises but also thriving in them. Two decades of management research suggest that the relationship between crisis strategic planning (combined crisis management and strategic management) and performance is positive, both for large firms (Miller and Cardinal 1994) and for SMEs (Schwenk and Shrader 1993, Peel and Bridge 1998). So investigating crisis strategic planning as a precursor for economic resilience in SMEs for successful performance can widen the resilience literature (dealing with resilience and organizational performance, e.g. Seville *et al.* (2006), Hollnagel *et al.* (2006)).

Thus it becomes fundamental to investigate transitional behaviours in firms' financial 'health' based upon their abilities to maintain a growing or constant healthy state over time (represented in terms of financial parameters) when subjected to negative events, or as an effective recovery to make quick positive transitions in the business 'health' state (Wildavsky 1988, Sundström and Hollnagel 2006). This suggests how inevitable it becomes in the research arena to relate such business 'health' transitional analysis to a crisis strategic planning repertoire in organizations. It favours a 'top-down' approach for developing the strategic initiatives in an organization, combining both pro-active planning and reactive adaptation, and assessing the financial contributions and perceived avenues for growth and survival (Ismail *et al.* 2011).

Another evident research gap that is pin-pointed here is what Sundström and Hollnagel (2006) mentioned, *'some properties are not directly observable, the property of resilience being among these.'* So it is important to relate resilience to a more tangible and measurable organizational aspect for assessing overall financial 'health'. Generally, ratios measuring profitability, liquidity, and solvency are considered to be the most significant indicators to correctly specify and quantify business 'health' from an economic standpoint. Beaver (1966) and Deakin (1972) used univariate financial ratios, like cash flows, net-income ratios, debt-to-asset ratios, working capital and current liabilities, and turnover ratios etc., to predict corporate distress or more precisely bankruptcy of organizations. But the shortcomings of such univariate indicators lie in the potential ambiguity of interpreting different ratios. In such a context the use of an effective multivariate discriminant analysis (MDA) technique and index for cumulatively effecting economic viability of an organization is of importance to define success in terms of achieving and maintaining its business goals amidst market changes.

Thus the major overarching areas this thesis addresses are outlined as: organizational resilience, crisis strategic planning, and business health, as shown in Figure 1.1.

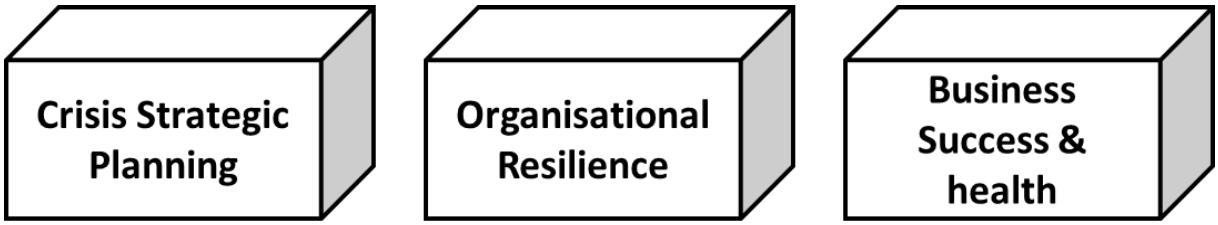


Figure 1.1. The three major subject areas addressed in this thesis

1.3. Research Purpose

Derived from the above discussion on the problem area and research gap, the thesis examines textile-related SMEs those have dealt with major economic crises by facing threats to their financial performance. It is evident that economic resilience has become a property to be cultivated in such firms. As highlighted by Acs *et al.* (1990), Ingirige *et al.* (2008) and others, SMEs are particularly vulnerable to various economic recessionary trends and turbulences those arise and get accelerated by crises. Thus there is a need for studying or understanding the dynamics of resilience in SMEs, considering the vulnerabilities in today's world. Stoltz (2004) outlined resilience in firms as a key organizational requirement for developing sustainable edge over the less resilient firms. Resilience, therefore, must be considered as a discriminating factor between successful and surviving firms and those that fail. Much recent research aim at contributing towards the understanding of what creates organizational resilience, its attributes, its formative elements and framework or to devise ways and indicators to measure it. Hence, author is motivated to investigate financial factors and organizational resilience in economic downturns.

Textile and clothing is one of the oldest and largest global export industry in the world due to factors like export-oriented industrialization, labour-intensive manufacturing, low fixed costs etc. (Gereffi 1999, Gereffi and Frederick 2010). The onset of the economic crisis in 2009 has accounted in a steady

decline in sales and profits of textile companies globally, followed by lack of access to credit and trade finance, closures, and layoffs, particularly in the European Union (EU) and the United States (Gereffi and Frederick 2010). Barrie and Ayling (2009) and Driscoll and Wang (2009) asserted that particularly hard hit were the small and medium-sized firms and locally owned firms.

Thus exploring the phenomenon of SME resilience, particularly in the textile and clothing industry in the economic crisis context is of significance. Along the lines of Gereffi and Frederick (2010), this is of immense interest to the author as the recession has hit the textile and clothing industry especially hard, leading to company shutdowns, sharp increases in unemployment, and growing concerns over social unrest etc. Overall this has led to structural changes of the industry.

Thus the purpose of this thesis is:

To explore the resilience development process for successful organizational financial performance in economic crises (for textile-related SMEs)

With this backdrop, recent research on organizational resilience development will be addressed and discussed.

1.4. Research Questions

In order to fulfil the research purpose, it was first translated into a research objective (RO) which was further divided into three distinct research questions (RQs) as outlined in this section. RQs 2 and 3 were further sub-divided into two RQs each. The main objective of this thesis is:

To investigate the inevitable requirements and pathways to develop organizational resilience for business 'healthiness', in crisis times, through crisis strategic planning

The research objective highlights the need to explore the process of fostering economic resilience in organizations predominantly in context to economic crises. This outlines the requirement of a resilience developmental process by attuning the available assets, resources and capabilities (both tangible and intangible) along with execution of diverse strategies to create a unique response repertoire in organizations to deal with the turbulence or crisis. Finally this study needs to be delineated towards an outcome-based causation mechanism by highlighting the need to quantify resilience from an economic/financial perspective. Figure 1.2 shows the scope of the thesis. The 3-D boxes show the major areas researched in this thesis while the remaining boxes show the connection between them in a social research context.

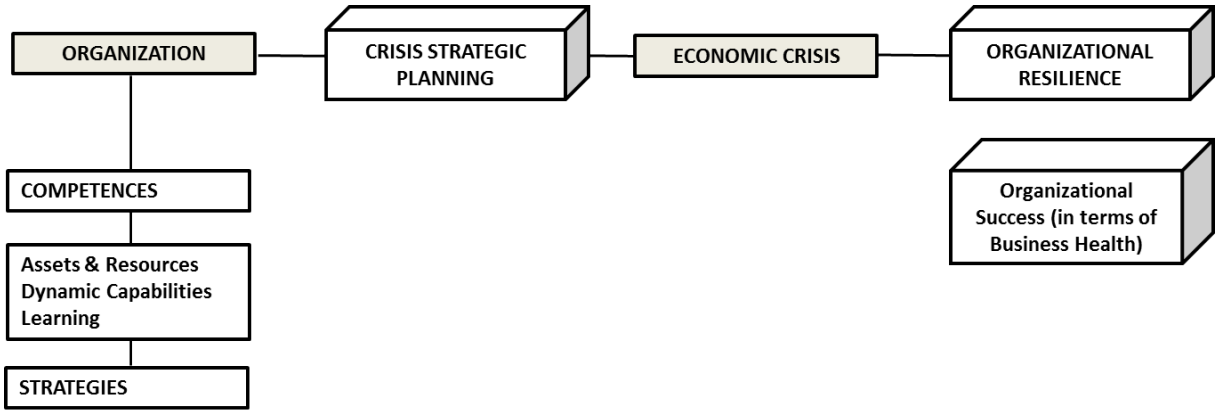


Figure 1.2. Scope of thesis

The first RQ aims at identifying the need for organizational resilience research, the second RQ focusses on quantifying resilience on the basis of business health for, finally, investigating the causal

relationship between resilience development process and its precursors (process-based) underpinning successful financial performance in RQ 3.

Firstly, this highlights the research gap related to well-established 3-DCE researches for organizational design and CSFs (cf. section 1.2). Evidently, there are certain lacuna of 3-DCE implementation in dynamic environments which also neglects development of value propositions in organizations. Overall, it is required to explore an extended 3-DCE framework for resilience designing and development by attuning various available assets, resources and capabilities along with proper implementation of a multitude of strategies for achieving business success thus shifting the focus from a component-based view to a systemic view. This sets up the quest for establishing the platform of linking organizational resilience and business success as stated in RQ 1:

RQ 1: Is organizational resilience development a precursor for successful financial performance in crises?

The RQ 1 translates the need to develop resilience from a research gap in the existing paradigm. In this context it becomes inevitable to explore an outcome-based causation mechanism for yielding organizational resilience. Two phenomena are important here thus dividing the requirement into two sub-questions, the first one dealing with how resilience can be developed along a processual causal structure while the next question dealing with quantifying a resilience outcome. The broad context for investigation is set by RQ 2 stated as:

RQ 2: How can organizational resilience be developed and monitored?

A multitude of organizational or business resilience researches have highlighted how resilience can be developed by moderating and allocating diverse resources and/or strategies, but seldom providing a holistic perspective unifying all in a processual path. A process-based approach to develop such a resilience response repertoire needs to explore this causation-based requirement to highlight the causal power, structure and context and propose a practice-based generic framework for creating resilience in firms. Thus RQ 2a is proposed as follows:

RQ 2a: How can organizational resilience be developed?

To complement RQ 2a, the causal relationship for resilience development needs a quantification technique in order to measure resilience as well. The author believes that the effect of any turbulence in the external environment is reflected onto the organization's health in economic/financial terms, e.g. any change in the consumer behavior or global economic crisis etc. and will affect financial performance ultimately. This translates into the need to devise the next question as follows:

RQ 2b: How can organizational resilience be monitored?

RQs 1 and 2 set the platform for exploring in-depth what resources and assets along with operational and strategic initiatives are required in firms to develop a unique context-dependent resilience response repertoire. RQ 3 sets out to outline this process in understanding what are the antecedents or enablers of resilience in economic crises and what strategies are required to streamline them efficiently. This is addressed in RQ 3:

RQ 3: What are the antecedents and the key strategic initiatives of resilient SMEs and how do they differ from less resilient ones?

With the resilience development process model it becomes relevant to investigate the antecedents of resilience from the resource-based, dynamic capabilities and organizational learning perspectives. This question sets out to answer what are the key enablers of resilience development in firms amidst crises and what inhibits it. So the focus is on understanding the correlation between level of organizational resilience and its antecedents. This helps to monitor the effect of the lack or

significance of any component or antecedent on economic resilience and financial performance. RQ 3a follows from it as:

RQ 3a: What are the antecedents of resilient SMEs and how do they differ from less resilient ones?

RQ 3b sets out to complement RQ 3a to address the strategic perspectives of resilience development. This highlight how a multitude of strategies (short-term and long-term) can be formulated, implemented and executed in a firm and further be reviewed for adjusting the response repertoire for resilient financial performance. This requirement translates into RQ 3b as:

RQ 3b: What are the key strategic initiatives of resilient SMEs and how do they differ from less resilient ones?

The research questions contribute to different parts of the thesis framework as depicted in Figure 1.3.

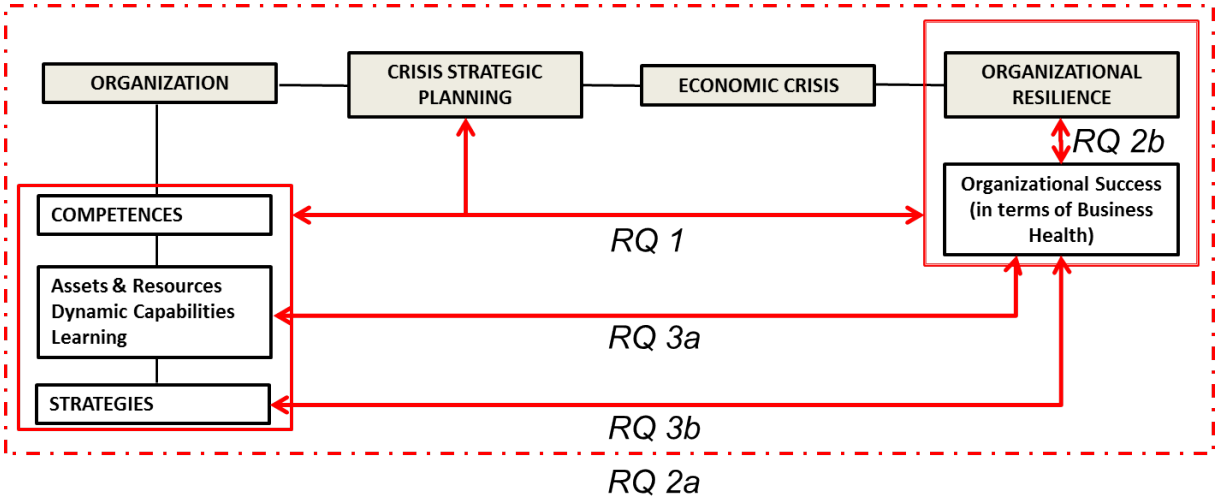


Figure 1.3. Research questions along the scope

1.5. Scope of Research: Focus and Studied Context

Since 2008, the world economy has been undergoing tremendous economic slowdown marked by an economic crisis known as the credit crunch leading to a collapse of large number of financial institutions, bailout of banks by national governments and downturns in stock markets around the world (Ocaya 2012). The global nature and the measures taken to address the crisis have been baffling resulting in a contraction of most OECD economies (in 1st quarter of 2009, annual rate of decline in GDP was 14.4% in Germany, 15.2% in Japan, 7.4% in UK, 9.8% in Euro area) (Ocaya 2012). The stock market made a record dip (Dow Jones average dived by 6,600 points in March 2009[2]) (Mtpredictor.us 2011) while unemployment increased.

Although the global value chains (GVCs) in textile and clothing have been expanding rapidly across countries due to offshoring, outsourcing and vertical specialization of international production, the industry has experienced two major crisis in the last decade (Gereffi and Frederick 2010, Backer De and Miroudot 2012). The first being regulatory in nature during 1995-2005 (the Multi-Fibre Agreement – MFA) while the second one was economic, sparked by the banking meltdown in United States in 2008. The recession has hit the T&C industries very hard, leading to factory shutdowns and increased bankruptcies, rapid increase in unemployment, changing patterns of supply and demand in global T&C value chains etc. (Gereffi and Frederick 2010). Amidst this changing dynamics, leading firms in the textile and clothing GVCs have counteracted them either by shifting apparel sourcing strategies

[2] http://www.mtpredictor.us/1061/impact-of-quantitative-easing-on-the-stock-market/ (accessed 15.02.2013)

through new forms of coordination and management in the sourcing channels (e.g. agent-based sourcing and direct sourcing) or by assuming new roles and relationships (e.g. brand owners becoming specialty retailers, full-package manufacturers becoming intermediaries, creating exclusive product lines, dual sourcing using quick response and fast fashion, supply chain rationalization, providing more importance to social and environmental standards etc.) (Gereffi and Frederick 2010). However, the decline in export volume and value, closure of a number of firms and job cuts have left the credit availability at a staggering level for the SMEs and locally owned firms (Barrie and Ayling 2009, Gereffi and Frederick 2010). The biggest constraints to the operations of the SMEs in the high income countries of EU, during the crises, has been lack of access to finance, followed by inadequately educated workforce (Jansen and Lanz 2013). They also faced more severe resource constraints hence it has become harder for them to fund the strengthening of their employees' skills by investing in training. Lack of funding constrained fresh investments for developing defensive and expansive strategies during crises. Table 1.1 below provides a brief account of the main reasons for bankruptcies in some OECD economies. The countries facing high bankruptcies in their textile and clothing sectors have been highlighted.

Table 1.1. Main reasons for bankruptcy in some EU countries[3]

Country	Main reasons for bankruptcy
Austria	• Internal reasons due to company failings and management negligence, shortage of capital, and external reasons like hike in raw material prices. • Insolvency growth rate in textiles and leather sector was +38% (in 1st half of 2009).
Belgium	• Lack of liquidity due to delayed payments or non-payments among customers, high levels of debt from cheap loans. • Most bankruptcies involved SMEs in business activities, construction, transport, retail trade etc.
Bulgaria	• Lack of finance, reduced demand, high rents etc. • Textile SMEs seriously affected due to decline in sales.
Cyprus	• No major effect or case of bankruptcy reported.
Czech Republic	• Lack of new orders due to increased competition and reduced demand, lack of credits available. • Permanent decline faced by Czech textile industry (exports reduced by 23% in 2009)
Denmark	• Decline in sales and curtail of credits. • Overall increase of 85% in the number of bankruptcies in May 2008-09.
Estonia	• Downturn in the market. • Mainly in the wood-processing and construction industries.
Finland	• Downturn in the market. • Mostly for self-employed people.
Germany	• Inability to pay debts, liabilities exceeding assets. • Overall increase of 10% in the number of bankruptcies in Q1 of 2009.
Greece	• Deficient planning, competitive pressures, restricted access to loans. • Mainly in the fish farming and telecommunications industries.
Hungary	• Downturn in the market and accumulating debts. • Overall increase of 30% in the number of bankruptcies in mid-2009, mainly the construction sector.
Ireland	• Downturn in the market. • Mainly in the construction, manufacturing and food industries.
Italy	• Structural difficulties, lack of liquidity from customers and financiers. • Mainly in the construction, manufacturing and wholesale and retail industries. • SMEs in textile and clothing, food and transportation sectors were at risk.
Latvia	• Reduced consumer expenditure, decrease in competitiveness due to cost inflation and lack of finance. • Overall increase of 85% in the number of bankruptcies in mid- 2009. • Mainly the SMEs in wholesale and retail trade, and wood sectors.

[3] http://www.eurofound.europa.eu/docs/erm/tn0908026s/tn0908026s.pdf (accessed 08.08.2013)

Continued…

Country	Main reasons for bankruptcy
Lithuania	• Competition from Asian producers in textile industry, Intensification of competition in other manufacturing sectors. • Overall increase of 53% in the number of bankruptcies in 2008. • Mainly in the construction, real estate, wood processing, furniture and textiles sectors.
Luxembourg	• Highly competitive nature of market, management errors. • Mainly the SMEs.
Malta	• No major effect or case of bankruptcy reported except one.
Netherlands	• SMEs facing downturn in economic activity.
Poland	• Fall in demand, problems in obtaining credit, bad investment decisions. • Mainly in the metal and metal working, furniture and food sectors.
Portugal	• Decline in orders, increased losses and debts.
Romania	• Competitive pressures, restricted access to bank loans. • Overall increase of 58% in the number of bankruptcies in Q1 2009. • Mainly in the construction and wholesale and retail industries accounting 55% of all.
Slovakia	• Lack of orders. • Mainly in the automotive, electrical, textiles and road building industries.
Slovenia	• Lack of new orders due to increased low-cost competition and reduced demand. • Mainly in the textiles, clothing, leather and wood industries.
Spain	• Lack of bank credits, decline in domestic demand, and decreased sales. • Overall increase by 167% in the number of bankruptcies in Q1 2008-09. • Mainly in the construction and real estate sectors.
Sweden	• Lack of bank credits and liquidity for SMEs. • Overall increase by 45% in the number of bankruptcies in Q1 2009. • Mainly in the wholesale and retail trade, textile, construction and automotive sectors.
UK	• Lack of bank credits, decline in domestic demand, and decreased sales. • Mainly in the wholesale and retail trade, textile, construction and automotive sectors.
Norway	• Economic downturn and lack of demands.

The Scandinavian market, however, has been somewhat stable with stagnant growth rates though the main export market has fallen during the recent global credit crunch since 2007-08 (Keay 2012). There has not been any particular evidence showing the effect has been more pronounced in case of the textile-related sectors, but it is noticeable in Table 1.1 that out of the four Scandinavian countries only Sweden had its T&C industry listed among the predominant bankruptcy-facing sectors. From the Swedish central statistics (of Statistics Sweden) it is evident that the average number of Swedish textile and clothing (T&C) firms that went bankrupt during the recent crisis (2007-09) escalated two times compared to the average over 2000-10 (cf. Figure 1.4 – adapted from SCB database statistics[4]). For detailed statistics, see Appendix 1. In percentage, these were 9.9%, 4.36% and 5.57% consecutively since 2008 while it was merely 1% in 2007 (cf. appendix 1). Denmark had only around 40-50 fashion companies (all SMEs) that went bankrupt during the crisis.[5] However, overall the textile and clothing sectors in Denmark were the hardest hit in the crisis (with nearly 1550 companies, on an average, going bankrupt over 2008-09)[6] compared to Sweden's numbers of 449 and 199 SMEs those closed in the same period. The Norwegian textile and clothing manufacturers were, however, not that badly hit in terms of number of closures of enterprises.[7] On the other hand, the 1990's economic crisis

[4] Statistiska Centralbyrån (Statistics Sweden) http://www.ssd.scb.se/databaser/makro/start.asp?lang=2 (accessed 05.06.2012)

[5] http://pure.au.dk/portal-asb-student/en/studentprojects/scenarios-for-the-danish-fashion-industry-for-the-year-2015(bac2e27d-ef30-4873-b846-f82905631e32).html (accessed 07.08.2013)

[6] Statistics Denmark http://www.dst.dk/en/Statistik/emner/virksomhedernes-udvikling/konkurser.aspx (accessed 08.08.2013)

[7] Statistics Norway http://www.ssb.no/en/bedrifter-foretak-og-regnskap/statistikker/konkurs (accessed 08.08.2013)

was the toughest in the Swedish context when the business failure rate rose by 76%, with nearly 12% of the T&C firms going bankrupt in 1994-95. It was also evident that most of these firms were small with less than 50 employees.

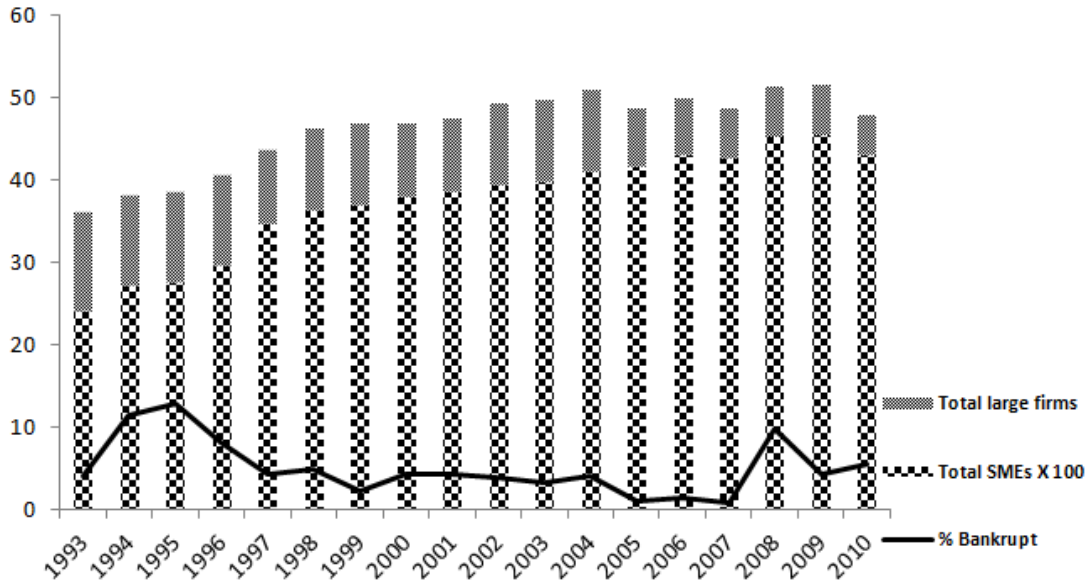


Figure 1.4. Bankruptcy Statistics of Swedish Textile and Clothing firms (1993-2010)

The global economic crises of 2007-11 created tremendous impact on the Swedish credit system for organizations, particularly SMEs, as nearly 10% of these firms went bankrupt in 2008 (cf. appendix 1). In 2007-12 the Swedish textile-related firms, particularly SMEs, were affected by intensified global competition, lack of demands and access to skilled labours, economic uncertainty etc. In a recent investigation by the Swedish Agency for Economic and Regional Growth[8], it was realized that the major obstacles to the growth of SMEs in 2011 were lack of access to skilled labour, laws and regulations and inter-firm competition.

The structural industrial statistics also showed considerable dip, as the net turnover reduced by 17.7% between 2007-10 while production value, value added, total assets all plummeted in these crisis years with losses incurred between 2007-09 (adapted from SCB Database[9]). Similarly in the 1990's economic crisis the statistics were congruently worse as the industrial statistics like market value, operating revenues, value addition plummeted by 23%, 24% and 20% respectively. Overall profits for the textile and clothing industries decreased from 419 MSEK in 2006 to consecutive three year losses of 387, 223 and 155 MSEK respectively till 2009, while the net turnover and total assets also reduced by 19.4% and 8% respectively, though no substantial dip was observed in other structural indicators. For details see Table 1.2. Compared to these structural changes in the Swedish T&C sectors, the Danish T&C manufacturers showed a dip in total turnover by 5.4% and 14.6% respectively over the periods 2007-08 and 2008-09 respectively.

[8] Tillväxtverket (Swedish Agency for Economic and Regional Growth) http://www.tillvaxtverket.se/download/18.3c075973137a2e9d3a825e/Opportunities+and+obstacles+to+growth+in+Swedish+SMEs.pdf (accessed 27.08.2012)

[9] Statistiska Centralbyrån (Statistics Sweden) http://www.ssd.scb.se/databaser/makro/start.asp?lang=2 (accessed 05.06.2012)

Table 1.2. Swedish industry statistics for textile and clothing sectors (2000-10) (all values in MSEK)

Years	Net turnover	Production value	Value added	Total assets	Gross investments	Net investments
2000	12048	11164	4095	11811	604	458
2001	12358	11448	4083	12023	456	379
2002	12279	11452	3973	11616	410	344
2003	12615	11490	4036	15097	382	283
2004	12365	11254	3878	16079	358	234
2005	11717	10851	3792	15812	372	174
2006	11925	10943	3845	15963	479	388
2007	11945	11098	3904	16426	383	341
2008	11449	10666	3783	18094	768	694
2009	9827	9144	3166	15010	275	230
2010	9830	9541	3611	9677	186	106

During the 1990-93 crises the repercussion was worse as the total operating revenue and value addition for the industries declined by 24% and 20.4%, respectively, though it picked up again in 1994 but did not reach the level before the crisis until 1997. See Table 1.3 below.

Table 1.3. Swedish industry statistics for textile and clothing sectors (1990-96) (all values in MSEK)

Years	Total operating revenues	Sales Value	Value added
1990	11559	10041	3921
1991	9771	8644	3489
1992	9279	8028	3247
1993	8778	7694	3122
1994	9657	8614	3418
1995	10292	9279	3593
1996	9896	8758	3496

It is thus evident that the Swedish textile-related SMEs faced substantial threat to their financial performances and ultimately to their survival at times of economic crises. In such a turbulent business climate effective functioning requires developing organizational capacity to survive, adapt and sustain them. This makes the concept of organizational resilience development highly contextual. Investigating the causes for high level of bankruptcy in firms during crisis and devising economic resilience to counter such trends has become a prerequisite in firms to be successful, and hence becomes the central investigation point in this thesis.

1.6. Research delimitations and limitations

In all researches some delimitation applies. First are the delimitations related to the scope of the thesis and these are mostly governed by resource and time constraints. Organizational resilience is a vast subject, particularly considering that the field of enquiry has much connection with the fields of organization theory, strategy and operations management. Bhamra *et al.* (2011) highlights that organizational resilience literature deals with topics or concepts related to organizational behavioural dynamics, capabilities, strategies, performances etc. From this perspective, the thesis however tries to provide a holistic processual view of the organizational resilience development mechanism. Considering the fact that the concept is broadened, time and resources constraints of the Ph.D. process somewhat forces the author to delimit the context. Thus the thesis concentrates on investigation of organizational resilience phenomenon only in case of economic crises. Hence, all the RQs address resilience from an organizational context only. A country-specificity is also enforced by

considering economic crises in Sweden or at least affecting Sweden in the last two decades, viz. (i) economic crisis between 1990 and 93, (ii) global credit crunch of 2007 and 09, and (iii) effects of 2012 European monetary crisis resulting in double- or triple- dip recession. The next delimitation is done in studying only the textile and clothing- related SMEs. Various researches on SME resilience as done in the special issue of International Journal of Production Research (Volume 49, Issue 18) called 'Creating resilient SMEs' highlight the fact that SMEs are different from large firms in a multitude of aspects, like resources availabilities, learning perspectives, strategies etc. and hence SME resilience must be studied separately before a comparison can be done. It should also be remembered that SME survival rate is particularly low, e.g. in countries like United Kingdom (Bolton 1971, Storey 1994) and this sufficiently requires further investigation. The firms studied in this thesis were all Swedish textile and clothing- related SMEs.

Next delimitation in this thesis was made in terms of the performance measure in focus. Considering the fact that resilience in firms during economic crisis is the central point of investigation, an economic or financial performance measure was used in quantifying resilience. Thus the author claims to adapt and use an economic resilience measurement tool for research. As the thesis adopts a processual approach based upon an outcome-based causation principle, such a measure of economic resilience is a very tangible indicator of organizational/business health. Practicality lies in utilizing a multivariate financial ratio for the purpose so author used annual reports of firms to extensively calculate Altman's Z-score (Altman 1968, Altman 2000) for indicating business health. A potential limitation in using annual reports as the base for collecting data for measuring organizational resilience could be that firms are known to tamper with financial data in order to attract prospective investors to finance their capital requirements and debt elimination, particularly in crises. Therefore, a proper scrutiny of the financial statements is essential. However, counteracting developments in the form of stricter regulations like GAAP1 in United States or the International Financial Reporting Standards (IFRS) have been devised to eliminate discrepancies in financial analysis. Since 2005, all companies registered in European Union (EU) have adhered to the new accounting standards. A similar study on increasing reliability on fair value accounting of IFRS for proper valuation of companies compared to national accounting regimes is provided by Vazakidis and Athianos (2010) in the Greek financial context.

Furthermore, due to the vastness of the topic of organizational resilience the author has considered only the factors internal to an organization in fostering resilience. Investigation of external factors like legislation, globalization or industrial changes, and their influences on SME resilience and competitiveness as highlighted in the study of Gunasekaran *et al.* (2011) are not considered here.

Some limitations also exist from the methodological and the theoretical perspectives of the research. Concepts of sustainable competitive advantages (SCA), critical success factors (CSFs) etc. for organizational success in turbulent times are proposed to be highly impactful as researched by Prahalad and Hamel (1990), Hamel and Prahalad (1994) and many others. Moreover, from the organizational dynamics perspective high reliability theory (HRT) (Weick 1993, Weick and Sutcliffe 2001) or sense-making (Weick 1995) etc. holds close relation with organizational resilience but have not been focussed in detail in this thesis. Also resilience development is truly an organizationally contingency concept as also highlighted by Sullivan-Taylor and Branicki (2011), but this theoretical perspective on resilience is considered to be beyond the scope of the frame of reference of the present thesis.

From the methodological perspective the thesis adopts mostly surveys and interviews as data collection methods and thus lacks direct observational study of the object reality (of organizations) through ethnographic field studies as suggested by Craighead *et al.* (2007).

In all, the author acknowledges all the delimitations and limitations of the present thesis and crafts out future research directions starting from these constraints, as mentioned in chapter 7.

1.7. Thesis Outline

Chapter 1 provides the background description of the thesis and presents the problem areas, research objectives and questions, followed by outlining the studied context and demarcations and finally highlighting the research delimitations.

Chapter 2 lays out the frame of reference regarding two main topics: organizational resilience and crisis strategic planning particularly in context to crisis. The underlying theoretical and conceptual foundations also include discussions on organizational resilience in SME context, health of business systems, organizational capabilities and strategies etc.

Chapter 3 compiles the methodological framework, research procedure and scientific reasoning of the paper. This chapter also highlights some of the fundamental theoretical and methodological foundations on which this research is based upon the ontological and epistemological assumptions, research approach, strategy and the research design.

Chapter 4 summarises the five appended papers supporting the present thesis. It shows how the papers are related to one another and to the research questions.

Chapter 5 analyses and discusses the results of the research papers along the frame of reference in response to the research questions and the overall research objective using multiple data analysis techniques along the processual framework.

Chapter 6 draws conclusion from the thesis in terms of the applicability of the crisis strategic planning framework in developing organizational resilience, along its academic and managerial implications.

Chapter 7 suggests areas for further research by using the delimitations and the limitations stated in this thesis as the starting points.

2. Frame of reference

The purpose of the frame of reference is to give insight into the related literature and research in the field. Academic papers like the ones appended here are more constricted to the research question. So the frame of reference provides a more comprehensive explanation of the underlying theoretical and conceptual foundations. In this regard, the thesis discusses two perspectives under the frame of reference, viz. (i) organizational resilience, and (ii) crisis strategic planning, particularly in crisis context. In the end, few other approaches and theories are discussed very briefly.

The topics considered in this thesis are several and these can be categorized under different research fields and domains like organizational resilience, strategic management, crisis management and business continuity, dynamic capabilities, organizational learning, corporate finance and more. To a large extent these topics or fields supplement each-other and have been discussed extensively in extant literatures. For example, strategic management, crisis management and business continuity studies have been unified under common frameworks like the integrated strategic management model (Preble 1997), the strategic and operational agility frameworks by Ismail *et al.* (2006) and Ismail *et al.* (2011), the business continuity management (BCM) approach encompassing strategic precursors by Herbane *et al.* (2004) etc. These have been discussed in connection to organizational resilience capacity as discussed by Vargo and Seville (2011) or under the strategic agility framework of Ismail *et al.* (2011). Similarly the resource-based view (RBV) of firms justifies how competitive advantage can be achieved through possession and allocation of various assets and resources and has been discussed in connection to how can these be effectively deployed by utilizing the dynamic capabilities and are instrumental in leading to resilience development (Prahalad and Hamel 1990, Grant 1991a, Grant 1991b, Eisenhardt and Martin 2000). In connection to this, Lengnick-Hall and Beck (2005) highlighted the integrative view of both environmental conditions (disruptive event) and organizational capabilities in shaping a firm's response and hence resilience capacity. The present research positions itself within this overlapping cross-disciplinary domain. The components of the utilized framework in this thesis have adopted theories, concepts and models predominantly from the domains of organizational resilience and crisis strategic planning. As very little research has been conducted on crisis strategic planning, the literature review on this topic covers ideas from strategic management, crisis management and business continuity management and focusses on their inexorable linkage. A detailed literature review on organizational resilience has also been conducted to highlight various concepts and definitions related to it.

The various sections in this chapter can be divided into two main areas: (i) organizational resilience and (ii) crisis strategic planning. The sub-topics covered under this structure according to the resilience development process framework diagram prescribed here are, viz. (i) SME resilience, (ii) organizational resources and capabilities, (ii) organizational strategic initiatives, and (iv) organizational health (cf. Figure 2.1).

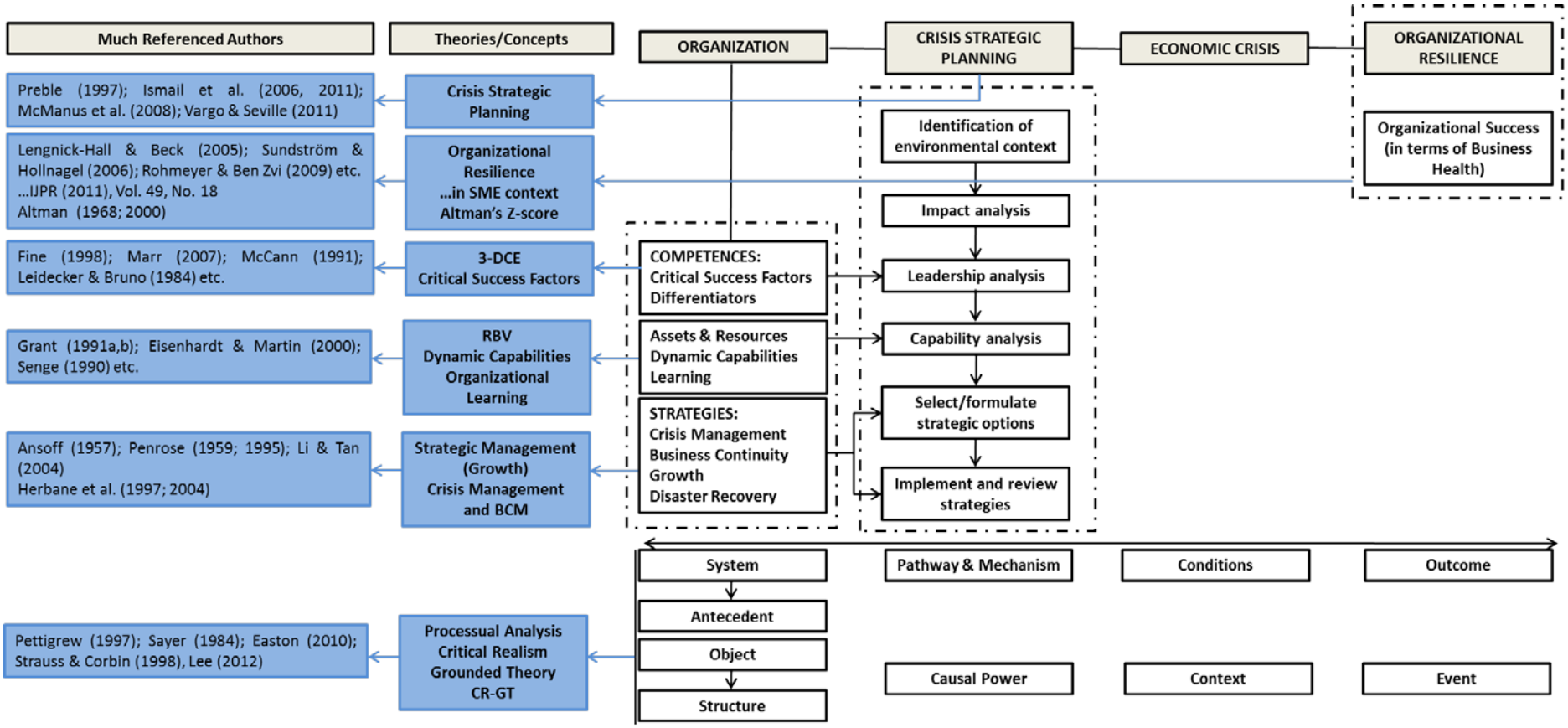


Figure 2.1. Related theories, concepts and extant literatures in the frame of reference

2.1. Organizational Resilience

Resilience has emerged as a critical characteristic of complex, dynamic systems in a range of disciplines till it recently emerged strongly into the business literatures and management studies like in Christopher *et al.* (2003), Hamel and Välikangas (2003), Christopher (2004), Sheffi (2007) and many others. It has increasingly become a multi-dimensional and multi-disciplinary concept (Ponomarov and Holcomb 2009), however still inadequately theorized (Sutcliffe and Vogus 2003). As Madni (2007) states, resilience has become a semantically overloaded term, meaning somewhat different things in different fields (Madni and Jackson 2009). Some authors have focussed on the corporate attributes that yield resilience, understanding its drivers and how to sustain it like Weick and Sutcliffe (2007), while some have aimed at expanding the concept as done by Falasca *et al.* (2008) and Pettit *et al.* (2010). Furthermore some have incorporated its concept in supply chain designing like Sheffi (2007) or looked into its customer-centric perspectives e.g. Gulati (2010). Different schools of thought have looked into resilience as a company's ability to either continuously anticipate or react fast to the trends and turbulences. According to Hamel and Välikangas (2003) companies need to dynamically reinvent or renew their business models and strategies as circumstances change – to attain zero traumas and this forms the core for building an organization's strategic resilience.

To provide a holistic view of these diverse and inter-disciplinary viewpoints, yet identify the conceptual content of the field, Table 2.1 is proposed. It classifies various schools of thought related to multiple facets of resilience into two broad divisions, viz. (i) resilience as a *super material*, corroborating the abilities to absorb and recover (Meyer 1982, Wildavsky 1988) theorizing organizational adjustments by developing protective or reactive factors and processes, and (ii) resilience as the capacity for adaptability (Levinthal and March 1981, Levinthal and March 1993, Weick *et al.* 1999, Eisenhardt and Martin 2000), positive functioning (Luthar *et al.* 2000) or competence (Weick *et al.* 1999) required for proactive anticipation and/or adaptation (Sutcliffe and Vogus 2003).

Table 2.1. Different definitions and facets of resilience

Authors	Definition	Different facets of resilience
1. Super material; 2. Developmental perspective: adaptability, positive functioning, competence; 3. Ability to absorb/withstand; 4. Ability to recover		
Hamel and Välikangas (2003)	**Strategic resilience:** Ability to dynamically **reinvent** business model and strategies as circumstances change	Developmental perspective: adaptability, positive functioning, competence
Lengnick-Hall and Beck (2005)	**Resilience capacity:** Unique blend of cognitive, behavioural, and contextual properties that increase a firm's ability to understand its current situation and to develop a customized response	Developmental perspective: adaptability, positive functioning, competence
Sutcliffe and Vogus (2003)	Resilience refers to the maintenance of **positive adjustment** under challenging conditions	Developmental perspective: adaptability, positive functioning, competence
Madni (2007), Madni and Jackson (2009)	*The many faces of Resilience:* **Avoid (Anticipate)**[2], **Withstand (Absorption)**[1,3], **Adapt to (Reconfiguration)**[2], **Recover from (Restoration)**[1,4]; *Resilient system vision:* Operational environment, Detect/**Learn**[2], **Adapt/Act**[2]; *Conceptual Framework for resilience engineering:* System Resilience affected by disruptions, enabled by system attributes, associated with methods and measured by metrics	As a super material[1] Developmental perspective: adaptability, positive functioning, competence[2] Ability to absorb/withstand[3] Ability to recover[4]
Reinmoeller and Baardwijk (2005)	The ability to **self-renew** over time by innovation	Developmental perspective: adaptability, positive functioning, competence

Continued…

Authors	Definition	Different facets of resilience
Woods (2006)	Resilience is how well a system recognizes and **adapts** to handle unanticipated perturbations (those perturbations that are outside the design envelope	Developmental perspective: adaptability, positive functioning, competence
Starr *et al.* (2003)	Enterprise Resilience is the capacity or ability to **withstand**[3] system discontinuities and **adapt**[2] to new risk environments	Developmental perspective: adaptability, positive functioning, competence[2] Ability to absorb/withstand[3]
Hale and Heijer (2006)	Resilience is flexibility, **ability to cope** with unexpected and unplanned situations	Developmental perspective: adaptability, positive functioning, competence
Westrum (2006)	Resilience is to (i) **prevent**[2] something bad from happening (ii) **prevent**[1] something bad from becoming worse (iii) **recover**[1] from something bad once it has happened	As a super material[1] Developmental perspective: adaptability, positive functioning, competence[2]
Seville *et al.* (2006)	A resilient organization is still able to **achieve its core objectives** in the face of adversity	Developmental perspective: adaptability, positive functioning, competence
Walker *et al.* (2006)	The amount of disturbance a system can **absorb** without shifting into an alternate regime	Ability to absorb/withstand
(2011)	Ability to absorb disturbances, to be changed and then to **re-organise**[2] and still have the same identity (retain the same basic structure and ways of functioning Ability to **absorb**[3] disturbances, to be changed and then to re-organise and still have the same identity (retain the same basic structure and ways of functioning A resilient system is forgiving of external shocks. As resilience declines the magnitude of a shock from which it cannot **recover**[4] gets smaller and smaller	Developmental perspective: adaptability, positive functioning, competence[2] Ability to absorb/withstand[3] Ability to recover[4]
Woods and Cook (2006)	How well the system **adapts** and to what range or sources of variation	Developmental perspective: adaptability, positive functioning, competence
Gunderson (2000)	Amount of disturbance that an ecosystem could **withstand without changing** self-organized processes and structures/without changing state	Ability to absorb/withstand[3]
Gunderson *et al.* (2002)	Engineering Resilience is the time the system takes to **return** to a global equilibrium following a disturbance. Ecological resilience is the amount of disturbance that a system can **absorb** before it changes state	As a super material[1]
Jackson (2007)	System Resilience is the ability of organizational, hardware, and software systems to **mitigate**[1] the severity and likelihood of failures or losses, to **adapt**[2] to changing conditions, and to respond appropriately after the fact Resilience is the **ability to survive**[3] disruptions without a breakdown in performance	As a super material[1] Developmental perspective: adaptability, positive functioning, competence[2] Ability to absorb/withstand[3]
Nathanael and Marmaras (2006)	Resilience engineering aims to enhance the ability of a complex socio-technical system to **adapt**[2] or **absorb**[3] disturbance, disruption, and change	Ability to absorb/withstand[3] Developmental perspective: adaptability, positive functioning, competence[2]

Continued…

Authors	Definition	Different facets of resilience
Kendra and Wachtendorf (2003)	Ability to sustain a shock without completely deteriorating; that is, most conceptions of resilience involve some idea of **adapting to**[2] and '**bouncing back'**[4] from a disruption	Developmental perspective: adaptability, positive functioning, competence[2] Ability to recover[4]
Axelband and Valerdi (2007)	The attribute of a system of systems that makes it less likely to experience failure, and more likely to **recover** from failure	Ability to recover
Pariès (2006)	Intrinsic capacity of an organization to **recover** to a stable state (initial or new), allowing it to continue operations after a major mishap or in presence of continuous stress	Ability to recover
Grote (2006)	Resilience is an adequate balance between stability and flexibility that allows for **adaptations** without losing control	Developmental perspective: adaptability, positive functioning, competence
McDonald (2006), Pavard *et al.* (2006)	Resilience is "capacity of an organizational system to anticipate and manage risk effectively, through appropriate **adaptation** of its actions, systems, and processes, so as to ensure that its **core functions** are carried out in a stable and effective relationship with the environment"	Developmental perspective: adaptability, positive functioning, competence
Sundström and Hollnagel (2006) Hollnagel (2006)	Resilience is an organization's ability to **adjust** effectively to the multifaceted impact of internal and external events over a significant time period and to deal with unexpected and disruptive events and understand their long term impact An organization's ability to efficiently **adjust** to harmful influences rather than to shun or resist them (in a systemic model)	Developmental perspective: adaptability, positive functioning, competence
Fiksel (2003), Fiksel (2006)	Resilience can be defined as the capacity of a system to tolerate disturbances while retaining its structure and function. More specifically, in the business context, enterprise resilience is defined as the capacity for an enterprise to survive, **adapt**, and grow in the face of turbulent change	Developmental perspective: adaptability, positive functioning, competence
Carpenter *et al.* (2001)	Resilience is related to **self-organization** and **adaptive capacity**	Developmental perspective: adaptability, positive functioning, competence
Gaddum (2004), Rohmeyer and Ben Zvi (2009)	Resilience is the ability of an organization's business operations to **rapidly adapt** and respond to internal or external dynamic changes... and continue operations with limited impact to the business	Developmental perspective: adaptability, positive functioning, competence

Some of the definitions in Table 2.1 (Column 2) fall under more than one category and the words/phrases are emphasized in bold letters to guide the reader to identify the similarities and differences among these. Among the existing researches or literatures only Madni (2007) and Madni and Jackson (2009) highlight all these facets of resilience together. Such a lack of a holistic view of different facets of Ores somewhat hinders the criticality in looking into organizational *resilience capacity* as firms' responses to the environmental conditions or disruptive events by modulating organizational capabilities as highlighted by Lengnick-Hall and Beck (2005).

Author further believes that one of the most comprehensive 'resilience response' perspective is provided by Madni and Jackson (2009) and incorporates it in developing the view towards organizational resilience. From the resilience engineering perspective, ORes deals with the ability to circumvent disruptions through proactive anticipation, absorb/withstand them through system robustness, adapt and learn through reconfiguration (of organizational design) or reactively recover from them as shown in Figure 2.2.

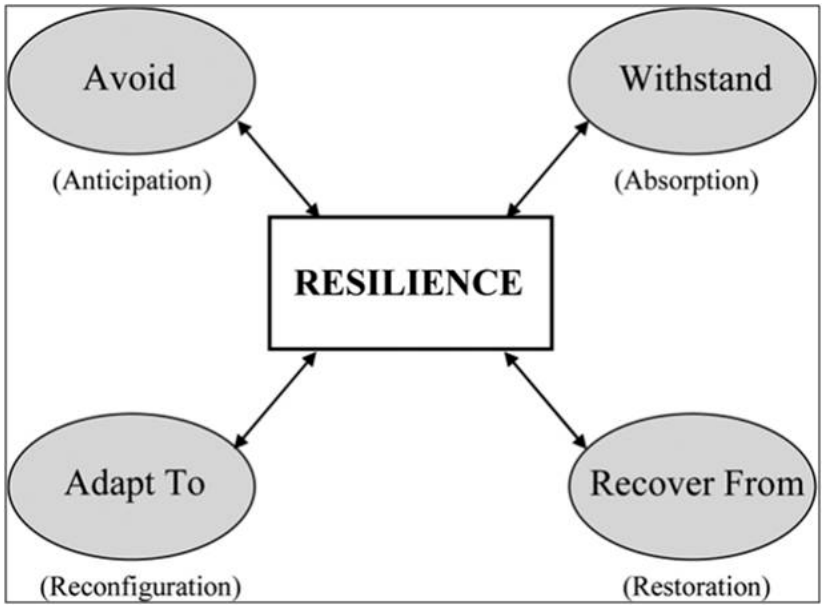


Figure 2.2. Different facets of resilience development (Madni and Jackson 2009)

This describes the different facets of resilience as follows: (i) avoidance – preventive aspects of resilience based on anticipation, (ii) survival – ability to withstand or adapt to disruptive events both passively and actively, and (iii) recovery – ability to survive major disturbances with reduced performance. Along similar lines, Gibson and Tarrant (2010) illustrate the four resilience strategies, viz. resistance, reliability, redundancy and flexibility contributing to resilience. The *resistance strategies* aim at improving robustness of organizations to withstand disturbances, *reliability strategies* aim at recovering from disturbances, *redundancy strategies* are usually designed to manage foreseeable volatilities (similar to anticipating and avoiding disturbances), while the *flexibility strategies* enable the organizations to adapt to extreme circumstances. This construct of an organizational resilience framework actually supports what Diamond (2005) thinks as the reasons for societal collapse based on failure to anticipate a problem before its arrival, failure to perceive it when it has actually arrived or failure to solve it after being perceived.

The above mentioned issue unfolds two important discussions addressed in this thesis: (i) how to measure and monitor organizational resilience considering its various facets, and (ii) how to develop a multi-strategic response repertoire in organizations to hone resilience development in crises. A processual approach as adopted in this thesis explains what attributes lead to resilience merit and how can it be achieved thus emphasizing resource engagement the multi-strategy based developmental process (cf. Figure 3.1). However considering the focus of this thesis is on SMEs, organizational resilience in an SME context needs sufficient review at first 2.1.1.

2.1.1. Organizational Resilience in an SME context

Research has found out that SMEs suffer the most in times of crisis and are the least prepared of all organizations (Ingirige *et al.* 2008). Compared to large organizations, SMEs have different operating environment and are more sensitive to financial fluctuations and cash flow, legislation, technology changes and changing customer demands and even political instabilities (Bhamra and Dani 2011). SMEs however do have some advantages over large firms as they are more flexible, closer to customers and are more efficient in their resource deployment (Carlsson 1989).

Yet resilience research from the SME perspective is under-explored (Runyan 2006) and references to ‘crisis management’, ‘business continuity management’ or ‘disaster recovery’ in key small business journals are considerably less (Herbane 2010b, Sullivan-Taylor and Branicki 2011). In this context,

Table 2.2. summarizes the special issue of International Journal of Production Research (Volume 49, Issue 18) called 'Creating resilient SMEs' to provide the readers a summary of a wide range of articles that represent a breadth of issues affecting and influencing SME resilience.

Table 2.2. Summary of articles in International Journal of Production Research (Volume 49, Issue 18)

Articles in journal order	Summarized findings
1. Bhamra *et al.* (2011)	1. Provides the perspectives, concepts and methodologies adopted so far in resilience literatures; mostly 'theory-building' with lack of empirics (lack of surveys) and resilience topics related to behaviour and dynamics (less on capabilities, strategies and performance) 2. Provides conceptual linkages between vulnerability, resilience and adaptive capacity, with vulnerability as the overarching concept; Also of resilience as a function of system vulnerability and adaptive capacity
2. Demmer *et al.* (2011)	1. In-depth case study of Demmer Corporation (B2B automotive supplier) 2. Antecedents/drivers of resilience for large enterprises based on Hamel and Välikangas (2003), Reinmoeller and Baardwijk (2005) 3. Additional potential factors engendering resilience in SMEs: role of top management in innovation; mission-focused flat organizational structure; robust strategic planning process; need of a clear enterprise strategic map; partnering with customers in product development; invest in HR 4. Resilience antecedents clustered into 2 stages viz. Stage 1. Founding renewal Stage 2. Executing renewal by partnering with optimization
3. Li *et al.* (2011)	1. Identified growth strategies and resilience models for Japanese electronics manufacturing SMEs 2. Highlighted 3 growth options: *BTD (generic expansion)* through market expansion; diversifying product portfolio into other industries and improve knowledge; re-organize supply chain *Transformation* through mergers and acquisitions (M&As) to push firm boundary *Diversify* through strategic alliance and networks, forward/backward integration along value chain, diversify/expand product range, expand capabilities 3. The Japanese EMS SMEs achieve growth and hence resilience at crises times through (i) re-organization of manufacturing supply chains through Keiretsu melt-down, (ii) gaining bargaining power to achieve economies of scale through acquisitions, (iii) adopting IT technology to achieve lean and increase responsiveness to market changes
4. Kumar and Sosnoski (2011)	1. Adds clarity to an important tax issue and decrease SME's exposure to double taxation and tax penalties for global SME operation 2. An integrated decision framework for transfer price compliance and selection of appropriate transfer price methods was developed and applied to a global SME operation 3. Creates a seamless flow within SME supply chain helping them to become more resilient 4. Help the related tax authorities by informing managers of tax regulations in the US and what is required to comply with the regulations
5. Kumar *et al.* (2011)	1. Proposed a four phased 12-step Six Sigma Implementation framework customized for SMEs 2. Commitment (of senior management teams), leadership, culture and communication of information plays key role in all phases for successful implementation of Six Sigma
6. Ismail *et al.* (2011)	1. Resilience occurs as a result of the implementation of both operational and strategic capabilities (agility) 2. SMEs are flexible encouraging the adoption of agility but they lack resources and capabilities 3. Multi-strategy implementation through operational and strategic flexibilities (following Ansoff matrix) by SMEs develops 'strategic readiness' to make them more resilient
7. Gunasekaran *et al.* (2011)	1. Key factors influencing resilience and competitiveness of SMEs are grouped into internal, external and enabling factors 2. Location and marketing, and quality are not considered as competitive advantage by SMEs; human resource (HR) and knowledge management (KM) needs attention 3. SMEs need market access and financial resources (capital) for enabling resilience 4. Use of technology (EDI, IT, ERP, etc.), managerial characteristics and organizational structure positively influences SME resilience
8. Thun *et al.* (2011)	1. SMEs did not consider themselves more vulnerable compared to large firms 2. Major risk drivers for SMEs are complexity (globalization) and efficiency (lean production and single sourcing) 3. SMEs deal with risks using reactive instruments like redundancy (over-production and safety stocks)

Continued…

Articles in journal order	Summarized findings
9. Acquaah *et al.* (2011)	1. Identifies the relationship between manufacturing strategy (delivery, flexibility, cost, & quality) and competitive strategy (cost leadership and differentiation), and the relationship between manufacturing strategy and performance (sales growth and profitability) for both family and non-family firms 2. For studied family firms (i) delivery strategy is related to cost-leadership, (ii) flexibility is related to differentiation, (iii) delivery strategy is related to both sales growth and profitability, (iv) cost manufacturing strategy is related to cost-leadership 3. For non-family firms (i) flexibility is associated with cost-leadership, (ii) flexibility is associated with profitability, (iii) cost manufacturing strategy is related to cost-leadership
10. Chan (2011)	1. Viability of the system-in-focus is based on corporate credibility and autonomy-control issues related to self-maintenance of organizations 2. Proposed approach of combining VSM and MCDA helps management to make organizational resilience decisions by evaluating various structural arrangements for achieving the best adaptation model for maximum viability in a changing business environment
11. Sullivan-Taylor and Branicki (2011)	1. Resourcefulness is a key barrier for SMEs in terms of establishing priorities (due to lack of consistent information from government etc., lack of balance of responsibility and accountability between firm, emergency services and government, lack of cash flow and resource) 2. Technical systems are not a key focus 3. SMEs prefer muddling through approach to make decisions based on reactivity and less on preparedness 4. SMEs are rapid in decision making due higher intra-organizational relationship and their small size and flatter management structure
12. Burnard and Bhamra (2011)	1. Focusses on detection and activation of organizational response to disruptive event by establishing a conceptual base for organizational resilience 2. Outlines the background literature related to resilience and presents a working definition along with the implications of resilience on SMEs
13. Ates and Bititci (2011)	1. SMEs: view change and culture management separately, lack attention to people and organizational aspects of change, have centralized decision making by command and control culture undermining quick decision-making and change implementation, have employees with lesser freedom to make decisions, lack planning and preparation phases of change, lack readiness/pro-activeness for changes, and show little attention to relationship management with key partners and shareholders 2. Enablers of SME resilience: softer aspects of change management; planning, preparation and embedding phases of change processes; strategic and long-term view of change and drive change internally and proactively; more relationship and communication with key customers, suppliers and competitors
14. Vargo and Seville (2011)	1. To be resilient in crises, organizations need to juxtapose *effective planning* with *adaptability* to bridge strategic planning and crisis management and propose crisis strategic planning as the way of creating resilient planning processes 2. The four enablers of effective crisis strategic planning are leadership, culture, decision making and situation awareness 3. Four types of resilience proposed viz. (i) latent resilience – low levels of planning and adaptability, (ii) planned resilience – low level of adaptability but high level of planning, (iii) ad hoc resilience - high level of adaptability but low level of planning, (iv) dynamic resilience - high levels of adaptability and planning

To a large extent the above findings support the difference in view towards organizational resilience in case of SMEs compared to large organizations. According to Bolton (1971) and Storey (1994), operational contexts of SMEs are fundamentally different and they cannot be seen as scaled down versions of larger firms thus making resilience an organizationally contingent concept as 'one size' does not fit all types of organizations (Sullivan-Taylor and Branicki 2011). For example, resource scarcity in terms of lack of finance or technological and human resources (as opposed to large firms) is a key issue in SMEs hindering their resilience development (Kirchhoff 1994, Vossen 1998, Van Gils 2005, Sullivan-Taylor and Branicki 2011). Ghobadian and Gallear (1997) also highlighted factors like insufficient forward planning, lack of investment and cash flow, lack of business experience and innovation etc. to be limiting SME success and are considered to be prime reasons for low SME survival rate (Storey 1994).

However, SMEs are better in reactive approaches towards turbulences owing to higher flexibility, adaptation and responsiveness through rapid decision-making, little bureaucracy, rapid and effective internal communications, shorter decision chains, capacity for fast learning etc. (Vossen 1998, Stokes 2002). From the change management perspective, Antony *et al.* (2008) highlighted that SMEs have strength in flexibly adapting to change by maintaining a closely integrated relationship with customers, partners and shareholders thus being more responsive to market demands. However they clearly lack of strategic planning and a focus on short-term benefits during the decision-making process which may limit the ability to respond effectively.

Moreover, Sullivan-Taylor and Branicki (2011) in their study have showed that SME managers prefer to take reactive actions by 'muddling through' rather than being prepared for them. In particular, SMEs lack necessary skills to pursue long-term proactive and strategic changes to foster resilience due to their fire fighting approaches (Bergman *et al.* 2006, Trim and Lee 2008). Lack of proactive approach towards threat detection is a serious drawback in SMEs resulting in a lack of knowledge retention through flexible workforce, strategic thinking and top management support and technology even though they are good knowledge creators (Levy *et al.* 2003). Typically due to their small size and resource constraints, SMEs are better able to create resilience if they can engage in strategic thinking and planning hence build 'strategic readiness' (Ismail *et al.* 2011). Such an agility perspective to SMEs both along operational and strategic levels can render substantial proactiveness and develop more structured strategic and predictive behaviours. This is essential to match *adaptive resilience* based on adaptation strategies to *planned resilience* developed through planning and thus form the basis of crisis strategic planning (Sullivan-Taylor and Branicki 2011, Vargo and Seville 2011). Even though SMEs regard strategic thinking and planning to be vital for developing resilience in practice there is very little evidence to it (Stonehouse and Pemberton 2002).

SME success depends upon several external and internal factors like (i) policy enhancement at the government level, (ii) simplification of legal and regulatory environments, (iii) improvement in access to finance, (iv) simplified taxation, (v) improved information and communication technology, (vi) enhancement of science, technology and innovation for development, (vii) higher internationalisation, (viii) improvement in business development services, and (ix) strengthened public/private dialogue (Gunasekaran *et al.* 2011). While at the strategic level, Kitching *et al.* (2009) highlighted the need to understand its influence on achieving resilience and hence long term business performance. Competitiveness of SMEs thus depends on several resilience antecedents and ways to channelize them in a globalized environment. This opens up the discussion on crisis strategic planning to highlight both operational and strategic issues along both reactive and proactive approaches.

2.1.2. Measuring Organizational Resilience

Measurement of resilience is a key requirement within organizations and communities based upon development of tools and methodologies to analyse, measure and monitor it in organization's operating environment (Dalziell and McManus 2004). This is essential to model and predict the short and long-term effects of change and operational management decisions on resilience (Woods and Hollnagel 2006). Dalziell and McManus (2004), on the other hand, emphasized the key requirements of the measurement scheme as development of effective methodologies for evaluating resilience and strategies, development of a common terminology to facilitate resilience prioritization and finally development of metrics for evaluating resilience so that it is both meaningful to decision makers and directly relevant to the overall goals and objectives of the organization.

Along the time dimension of resilience based on different phases of disruptive events as illustrated by Sheffi and Rice (2005), the most significant resilience metrics are demonstrated by recovery time – time taken by an organization to overcome a disturbance and return to its normal state, level of recovery – recover to a level lower, same or higher than the original level, or in terms of level of vulnerability to potential disturbances (Sheffi and Rice 2005, Sheffi 2007, Erol *et al.* 2010).

Following this there has been some work on quantifying the methodology and the resilience indicators and prescribing resilience maturity models. One of the key researches among these was carried out by the group Resilient Organizations in Auckland, New Zealand[10] aimed at developing a resilience measurement tool. The aim of this tool is to benchmark organizational resiliency by measuring and comparing one organization against another in terms of situation awareness, management of keystone vulnerabilities, and adaptive capacity (McManus 2008). This is because prior researches by the group revealed clear linkage between an organization's resilience and their business performance in terms of cash flow, profitability and return on investment (ROI) (McManus *et al.* 2007, McManus 2008). The resilience measurement tool produces resilience scores for each dimension and indicator of organizational resilience as well as an overall score for providing organizations a better picture of how resilient they are in comparison to other businesses so that they can address their weaknesses and plan on leveraging their strengths in crisis (Stephenson *et al.* 2010a, Stephenson *et al.* 2010b).

Yet another resilience research group called the Centre for Resilience in Ohio State University have launched an internet-administered tool called Supply Chain Resilience Assessment and Management (SCRAM™) aimed at resilience assessment and modelling. The tool is used to identify potential resilience gaps and to simulate different vulnerability scenarios in order to maintain profitability and avoid lost sales in organizations[11]. The conceptual base of the assessment tool is based upon identifying seven vulnerability factors (composed of 40 specific attributes) and 14 controllable capability factors (composed from 71 resilience facilitating attributes) followed by theoretical linkages, correlations and focus group connections to identify specific linkages for improving resiliency (Pettit 2008, Pettit *et al.* 2010).

Though some extant literature can be found studying and relating knowledge-based theory or resource-based view (RBV) of firms to resilience development or firm growth, but the complexities of studying resilience development process as an outcome of firm growth and sustenance and their underlying strategies using certain growth indicator has been sparse. This could be attributed to multiple reasons. First, growth is a multi-faceted phenomenon having different determinants and effects (Davidsson *et al.* 2007). So studying or relating resilience to indicators of firms' growth is subjected to a) the choice of a pertinent multiple indicator index, b) the use of alternative measures separately, and c) finding the best indicator (Davidsson *et al.* 2007). Space precludes a detailed discussion on how should growth be assessed in firms but it is evident that the use of a multiple-indicator index makes the best sense (Davidsson 1991). It is also advised that researchers should think seriously about the growth indicator that best matches their theory, research question, and type of firms. From this perspective, Sundström and Hollnagel (2006) mentioned that, *'some properties are not directly observable, the property of resilience being among these.'* So it is important to relate ORes to more tangible and measurable organizational aspect for assessing overall financial 'health'.

From the system's theory perspective, organizations are open systems that interact dynamically either among themselves or with the surrounding environment in order to achieve certain business goals to determine the 'health' (Bertalanffy 1952); viz. shareholders value, profitability and customer equity. Organizations that are able to successfully achieve the stated business goals and meet the risks will enjoy a *healthy* business state, while they enter into an *unhealthy* state by slipping from their goals thus incurring losses in terms of their objectives. They further slip into a *catastrophic* state if the system behaves in such a way that either one or more elements of the system, or the overall system, ceases to function (adapted from Sundström and Hollnagel (2006) as shown in Figure 2.3). Such phenomena are more common in major crises or turbulences leading to risky behaviour where the organization makes a negative transition into the *unhealthy* or *catastrophic* state even though organizations can make negative transitions in *healthy* state, as well, when they are unable to fulfil the objectives of day-to-day operations. Another type of transition is when companies make timely

[10] For more information cf. www.resorgs.org.nz (accessed 09.01.2013)
[11] For more information cf. http://resilience.osu.edu/CFR-site/scram.htm (accessed 09.01.2013)

effective recoveries to bounce back after slipping to an *unhealthy* state (Sutcliffe and Vogus 2003, Sundström and Hollnagel 2006). Organizations can however show proactive or reactive feed-forward behaviour by anticipating or responding to the risks and taking necessary actions to deal with them (Weick and Roberts 1993, Weick *et al.* 1999).

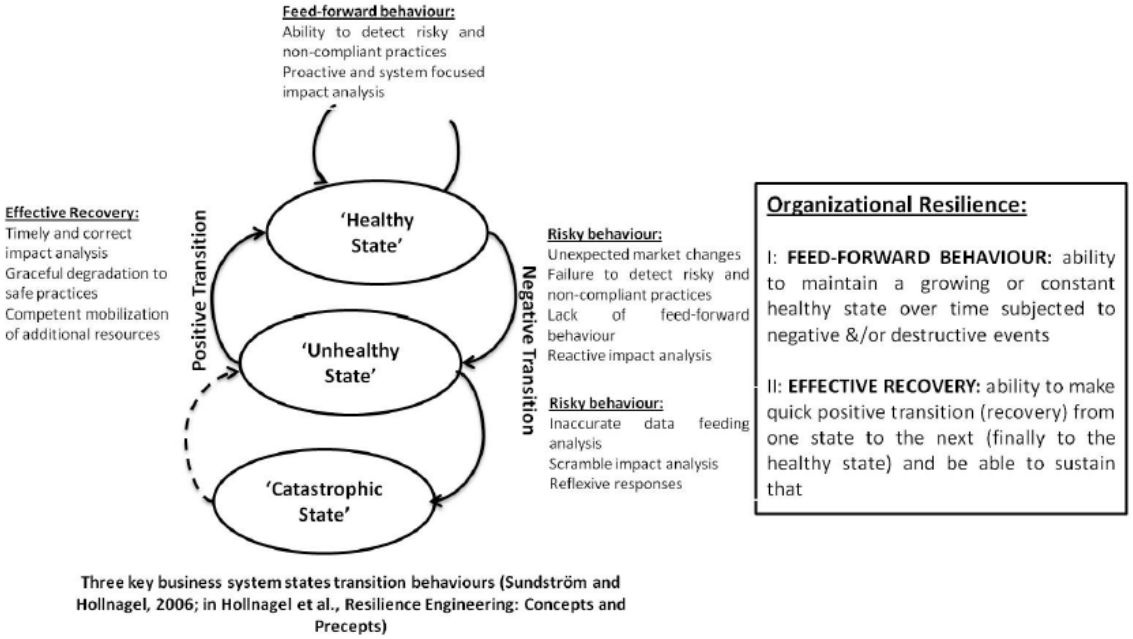


Figure 2.3. Key business system states and transition behaviours (cf. paper 2)

Evidently, these positive transitions (feed-forward behaviour and effective recovery) have much to do with the concept of organizational resilience that is finding an increasing emergence in organizational theory. The fundamental perspective of adaptive resilience capability revolves around either creating the ability to recover or bounce back from turbulences quickly (through effective recoveries), or anticipate the possible adverse changes or challenges for the organization in advance and prevent them (readiness) or to develop the characteristics or capacity to absorb or respond to the adversities (responsiveness) (feed-forward behaviour) (Sheffi and Rice 2005, Seville *et al.* 2006, Westrum 2006, Ponomarov and Holcomb 2009).

Financial theorists, in this regard, have suggested that organizations rebound in different ways, as recession ends. This can be either steep recovery following a deep recession (V-shaped), or gradual slide down followed by a gradual slide up (U-shaped), or temporary recovery driven by government or other stimulus followed by a 'double-dip' recession (W-shaped), or prolonged period of virtually zero-growth (L-shaped) (Riley and Dart 2009, Olson 2010). However, this way of defining business 'health' needs clearer interpretation as it is highly qualitative and no definite boundary exists in describing an organization to be in a *healthy* state or not.

From the perspective of economic viability used as a measure of organizational success, Sundström and Hollnagel (2006) considered profitability, liquidity and solvency as the most significant indicators. Beaver (1966) and Deakin (1972) used univariate analyses of a set of key financial ratios to predict corporate distress either represented by bankruptcy, bond default, or non-payment of a preferred stock dividend. Similarly, Andrade and Kaplan (1998), Brown *et al.* (1993) and others, interpreted financial distress, in various ways, in terms of business health (illness) requiring corrective actions in order to overcome them. In many other ways, financial distress has been used to predict business health, as was done by Opler and Titman (1994) defining financial distress to be affecting the relationship between debt-holders and non-financial stakeholders, or as Gestel *et al.* (2006) characterized financial distress to lead to disproportionate increase in liabilities accompanied by a shrinkage in the asset value or as Hendel (1996) defined it on the basis of reduced level of liquid

assets and credit availability. Gordon (1971), on the other hand, considered financial distress as the situation when the amount of debt exceeds the company's total assets, while Purnanandam (2005) determined it to be an intermediate state between solvency and insolvency. Other researchers, like Gilbert *et al.* (1990) have characterized financial distress by negative cumulative earnings over at least a few consecutive years, losses, and poor performance with bankruptcy as one of the possible outcomes of it, while Denis and Denis (1995) identified financial distress when a company experiences losses (negative pre-tax operating income or net income) over at least three consecutive years. Asquith *et al.* (1994), on the other hand, chose the interest coverage ratio in order to define financial distress. A firm is classified as distressed if in any of the two consecutive years its EBITDA is lower than 80% of the firm's interest expense, while Whitaker (1999) used the measure of cash flow and market value of the company in order to identify when a firm enters into financial distress.

However, such univariate predictors of corporate distress and in turn financial health have their own limitations. Such single ratios, firstly, do not capture a time variation; secondly, single ratios may give inconsistent results if different ratio classifications are applied for the same firm, thirdly, many accounting variables are highly correlated, so that the interpretation of a single ratio in isolation may be incorrect (Keasey and Watson 1991, Cybinski 2003). Thus single ratios are not able to capture multidimensional interrelationships within the firm. Whitaker (1999) also criticized the determination of financial distress in terms of a single event. A careful consideration of the weaknesses of Beaver's univariate model has led to the development of the Z-Score by Altman, which is based on the multiple discriminant analysis (MDA) (Altman 1968, Altman 2000).

The Altman's Z-Score includes factors considering the working capital, total assets, retained earnings, profitability, shareholder's equity, total liabilities and total sales, all in one index, cumulatively effecting economic viability of an organization. Such a MDA technique as proposed by Altman (1968) and Altman (2000) (called the Altman's Z-score) underpins the practicality of relating health of business systems as *healthy*, *unhealthy* or *catastrophic*, in terms of the Z-score. The score is a predictive measure of bankruptcy potential of firms that cumulatively affects the economic viability of an organization. This indicator of business growth is characterized by five practical financial ratios viz., (i) working capital/total assets measuring liquidity, (ii) retained earnings/total assets measuring leverage or cumulative profitability, (iii) earning profits/total assets measuring profitability or operating efficiency, (iv) shareholder's equity/total liabilities measuring solvency, and (v) sales/total assets measuring capital-turnover ratio (cf. Figure 2.4).

Altman's Z' Score Bankruptcy Model:

$Z' = 1.2T_1 + 1.4T_2 + 3.3T_3 + 0.6T_4 + 0.999T_5$ (for public firms)

$Z' = 0.717T_1 + 0.847T_2 + 3.107T_3 + 0.420T_4 + 0.998T_5$ (for private manufacturing firms)

$Z'' = 6.56T_1 + 3.26T_2 + 6.72T_3 + 1.05T_4$ (for general use)

T_1 = (Current Assets-Current Liabilities) / Total Assets
T_2 = Retained Earnings/ Total Assets
T_3 = Earnings before Interest and Tax (EBIT) / Total Assets
T_4 = Net Worth (Total Share holder's Equity) / Total Liabilities
T_5 = Sales / Total Assets

Zones of Discrimination:

Z' > 2.9 (for private firms)(2.6 - for general use) – "Safe" Zone

1.23 (for private firms) (1.10 – for general use)< Z' < 2.9 (for private firms) (2.6 – for general use)– "Gray" Zone

Z' < 1.23 (for private firms) (1.10 – for general use) – "Distress" Zone

Figure 2.4. Z-score discriminant functions and its zones

As the key interest in this context has been to identify the determinants of economic resilience at times of crises, this process of growth is conceived as a change process in two perspectives, viz. (i) growth underpinning resilience as a developmental process in terms of 'positive' Z-score transition profile of the firm improving the quality of its business health, and (ii) growth underpinning the change in amount of various economic growth indicators. In both ways it satisfies the construct of growth in firms as highlighted by Penrose (1959). Moreover, the Z-score ensures a balance between measures that capture performance and those motivate performance. It includes univariate ratios as lag indicators of performance but the MDA itself is a measure of bankruptcy potential (a potential pro-active or predictive indicator).

2.2. Crisis Strategic Planning

Crisis strategic planning (CSP) is about the marriage of the two disciplines: crisis management and strategic planning, to explore approaches that can be pursued by business owners and managers for developing more resilient organizations particularly in crises (Vargo and Seville 2011). As Vargo and Seville (2011) believes, such a crisis strategic planning model amidst crisis help organizations to find the 'silver lining' and rightly modulate crisis management and strategic planning expertise to improve their ability to survive and thrive. Clearly the crisis management (CM) aspect of CSP process underpins the following: (i) preparing resources and organizational structures necessary to respond effectively during the crisis or recover from it, (ii) building the capability to identify threats and vulnerabilities, and (iii) designing a plan for addressing these threats (Vargo and Seville 2011). Along similar lines, Burnett (1998) in his crisis management model advocated the three step process of crisis identification, crisis confrontation and finally reconfiguration.

On the other hand, strategic planning concerns: (i) dealing with firm's weaknesses and threats as well as strengths and opportunities, (ii) selection of a range of strategies and building up a plan to carry out those strategies, (iii) proper allocation of the resources and organizational capabilities necessary to carry out the plan, and finally (iv) evaluation of the performance (Ansoff 1980, Ghosh and Nee 1983, Ansoff 1987, Preble 1997, Grant 2003, Vargo and Seville 2011).

Vargo and Seville (2011) clearly indicates that these two definitions overlap considerably: (i) both dealing with the future, (ii) both treating weaknesses (vulnerabilities) and threats (risks), (iii) both involving creation of a plan, and (iv) both involving organizational structures and resources to carry out the plan.

However, these two planning processes in most certain cases are being practiced in isolation from one another resulting in wastage of limited slack resources in the organization. This explains why in the academic domain there are very few scientific works related to crisis strategic planning (CSP) even though there are umpteen researches dealing individually with crisis management, strategic management or business continuity management (BCM). The author's search on Google Scholar with the exact phrase of "crisis strategic planning" resulted in only 35 results, out of which just a few were related to the field of business management[12]. Ghandour and Benwell (2012) also highlighted that there is a general scarcity of models and frameworks for evaluating organizational recovery efforts along the disaster life cycle (pre-disaster, disaster and post disaster) to predict organizational performance. This explicates the need for synergistic integration of crisis management's defensive/preventive capabilities to strategic management's offensive market positioning orientation along pre-disaster, impact and recovery phases (Preble 1997, Ghandour and Benwell 2012). Some scholars like Mitroff *et al.* (1992), Pauchant and Mitroff (1992), Smith (1992) have explored this common ground offered by crisis management and strategic management. Clearly, Kennedy *et al.* (2003) uses a metaphor of a camera lens to compare crisis management and strategic planning when

[12] http://scholar.google.se/scholar?as_q=business&as_epq=crisis+strategic+planning&as_oq=&as_eq=&as_occt=any&as_sauthors=&as_publication=&as_ylo=&as_yhi=&btnG=&hl=en&as_sdt=0%2C5&as_vis=1 (accessed 07.01.2013)

the same lens can be used to take a close-up shot to provide a very narrow focus on the crisis environment, while the wide-angle shot provides a strategic perspective.

Some of the integrated models that deals with crisis strategic planning or concepts very similar to it have proposed their inexorable linkages with resilience development process, and are mentioned briefly in Table 2.3.

Table 2.3. Frame of Reference for Resilience Development Process Framework (adapted from paper 5)

Operational agility framework (Ismail *et al.* 2006)	**Strategic agility framework (Ismail *et al.* 2011)**	**5-step resilient management process (McManus *et al.* 2008)**	**Integrated strategic management (Preble 1997)**	**Crisis strategic planning model (Vargo and Seville 2011)**
Audit of SME operating environment	**Leadership analysis** Understand differentiators and intensity of competition	**STEP 1** Build awareness of resilience issues for situational awareness	**STEP 1** Develop mission statement	Mapping four enablers (situation awareness, leadership, decision making, culture) of effective crisis strategic planning
Prioritize turbulences based on potential severity and impact	**STEEP & Impact analysis** Examine industry trends and turbulences	**STEP 2** Select or map organizational components for situational awareness	**STEP 2** 1. Revise mission statement and establish long-term objectives 2. Perform internal and external audit (SWOT) 3. Perform crisis audit	Diagnose organizational adaptive and planned tendencies
Identify vulnerability on agility target areas	**Capability analysis/SWOT (Strength-weakness-opportunity-threat)** Position along competitive strengths and weaknesses	**STEP 3** Self-assess key-stone vulnerabilities (in terms of criticality, preparedness and susceptibility)	**STEP 3** Generate, evaluate, and select planned and crisis strategies	Identify type of resilience along crisis strategic planning approach
Agility capability indicator (ACI) selection	**Generate strategies** Set targets and select growth options	**STEP 4** Prioritize keystone vulnerabilities	**STEP 4** Establish policies, annual objectives and crisis plans	
Improve implementation process and cross-impact analysis	**Evaluate growth strategies** Assess and prioritize growth options	**STEP 5** Increase adaptive capacity	**STEP 5** 1. Allocate resources 2. Crisis approval and simulations	
Strategic alignment	**Implement growth strategies** Implementation and review		**STEP 6** Evaluation and control	

The divergences in the outcome of these frameworks lie in the type of crisis resilience achieved in response to the event. While the operational agility model (Ismail *et al.* 2006) and the 5-step resilience management process (McManus *et al.* 2008) both enhance the reactive or adaptive strategies for organizations to foster resilience, the strategic agility framework (Ismail *et al.* 2011) and the integrated strategic management (ISM) model (Preble 1997), on the other hand, support proactive approaches for yielding planned resilience. Further discussion on this issue is carried out in paper 5. However, the most embracing connection between the 'resilience development process framework' proposed by

author in this thesis has been found with the integrated strategic management model by Preble (1997) as shown in Figure 2.5.

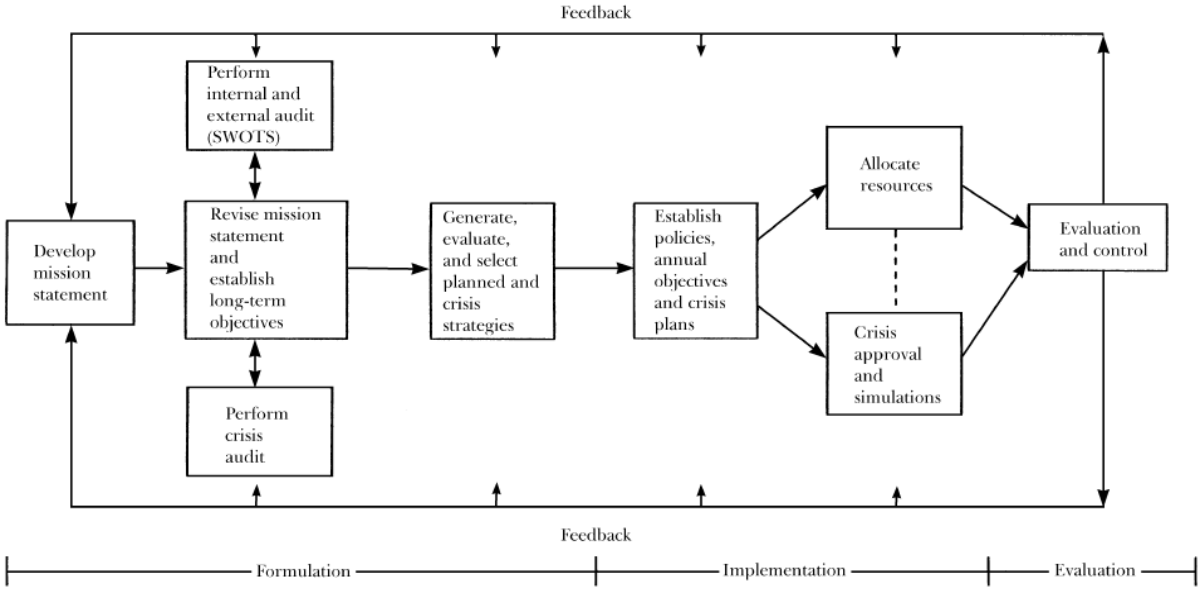


Figure 2.5. Integrated strategic management process model (Preble 1997)

This combined model prescribed by Preble (1997) represents a procedural integration of crisis management approaches into traditional strategic management and how they can be formulated and implemented together. One of the major steps in this model after the organization develops a mission statement was prescribed as identification of the company's external opportunities and threats and its internal strengths and weaknesses (SWOTs) (Weihrich 1982). However, apart from just focussing on SWOT analysis a crisis audit can also reveal a firm's areas of vulnerability or susceptibility to potential crises (Preble 1997). In connection to these stages of the model, Ismail *et al.* (2011) highlighted a suite of strategic tools appropriate for application so that SMEs can get a bigger picture of their operating environment. These tools and techniques can be used to identify the industry leadership factors to understand the key industry differentiators and critical success factors (Rockart 1979, Rockart and Bullen 1981) along with the identification of the industry trends and turbulences in the firm's environment and their impacts. These tools substantiate the drive for strategy formulation stage as seen in Figure 2.5. Combination of results of a firm's SWOT analysis and crisis audit is important to generate a revised mission statement and objective needed to envision an organization from both outside-in and inside-out. The next stage of the ISM model is marked by effective and efficient generation of feasible alternative strategies – planned or crisis-based (adaptive) and their proper implementation. This stage is characterized by sufficient documentation of a multitude of strategies, setting up of crisis management teams (CMTs), development of crisis communication strategies, making of necessary decisions and allocation of resources (Preble 1997). Such processes can be conducted in parallel to each other. Finally the integrated SM process ends through evaluation of progress towards achievement of the strategies and crisis plans using both feedback and feed-forward controls.

Interesting convergences among all the models/frameworks, as prescribed in Table 2.3, is observed as they adopt fairly similar stages: (i) auditing the SME operating environment through either turbulence analysis, STEEP (social, technological, economic, environmental and political) analysis or situation awareness, (ii) carrying out a vulnerability or impact analysis and prioritizing them, (iii) understanding the differentiation factors for the industry through leadership analysis or organizational component/business mapping, (iv) positioning the organization in terms of competitive strengths and weaknesses through either capability analysis or by adjudging the organizational preparedness, (v)

setting targets and selecting growth options, assessing and prioritizing them and finally implementing them either by 'evaluating and implementing growth options', cross-impact analysis or through adaptive capacity development. The next sections (2.2.1-2.2.5) discuss these five convergences or strategic steps separately. This forms the basis of the CSP based process framework for yielding resilience coined by author as the 'resilience development process framework'.

2.2.1. Turbulence analysis

Ismail *et al.* (2011) in the strategic agility framework highlighted how industry trends and turbulences can be examined to identify the potential for both internal and external failures firms. Such factors for failure could be human resources, production, organizational, technological, macroeconomic etc. Similar analytical tools like STEEP (social, technological, economic, environmental and political) are effective in auditing an organization's environmental influences to guide strategic decision-making properly with the assumption that if the organization is able to audit its current environment and assess potential changes then it will be better placed than its competitors to respond to these events (Ismail *et al.* 2006). Along similar lines, Lengnick-Hall and Beck (2005) corroborated the integrative effect of both environmental conditions and organizational capabilities required to shape a firm's response and, hence its outcome and performance consequences. McManus (2008) termed these environmental turbulences as keystone vulnerabilities and considered that proper identification and management of these can definitely have a positive impact on overall organizational resilience while Preble (1997) highlighted the preparation of worst-case scenarios to determine the potential of such turbulences.

2.2.2. Impact analysis

Auditing an SME's operating environment calls for not only identifying the vulnerabilities but also to prioritise them based upon their potential severity and impact on the business (Ismail *et al.* 2006, McManus 2008, Ismail *et al.* 2011). Ismail *et al.* (2006) typically used a series of agility capability indicators (ACIs) to identify and categorise the vulnerability factors and prioritise them on the basis of their effects on people, processes, products and other operational aspects (Arokiam 2005). McManus (2008), on the other hand, prioritised the key-stone vulnerabilities on the basis of their criticality (in terms of their importance in forcing organizational response/recovery), preparedness in terms of the firm's degrees of planned or intrinsic robustness, and susceptibility in terms of the overall vulnerability of the firm, by using a matrix entirely from a qualitative perspective. While Ismail *et al.* (2011) considered the potential to develop a more quantitative assessment tool by prioritizing the threat potential and its impact on financial performance of organizations, like on revenues, costs, growth etc. Such environmental impact assessments are highly recommended in order to identify potential areas of failure in organizational systems (Shrivastava and Mitroff 1987).

2.2.3. Leadership analysis

Differentiation has emerged as a key aspect in developing competitive advantage in most of the industries owing to greater market dynamics related to globalisation and competition, rapid fluctuations in consumer behaviour, shortening of fashion product life-cycle etc. Such differentiating strategies are the basis for tailoring *success factors* for specific industries and particularly for the companies operating in it, and subsequently needs careful attention and management for their development (Anthony *et al.* 1972). Barney (1991), Barney (2002) highlighted the major ways a firm can gain competitive advantage through differentiation based on product feature, linkages, timings, reputation, product mix, etc. while Porter (1998) highlighted the means of gaining advantage through cost leadership by implementing efficient-scale facilities, cost minimization and control over various processes. Rockart (1979) extended these ideas as suggested by Daniel (1961), Anthony *et al.* (1972) and others to suggest that firms develop different critical success factor (CSFs) depending on their structure, competitive strategy, industry position, location, environmental and time factors integrated

with the strategic objectives. Such a CSF framework exhibits substantial impact on the financial performances like profitability, return on investment (ROI), growth rate etc. and are important in determining organizational success (Leidecker and Bruno 1984). Additionally, competitive priorities, like price, cost, quality, delivery performance (speed), flexibility, etc. are also considerable measurement characteristics to determine organizational performance (Selldin and Olhager 2003). Thus, CSFs have been used significantly to present or identify the key factors that companies should focus on to ensure successful competitive performance (Rockart and Bullen 1981). CSFs are also important for building necessary organizational capabilities/competencies (Porter 1998, Barney 2002) and this translates into discussing the next step in the CSP process (cf. capability analysis in section 2.2.4).

It is necessary to synthesize or generate these success factors appropriately as advocated by Fine *et al.* (2005). CSFs can be devised effectively by designing and aligning of products, processes and supply chains simultaneously along with myriads of their attributes and components in order to foster distinctive competences in organizations (Fine 1998). The implications of these three-dimensional organizational designing aspects are immense in shaping-out success factors for organizations (Forza *et al.* 2005). The three pillars of 3-DCE are defined as: (i) product designing dealing with the product specifications for generating product innovation and/or specialization (as contributed by several authors like Koufteros *et al.* (2001), Koufteros *et al.* (2002), Fine *et al.* (2005) etc.), (ii) process designing focusing on the methods, facilities, equipment and output used for source-make-store and distribute-sell processes (Safizadeh *et al.* 1996, Fine 1998), and (iii) supply chain designing considering the decision-making aspects of sourcing, contracting (type of relationship with an organization), make-buy and coordination (with logistics channels, suppliers and customers) (Choi *et al.* 2001, Parker and Anderson 2002). The link between 3-DCE designing aspects to the CSFs they synthesize is highlighted in Table 2.4.

Table 2.4. 3-DCE linkages

CONTRIBUTION TO 3-DCE DESIGNING	BENEFITS IN TERMS OF SYNTHESIZING CSFS
Product-Process design linkage (Concurrent engineering)	
• Develops close relationship between manufacturing system capabilities, product's volume-variant specification, and its nature • Effective linking through information sharing improves cost, quality, time, and flexibility • Links product development, manufacturing, marketing to superior organizational performance in terms of time to market, product cost, quality, innovation & responsiveness for overall product performance	• Improved operating performance; cash flow; Communication infrastructure; Increased organizational culture and trust • Supports product innovation and quality; Time to market reduction; Cost reduction; Quality improvement; Improved customer satisfaction; Higher profits and brand value
Supply chain-Process design linkages	
• Customer-supplier information exchange for process integration • Link process capability achievements to *design for supply chain* by controlling sourcing, contracting, make/buy, and coordination decisions • Design for manufacturing, distribution strategies	• Minimize inventory level and cost tied-up with stock keeping; Improved forecasting accuracy; Supplier/customer relationships and coordination; Higher supply chain innovation; Improved productivity
Supply chain-Product design linkages	
• Channel structure/design: Better competition as integrated network entities render better performance outcomes to reduce risks • Integrate customer needs to reduce lead time, improve quality and overall market success • Early supplier involvement to integrate material suppliers into the product development cycle; Focus on supplier participation in design and development; Reduce relationship risk; Improve NPD success; Match product innovation with collaborative supply chain designs; Develop high market-responsiveness high flexibility, QR etc.	• Decreased time to market; Increased product innovation and quality; Lower prices for customers; Improved design for manufacturability • Decrease time to market; Improve commercial success; Reduce concept to customer development time; Improve quality, reduce cost of new products and facilitate new product launch

Continued…

3-DCE (Supply chain-Product-Process design linkages)	
• Higher level of integration, collaboration and partnership; Strategic process engagement, control and planning, higher degree of cost-efficient processes; Focus on responsive supply chains	• Deploy right customer focus, increase product design and technology and enhance supply chain architecture; Cost minimization; Reduce lead time
Extended 3-DCE linkages	
• Extend or complement 3-DCE by incorporating intangible value propositions like knowledge, image, relationships, shared vision and organizational culture; Incorporate organizational change and innovation, Incorporate notion of self-organizing adaptive system	• Develop dynamic competencies and competitive advantage with changing market dynamics to match the strategy and structure; Organize resilience development

2.2.4. Capability analysis

2.2.4.1. Resource based view, dynamic capabilities and organizational resilience

Essential combination and deployment of organizational slack resources, as assets and dynamic capabilities, can ameliorate particular processes and competences to contribute to resilience development (Vogus and Sutcliffe 2007).

High levels of slack resources in the form of financial, cognitive, relational, material or human reserves are critical enablers of ORes (Schulman 1993, Nohria and Gulati 1996, Chattopadhyay *et al.* 2001, Vogus and Sutcliffe 2007). As stated by Linnenluecke and Griffiths (2010), slack resources can include backup facilities for organizational data and critical systems, access to resource inputs through various suppliers and locations (rather than reliance on a single supplier and/or location) and financial slack resources. Expertise to deploy and reconfigure these resources efficiently helps an organization to have a distinct understanding of the on-going operations to reduce the effects of turbulences and foster resilience (Gittell *et al.* 2006, Vogus and Sutcliffe 2007). For example, material assets like stock of raw materials, work in progress or finished goods as inventory when used strategically can help to overcome immediate problems of supply chain vulnerability. Building-up such a system with safety stocks need organizational planning to attain internal efficiency to cushion every part of an extended enterprise (Sheffi 2007). Yet, another important resource is the mobility of the financial assets as well as its deposits to create critical asset stock (Gittell *et al.* 2006). A large capital base acts as a buffer or shock absorber and prevents the impacts of changes along with immediate access to adequate insurance coverage. Moreover, building a deep social fabric of goodwill, inter-personal relationships and brand is also evident in laying a foundation for developing *contextual resilience* (Adler and Kwon 2002, Lengnick-Hall and Beck 2005) by developing deep pockets of intangible resources to temporarily protect the organization from turbulences (Perrow 1984).

Social capital and strong relationships are complemented by broad networking ability at the organizational level (Leana and Van Buren 1999, Lengnick-Hall and Beck 2005) through mergers and acquisitions, strategic alliances or outsourcing relationships (Reinmoeller and Baardwijk 2005). Such collaborative inter-organizational relationships (IORs) balance exploration and exploitation of resources (Lavie *et al.* 2010, Parmigiani and Rivera-Santos 2011) through external specialization, constant innovation and adjustments, internal process optimization etc. This helps to transfer and exchange uniquely complementary sets of knowledge resources and relationships (Lippman and Rumelt 2003, Leiblein 2011) for correct alignment of the organization, both along the value chain and to the environmental conditions. This is indispensable to reduce and spread risks and manage market turbulences through appropriate strategies, enterprise culture and relationship (Sheffi 2007). Networked organizational structures offer greater agility and adaptability by maintaining countless secured relationships, thus intertwining integrally to organizational success patterns (Starr *et al.* 2003). Such strategic choices yield fullest utilization of slack resources, sharing of risks and also provides financial reserves and bargaining power to firms, and can be directly related to three organizational growth models mentioned by Li *et al.* (2011) through resilience development. Lippman and Rumelt (2003) states this as ‘co-specialization’ or coalition of heterogeneous resources through

complementarity to largely emphasize growth of firm's competitive advantage and its superior performance (Barney 1986, Leiblein 2011).

Similarly, Freeman (2004) highlighted four categories of resources, viz. (i) wealth as cash and other assets, (ii) systems: internal coordination, processes and technical expertise, (iii) human resources: people with requisite skills, and (iv) network connections and relationship with quality stakeholders, as essential contributors to superior organizational performance (Barney 1991, Peteraf and Barney 2003, Leiblein 2011). Another intrinsic need for superior performance to generate competitive advantage is to leverage information advantage. Barney (1986) and Makadok (2001) provide interesting views on how better informed firms generate competitive advantage superior to less-informed rivals. Such positive adjustments are essential for resilient responses through superior information processing, as Bell (2002) highlighted the need for greater connectivity and information for developing resilient virtual organizations (RVO). Gulati (2010), on the other hand, points out how market intelligence through customer-centricity (by leveraging coordination, cooperation, clout, capabilities and connection) is imperative to identify potential customer problems and needs to deliver seamless solutions for organizations to be resilient and prosper by driving growth and profitability.

The above discussion elucidates the following points. First, how extant researches built on a resource-based perspective of an organization, represent the origination and persistence of superior organizational performance by delivering competitive advantage (Barney 1986, Peteraf and Barney 2003) and at the same time how they can foster resilience (Schulman 1993, Vogus and Sutcliffe 2007). Second, it becomes evident that these researches have also responded to the question of 'how' firms' assets and resources have led to its growth and resilience development through 'co-specialization'.

The essentiality here, however, is not only the creation of slack resources and assets for determining resilience but its effective deployment through alignment to build, integrate and reconfigure dynamic capabilities (competences) in response to emerging and manifest threats. These capabilities are results of combinations of heterogeneous resources (Prahalad and Hamel 1990, Grant 1991a, Grant 1991b, Teece *et al.* 1997, Eisenhardt and Martin 2000), constituting the core competences of organizations through coordination and integration of activities inside the firm for responding to the transitory environmental conditions. Such capabilities, like long-term flexibility, redundancy and robust responses (Sheffi 2007) foster competitive advantages and are instrumental in reducing/absorbing market complexities (Lengnick-Hall and Beck 2005).

For example, flexibility is a key issue in building organizational readiness to deal with disruptions and operate proactively in a tightly-coupled environment (Coutu 2002, Reinmoeller and Baardwijk 2005). Resilience can be built in firms through operational flexibility, like by building inter-operable standardized materials and processes, effective lean management, closeness of operations to demand via postponement, building efficiency through training programs, seamless integration of processes, concurrent engineering techniques, shortened lead times etc. (Peck 2006, Sheffi 2007). Thus it is an organization-wide action required to be competitive in changing business environments and to resist and respond to disruptions quickly (Sheffi 2005). From the resilience engineering perspective, flexibility and agility emphasizes the ability of a system to respond to unexpected situations and restructure rapidly by developing adaptive capacity (Hale and Heijer 2006, Westrum 2006, Woods 2006). In this line, Bell (2002) considered workplace flexibility as an essentiality to build RVOs, while Wreathall (2006) emphasized it to be a central theme behind highly resilient organizations. Woods (2006) regarded flexibility as the ability of organizations to adapt to problems and disruptions by adopting problem-solving techniques quickly, especially noticed in SMEs (Sullivan-Taylor and Branicki 2011) while Tang and Tomlin (2008) and Lee (2004) proposed how alignment, adaptability and agility can be considered as three basic ingredients for improving resilience. Ismail *et al.* (2006) and Ismail *et al.* (2011) further conceptualized these aspects of operational and strategic agilities by adopting the developmental frameworks from SME perspective.

Organizational robustness is another element imperative to achieve resilience by resisting disruptions and building reliability (Mangan *et al.* 2008). Christopher and Rutherford (2004) corroborated that robust enterprises and supply chains have a culture of quality awareness and 'lean thinking', while Tang (2006) stated that robust enterprises are effective in deploying contingency plans and resources when facing disruptions. This enhances the organization's ability to develop internal quality control on variability and lean processes, thus, adding a great degree of resilience through stabilized processes, reduced supply chain variability and low inventory levels (Christopher and Rutherford 2004). Total quality management (TQM) frameworks and models suggest that robustness built through quality managed lean processes and continuous improvements (CI) can control and manage disruptions to a great extent, particularly researched in case of large organizations (Kumar *et al.* 2011). In the SME's customized environment this calls for implementation of quality management frameworks and models for CI as propose by Kumar *et al.* (2011). This is an essential precursor for withstanding or even adapting to impending uncertainties by developing consistent quality in products and processes, apart from responsiveness and pro-activeness in the supply chain (Ismail *et al.* 2011).

Redundancy is another common practice by maintaining resource reserves or buffers to reduce the effect of the turbulences by creating slackness (Sheffi and Rice 2005, Waters 2007, Weick and Sutcliffe 2007). At the operational level in organizations, redundancy is executed by relying on multiple sourcing options, increased outsourcing partners, multiple (alternative or parallel) channels etc., which enhances the possibility to rely on parallel paths in case of sudden disruptions. From a business system's perspective, redundancy is instrumental in building slack systems for processing and reproducing organizational knowledge, production and capabilities in facing turbulent environments though there remains a trade-off in balancing the cost of redundancy and generating long-term economic benefits (Linnenluecke and Griffiths 2010). In an SME environment, Thun *et al.* (2011) has shown how small firms can thrive on developing redundancy-based reactive instruments for dealing with crises while Dangayach and Deshmukh (2001) demonstrated how redundancy building can lead to resilience development in non-family firms but not for small family-owned ones as they are expected to have disadvantages of inadequate technological capabilities, lack of financial strength and infrastructure.

Building networks and knowledge integration for considerable conceptual slackness in tightly-coupled situations also asserts development of long-term resilience (Schulman 1993). This regards organizations as complex networks consisting of various actors and information flows particularly necessary to enable SME resilience (Sullivan-Taylor and Branicki 2011). Such organizational networking and connectivity not only reduces the risks of market turbulences but at the same time result in creation of deep interpersonal skills and relationships at the social level (Coutu 2002). At the intra-organizational level, this also adds to the possibilities of reducing 'silo mentalities' and complexities leading to higher visibility and trust within the organization (Ireland *et al.* 2002).

2.2.4.2. Organizational learning and organizational resilience

In an organizational setting, resilience development is hinged to various softer, less tangible aspects of organizational learning as well. The particular findings of Seville *et al.* (2006) suggest lack of attention to the soft aspects associated with human factors in an organization may create resistance to change which may also hinder resilience, particularly in SMEs. ORes is thus enhanced through development of specialized knowledge of individuals and also collectively in an organization to respond effectively to unfamiliar or turbulent situations.

Some previous organizational learning theories, from various perspectives, articulate common traits or behavioural patterns in organizations promulgating two central themes, viz. (i) collective awareness and learning, and (ii) change of organizational structure in response to change in environment (Appelbaum and Gallagher 2000). Senge (1990) and Edmondson and Moingeon (1998) have popularized this newly-conceived concept of organizations for adaptation to the changing environment. Group/team learning reveals equivalent dynamics for developing organizational

motivation, efficacy and skills and degrees of positive adjustment for mastering new situations for generating a sense of positive adaptation in organizations (Edmondson 1999, Bunderson and Sutcliffe 2002b, Sutcliffe and Vogus 2003). de Geus (1997), in his article 'The living company' discusses this further from the standpoint that organizations those can adapt and are willing to change can attune themselves to the environment in which they operate and have strong learning characteristics for yielding better corporate health. This essentially incorporates and harnesses the key principles of a learning organization (Senge 1990) for better strategy formulation and knowledge management for developing competitive advantage (Hitt 1996).

In case of SMEs, a study by Vossen (1998) described small firms to have relative advantages (over large ones) in terms of rapid decision-making, capacity for fast learning and rapid internal communications thus making them learning-oriented for enabling resilience. Relevant mechanisms for promoting such *cognitive resilience* (Lengnick-Hall and Beck 2005, Lengnick-Hall and Beck 2009) at the organizational level is argued to be accumulated knowledge, collective efficacy and shared belief, essential for developing coordinative and interactive dynamics (Bandura 1998). Such strong collective identity leads to constructive organizational sense-making (Weick 1993, Weick 1995), through positive perception of experiences, emotions, realism (Coutu 2002) and tolerance, to steer the organization through uncertainties. Operationally such learning capabilities align the organization not only structurally and strategically but also cognitively towards the market turbulences and make it ready to confront challenges (Weick and Sutcliffe 2007).

Sense-making in organizations need to be complemented by collective cognition as well, so that management teams can develop capabilities to view and cope with problems together (Weick *et al.* 1999). A unified commitment grows across the business organization to drive synergistic cooperation within the extended enterprise to strive towards a common goal or shared vision (Senge 1990) and break organizational 'silo thinking' (Gulati 2010, Keller and Price 2011). Developing an organizational culture through effective sharing of values and aligning mind-sets keeps the employees and the organization - as a whole - aware, committed and involved to act whenever and wherever necessary. Mitroff (1988) revealed such essentiality of organizational culture for effective corporate decision-making in crisis management. Researches on family and non-family firms have shown that generally resilient family firms have an ability of leveraging collective know-how while resilient non-family firms tend to have a corporate culture to boost their commitment to knowledge management and build resilience capacity (Lengnick-Hall and Beck 2005). Sheffi (2007) related this to passion for work among the employees of the successful companies and this is essential in triggering commitment through strategic leadership, strong sense of identity and value with shared responsibility (McCann 2004). Sheffi (2007) also considered distribution of power (so that teams and individuals are empowered to take necessary actions) to be an essential factor in fostering resilience particularly seen in case of small firms having stronger intra-organizational relationship due to a flatter structure. This builds both internal and external collaborative and co-operative relationships eventually leading to higher visibility, trust and empowerment in the organization (Christopher 2005). Likewise, Keller and Price (2011) mentioned how their study revealed the role of employee accountability, shared vision and sense of ownership, and continuous improvement through knowledge sharing, learning, right leadership and mind-set essential for organizations to build resilience and hence long-term successful performance.

Furthermore, leadership, management and governance were considered by Seville (2008) to be critical in developing adaptive organizational capacity for effective decision-making during times of crises. In case of SMEs this is subjected to the role of a powerful and decisive CEO and supported by a powerful top management team (Bourgeois and Eisenhardt 1988). Though SMEs can pursue retrenchment as a very defensive strategy during crises followed by assertion of an authoritarian management style due to high proprietary rights of manager-owners (Rainnie 1989, Jones 2003); entrepreneurial leadership through higher qualifications and experience can, on the other hand, instil adoption of more knowledge creation and innovation in the firm (Jones and Crompton 2009). In many

cases the effect of large-scale economic crises on SMEs can be significantly diminished through resilient leadership, inspiring yet realistic, supported by an able top management team for effective corporate turnarounds (Mitroff *et al.* 1992, Penrose 2000, Seville *et al.* 2006, McManus *et al.* 2008).

In sum, working together effectively across the organization leads to a sense of cognitive wellbeing through alignment of the organizational values, corporate culture, shared vision and responsibilities (ideational foundation) for promoting adaptive learning capabilities (Chakravarthy 1982, Boisot and Child 1999). Walker *et al.* (2006) emphasized such dynamic learning in an organization through experimentation, sense-making and collaborative learning (combining information and knowledge) to be essential in coping up with vulnerabilities and for managing resilience. This works along the process of operationalizing the adaptive behaviour of the organization (through adaptive co-management, governance and collaborative management) to understand the environmental dynamics and to generate knowledge in the organization. Such organizational mindfulness (Weick *et al.* 1999, Weick and Sutcliffe 2007) is also imperative for being crisis-prepared and proactive in detecting early warning signals, preparing the organization in shaping-out its culture and for knowledge management practices in supporting cognitive strategies crucial for building resilience (Boisot and Child 1999). In similar researches, it was concluded by Freeman and his group (Freeman 2004, Freeman *et al.* 2004) that resilience is characterized by successful achievement of strong core values, cognitive capabilities, mindfulness, sense-making, entrepreneurial orientation, virtual role systems and self-responsibilities as components for building learning capabilities and a 'sense of purpose' for *visionary organizations* (Collins and Porras 1994) or high reliability organizations (HROs) (Weick and Sutcliffe 2007). Weick and Sutcliffe (2007) advocated that these factors clearly distinguish resilient HROs from others in recuperating quickly and profitably from uncertainties and are inherent to corporate culture through communication among employees, shared vision & values and group thinking.

However, contrary findings supported by some notable researches like Gray (2002), Ates and Bititci (2011) etc. highlight that SMEs are more likely to be owner-centric (especially the family-owned ones), rely more on informal routines and focus on day-to-day operations rather than on long-term growth. This subsequently provides evidence that SMEs fail to embed changes into organizational culture for long-term sustainability rather they emphasize on short-termism and fire-fighting approaches (Ates and Bititci 2011).

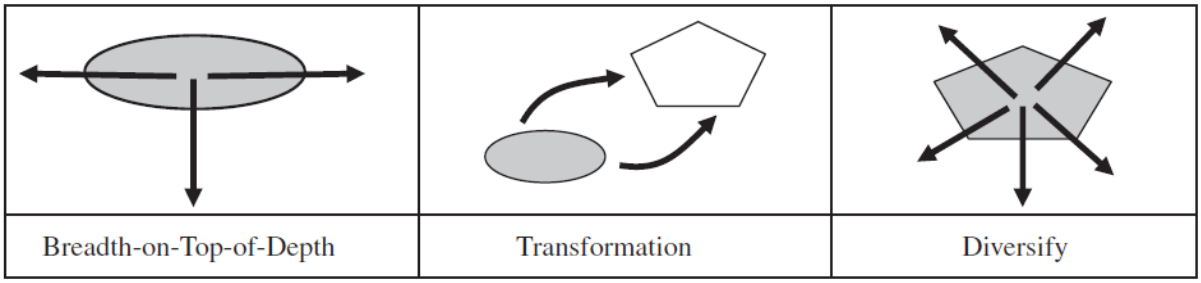
2.2.5. Strategies for Organizational Resilience

Adoption of a strategic approach is correlated to improved performance and resilience building capabilities for SMEs in turbulent environments (Ismail *et al.* 2011). SMEs require engagement with strategic thinking and planning by examining capabilities and weaknesses in order to develop multiple growth strategies and scenarios to foster resilience, either preventively or opportunistically thus highlighting the framework of 'strategic readiness' (Ismail *et al.* 2011). Such strategic perspectives can be either related to achievement of growth potential in organizations or to actively ensure both operational and strategic continuities to counter the effects of crises (Herbane *et al.* 2004). From this perspective, strategies can be either growth related or just for organizational survival/sustenance. Moreover, from the 'timeframe of development' perspective, Preble (1997) articulated the strategy implementation phase as a combination of long-term objectives aimed at designing the offensive focus of strategic management (SM) on market and competition along with defensive capabilities of crisis management (CM) during crisis times. Matthews and Scott (1995) considered that during the periods of crisis strategic planning tends to decline due to lack of time and resources required to generate strategic growth. However, when the two processes – strategic planning for growth perspectives and business continuity planning for survival are implemented together then this combined process leads to resilience development. Vargo and Seville (2011) suggested that such strategic development in organizations can be either pre-planned or adaptable to the requirements.

2.2.5.1. Growth strategies

According to the strategic agility framework, assessment of turbulence plays a major role in developing growth potential (Ismail *et al.* 2011). The framework is expected to promote business growth and capability development using resources effectively, enhance resilience that serves multiple growth avenues and induce a shift towards structured strategic behaviour in SMEs (Ismail *et al.* 2011). Similar models like the ISM model by Preble (1997) and few others also highlight the role of business growth in encouraging better performance.

According to Li and Tan (2004) and Li *et al.* (2011), there are three major theoretical perspectives on growth for strategic choices. Firstly, breadth-on-top-of-depth (BTD) perspective relates to 'generic' expansion by balancing technical depth with product breadth for either increasing the knowledge and exposure to related areas or for developing additional areas of expertise. This is attained through fullest utilization of firms' resources by harnessing their managerial and organizational capabilities (Peng 1997). The second growth perspective is related to diversification through expansion into new markets by maintaining a variety of inter-organizational relationships (IORs) such as strategic alliances and joint ventures to achieve growth (Kale *et al.* 2000, Sarkar *et al.* 2001, Coviello 2006, Li *et al.* 2011). This gives access to complementary assets for reducing impacts of turbulences in operating environments. Inter-partner cooperation, resource dependence and complementary capabilities are highly necessary for such developmental growth processes (Salancik and Pfeffer 1978, Stuart 2000, Das and Teng 2002, Ireland *et al.* 2002). The third growth perspective is transformation strategy and is achieved through expansion of the boundary of the firm by engaging in acquisition of various business subsidiaries or by transforming the existing business model (Penrose 1959, Penrose 1995, Li *et al.* 2011). This is achieved through full employment of under-utilized resources in the organization and gaining excess capacity. Figure 2.6 illustrates these three perspectives of the business growth model that are essential to significantly influence resilience development.



Growth perspective	**Strategic choice**
BTD	Generic expansion
Transformation	Acquisitions
Diversify	Networks

Figure 2.6. Three perspectives of business growth model (Peng 1997, Li and Tan 2004, Li *et al.* 2011)

From a much older perspective the Ansoff matrix proposes similar strategic growth options for firms by identifying and prioritizing them on the basis of market penetration, market development, product/service development and diversification (Ansoff 1957) (cf. Figure 2 in paper 4). On the basis of developing basic strategic growth options along an Ansoff matrix, the BTD strategies can be related and assessed with respect to possible tactics for market penetration and process capability extension. This is aimed at generic expansion within an older market either by using existing products or by enhancing product/process capabilities. Similarly, diversification strategies as prescribed by Li and Tan (2004), Byrd *et al.* (1997) and others, for development of IORs can lead to market development through expansion of product ranges or other core competences, either by attracting new customers in the existing sector, by attracting competitors' customers, by expanding into overseas markets and by moving into new market niches or through joint ventures and collaborations.

2.2.5.2. Business Continuity Management

Business continuity management (BCM) has emerged in many organizations as a systematic process to counter the effects of crises and turbulences both operationally and strategically for developing competitive advantage even though its strategic role is still under-explored (Herbane *et al.* 2004). It can be defined as *'the processes, procedures, decisions and activities to ensure that an organization can continue to function through an operational interruption'*[13]. In other words it is about identifying internal and external threats to organizations and anticipating failures, taking planned and rehearsed steps to protect the business and its stakeholders' interests by synthesizing appropriate hard and soft assets to maintain a competitive advantage and for value preservation, and subsequently develop resilience (Herbane *et al.* 1997, Elliott *et al.* 2001, Herbane *et al.* 2004, Herbane 2010a, Engemann and Henderson 2012). Similar to CM perspectives, organizations try to systematically avert crisis in order to prevent business disruptions however total prevention is difficult to achieve (Ghandour and Benwell 2012). In such cases, effective disaster management allows organizations to recover faster and learn from them during disaster or in post-disaster phase (Mitroff 1994). Thus BCM encompasses a strategic precursor involving long-term development of competitive advantages and value creation and drawing upon both crisis management and disaster recovery planning (DRP) approaches (Herbane *et al.* 2004) in all major crisis phases as highlighted by Mitroff (1994) as detection, prevention, containment, recovery and learning. Thus this incorporates both planning and management across the entire organization cross-functionally to ensure business continuity in five phases (prevention, mitigation, response, recovery and restoration) (Engemann and Henderson 2012). Such planning processes through a CM approach suggest crisis incubation in the pre-crisis phase that is rooted into the sequence of organizational and environmental analyses and the development of plans for preparedness, prevention, back-up and recovery (Preble 1997, Engemann and Henderson 2012); DRP, on the other hand, is dedicated to more reactive planning emphasising recovery over prevention (Fink 1986, Quarantelli 1988). Various typologies of business continuity approaches are highlighted in Figure 2.7.

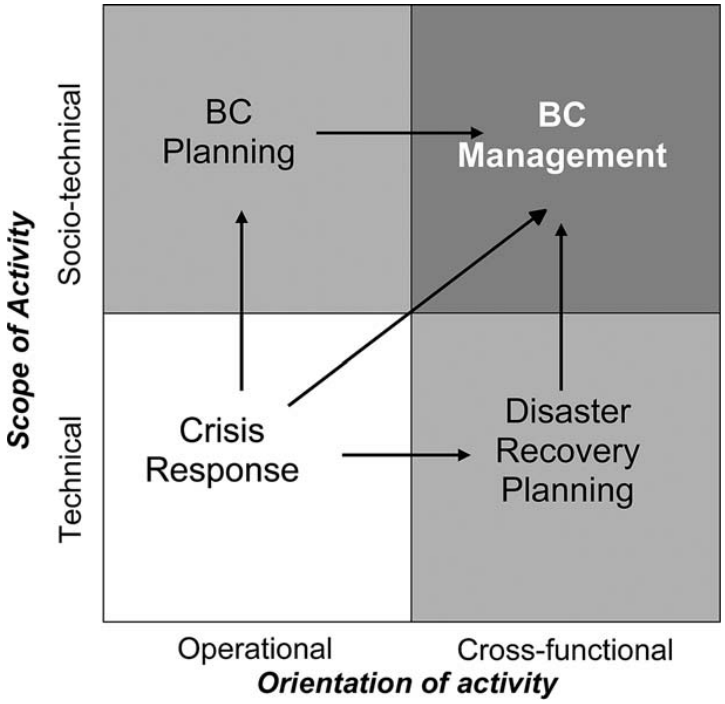


Figure 2.7. Typology of continuity approaches (Herbane *et al.* 2004)

[13] Continuity Central, *New to Business Continuity?,* http://www.continuitycentral.com/newtobusinesscontinuity.htm (accessed 21.03.12)

Crisis management strategies can be characterized either as planned or adaptive responses. The adaptive responses are developed during the crisis phase and consists of incremental actions to buffer an organization and to provide for limited remedies, often termed as 'fire-fighting' responses (Smart and Vertinsky 1984). Authors like Whitman and Mattord (2003), McCartney *et al.* (1999), Spillan and Hough (2003) and others have defined CM as the actions taken during and after a disaster, considering it to be a sub-function of contingency planning but more adaptive in nature. In case of small firms, crisis management has mostly been crisis-based turnarounds through top-management change, external management expertise or organizational retrenchment (Cater and Schwab 2008). Smart and Vertinsky (1984) highlighted such short-term strategic responses to crises along with cost effectiveness as plausible choices in practice.

However, Mitroff *et al.* (1992) considered the similarities existing between crisis management and strategic management and suggested possible integration of them. CM when integrated with SM defines a systematic process by which an organization attempts to predict potential crises and can encounter, prevent and minimize the effects, first by initiating a planning process followed by a risk assessment and subsequently development of plans for prevention, back-up and recovery (Preble 1997). This involves proper documentation, implementation and periodic reviews to enhance the defensive capabilities of the organization. On the other hand, DRP is more of planning for crisis recovery in the post-crisis phase. Most of the studies related to disaster management have actually analysed organizational performance as a criterion variable like that of Kaplan and Norton (1992).

But BCM is argued to go beyond just CM and DRP by incorporating strategic alignment within the organization and by putting into place planning approaches, structures and skills with a proactive strategic role organization-wide (Herbane *et al.* 2004). This encompasses distinct managerial skills to ensure business continuity and operational resilience in order to face minimum possible vulnerabilities. Such business continuity management incorporates both proactive and reactive strategies highlighting mainly the survival instincts in the organization. From an operational perspective, BCM includes a focus on human resource and responsibilities, BC planning and processes (planning on the basis of resource and capability configuration), proper organizational communication and structure, and attitude and ownership of leaders and management thus leading to the development of continuity processes to improve resilience (Herbane *et al.* 2004).

2.3. Other approaches and theories

In this section four other approaches or theories for describing organizational success is discussed briefly, viz. (i) High Reliability Theory (HRT), (ii) High Performance Organizations, (iii) Systems theory, and (iv) Contingency theory.

The High Reliability Theory (HRT) focusses on high-risk organizations and addresses how they can organize around high hazard technologies or catastrophes. Organizations those can deal with such catastrophes are called high reliability organizations (HROs) and are able to develop error-free performance (Roberts 1990, Weick and Roberts 1993). HROs are able to notice every single failure and problem that arises or are expected to arise, and treat them for quick recovery – proactively, rather than leaving them as a routine process to revive on its own. Such organizations have high 'mindfulness' of any unexpected situation by continually doing five things, viz. (i) track small failures through anticipation so that they do not pile up to unfold as a major uncontrollable disaster, (ii) resist oversimplification of events by incorporating a holistic, interconnected view of them, (iii) be sensitive to operations, i.e. be more situational and less strategic in approaches so that organizations can make continuous adjustments to prevent errors from generating gastronomic cascading effects, (iv) maintain resilience capabilities by complementing anticipatory activities of learning from failure with principles of containment based on fresh thinking and creative solutions, and (v) take advantage of shifting location of expertise and decision-making based upon experience (Weick and Sutcliffe 2007). All these five

principles together make an organization mindful, especially those organizations which are HROs and are working in highly uncertain environments.

Thus HRT emphasizes a strategic prioritization of safety, careful attention to design and procedures, a limited degree of trial-and-error learning, redundancy, decentralized decision-making, continuous training, and strong cultures that create a broad vigilance and responsiveness to potential accidents (LaPorte and Consolini 1991, LaPorte 1994). However, HRT theory has been mostly applicable in contexts of high uncertainty and high-risk environments and points to HROs, such as emergency rooms in hospitals, flight operations in aircraft carriers, nuclear plants, fire fighting units etc. Hence, use of HRT may not be ideal for testing for all organizations irrespective of the nature of disruption and, particularly, not in the case of economic crises where the financial valuation of the organizations are the most concerning indicator of success or failure.

Another classification of similar organizations those thrive well in dynamic operating environments is the high performance organizations (HPOs) (de Waal 2008). A high performance organization is a company that is considered more successful than its competitors in areas such as revenue growth, profitability, return on investments (ROI), customer service and strategy (de Waal 2008). de Waal (2008) and de Waal (2012) highlighted five principles of HPOs, viz. (i) high management quality, (ii) openness coupled with action orientation, (iii) long term orientation, (iv) focus on continuous improvement and renewal, and (v) high workforce quality, those make positive correlation with competitive performance of organizations achieved in terms of high financial and non-financial results thus showing resilient characteristics. Overall, HPOs are very similar in characteristics to resilient organizations as described in this thesis. Some differences that exist between the ORes processual framework developed in this thesis and HPO framework as suggested by de Waal are in terms of the methodology for seeking data and fundamental characteristics of organizational performance outcome. de Waal (2012) highlights HPO research based on a questionnaire and self-reported scores hence there is a possibility of biasness by the respondents; whereas, the present framework measures organizational performance from companies' financial valuations. Moreover, the biggest difference between these two frameworks lies in addressing performance transitions in organizations' financial valuation. The ORes framework uses the transition behaviour of organizational financial performance to quantify resilience thus addressing a dynamic financial outcome amidst crises and also gives certain indication of a company's health in the near-term future, whereas the HPO framework by de Waal (2012) provides snapshots of relative and historical financial performance of organizations thus missing the dynamic transition profile of organizations. Furthermore, organizational characteristics like crisis recovery (similar to resilient property of 'bouncing back' is not incorporated into HPO research so far). However, HPO framework and ORes processual framework are very congruent in nature and demands further research for unification.

The above mentioned dynamism in the operating environment, in the organization itself, and also in the transition profile of its performance amidst crises brings in a system's view as general system theory defines a system as "[…] a complex of elements standing in dynamic interaction" (Bertalanffy 1952). Organizations as systems are self-regulating entities that can generate some change in its environment and that change is reflected in that system in some manner (feedback) that triggers a system change. A business firm is clearly an *open* system exchanging material with its environment focussed on achieving particular goals like shareholder value, profitability and customer equity (Sundström and Hollnagel 2006). The essence of commitment to resilience "[…] is therefore the intrinsic ability of an organization (system) to maintain or regain a dynamically stable state, which allows it to continue operations after a major mishap and/or in the presence of a continuous stress" (Weick and Sutcliffe 2007). Thus the concept of resilience is established in view of organizational regularities ('laws') at a system level. Thus systems thinking plays an important role in understanding how organizations, regarded as systems consisting of consist of people, structures, and processes, influence one another within a whole (or operating environment) to be 'healthy' or 'unhealthy'.

Such self-regulatory nature of organizations increasingly limits the application of a one-size-fits-all organizational solution (management, policy or strategy) to create resilience due to contextual differences (Sullivan-Taylor and Branicki 2011). This makes resilience an organizationally contingent concept in practice as there is no single best way to achieve organizational success during various types of crises, nor a single best antecedent or capability to lead the company out of resource scarcity in times of crises, neither a single best strategy to be followed to make decisions. Instead, the optimal course of action is contingent (dependent) upon the internal and external situation faced by the organization to develop successful performance (Morgan 1986, Scott 2002). Thus contingency theory is the fundamental 'building block' describing the phenomenon of organizational resilience as the best way for organizations.

3. Research Methodology

This thesis is a compilation of five appended papers each having a relevant methodological consideration. The aim of this chapter is to give an overview of the approach and scientific reasoning that led to the underpinnings of this thesis work. Overall this chapter highlights some of the fundamental theoretical and methodological foundations on which this research is based upon; ontological and epistemological assumptions, research approach, strategy and design.

3.1. Introduction

O.E.C.D. (2002) defined research as the formal work undertaken systematically to increase the stock of knowledge, including knowledge of humanity, culture and society, and the use of this stock of knowledge to devise new applications for establishing or confirming facts, re-affirm the results of previous work, solve new or existing problems, support theorems, or develop new theories. Approaches to research depend on four set of assumptions about the nature of science identified along the philosophies of science as epistemological assumption, ontological assumption, assumptions about human nature, and methodological assumptions (Burrell and Morgan 1979). Thus the research philosophy contain assumptions about how one views the world and the process along which knowledge is developed thus relating it to the nature and creation of knowledge. Assumptions based on ontology, epistemology and human nature have direct implications on the methodology because any method/methodology is based upon the nature of knowledge developed (epistemological assumption) and the nature of existence or reality (ontological assumption) (Solem 2003, Hellström 2007). Thus it's positioning in the scientific domain leads to the development of research approach, and the related reasoning and assumptions following it, strategy and design, ending with data collection and analysis. According to Gummesson (2000) these research paradigms are discussed along two schools of philosophy – the positivistic and the hermeneutic. The former one is aimed at providing a scientific explanation while the latter is aimed at providing an understanding of the phenomena (Denzin and Lincoln 1998). However, Guba and Lincoln (1994) mention four alternative paradigms, viz. (i) positivism, (ii) post-positivism, (iii) critical theory, and (iv) constructivism, with set of alternative proponents as shown in Table 3.1.

Table 3.1. Basic beliefs (metaphysics) of alternative inquiry paradigms (based on Guba and Lincoln (1994))

Item	Positivism	Post-positivism	Critical Theory	Constructivism
Ontology	Naive Realism	Critical Realism	Historical Realism	Relativism
Epistemology	Dualist/ Objectivist	Modified dualist/ Objectivist	Transactional/ Subjectivist	Transactional/ Subjectivist
Methodology	Experimental/ Manipulative	Modified experimental/ Manipulative	Dialogic/ Dialectical	Hermeneutical/ Dialectical

The fundamental assumptions of the research underlying this thesis are discussed in the remaining chapter.

3.2. Research approach and procedure

The researcher's philosophy of science

3.2.1. From Metaphysical Levels

Researchers mostly adhere to each set of extremes, either through positivism by believing that the goal of science is to uncover the truth by simply describing the phenomena that is experienced through observation and measurement, or by being epistemologically subjective in acquiring and interpreting knowledge. On the other hand, critical realists believe that the goal of science is to hold the goal of getting it right about reality even though we can never achieve that goal (www.socialresearchmethods.net) thus not aiming at generalizing theories or testing or falsifying them

according to Popper. Thus critical realists believe that the characteristics of external reality are in constant change over time and are man-made as conceptualized by Roy Bhaskar. Critical realists consider the possibility of identifying causality between independent and dependent variables controlled by certain law which in turn is governed by space and time. From this perspective, the present research adopts a philosophical foundation consisting of critical realism and epistemological relativism and contributes to a very new domain of methodological underpinning called critical realist-grounded theory (CR-GT) approach to theory creation and evaluation as also done by heterodox economists (Lee 2012). In one way author of this thesis regards himself to be adopting a critical realist's eye by causally structuring the investigation out of the research objective in the manner highlighted in Figure 3.1.

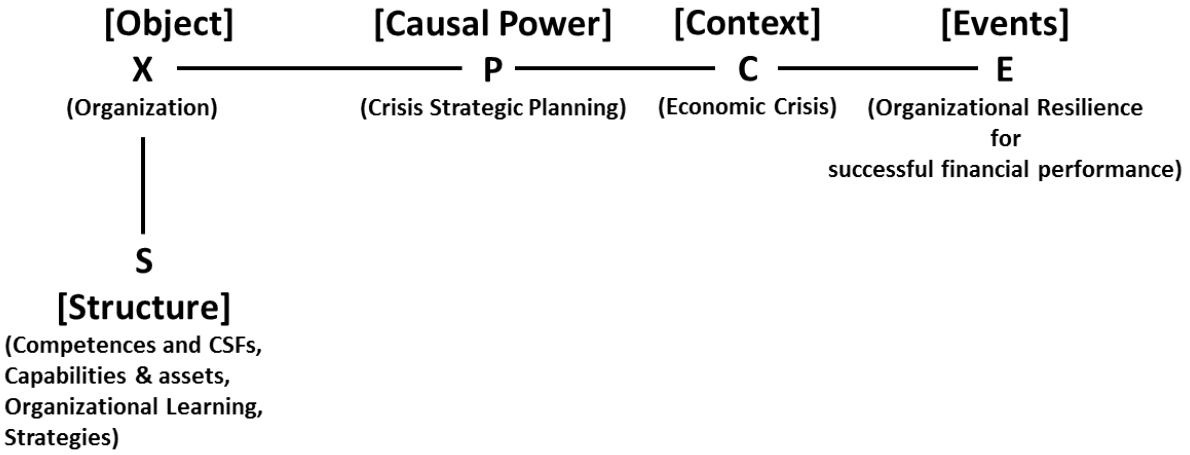


Figure 3.1. Critical realist view of causation of ORes processual framework (adapted from Sayer (1984))

Based upon eight basic assumptions of critical realism according to Sayer (1984) and Sayer (1992), the Figure 3.1 describes five variables, viz. object/entities, structure, causal power, context and events, that breaks up the 'real' world in order to understand and explain the situations being researched. In context to the present thesis these are discussed as follows:

1. *Object/Entities (X) – 'Objects, or more generally entities, provide the basic theoretical building block for critical realist explanation and can be such things as organizations, people, relationships […] and so on. They can be human, social or material, complex or simple, structured or unstructured* (Easton 2010). In this thesis, the entire causal relationship of how things change is being observed by referring to activities of organizations. Hence object in this context refers to the Swedish textile-related SMEs.
2. *Structure (S)* – This refers to the set of internally related objects or practices of the entity (Sayer 1992). In case of organizations this can be considered to be comprising of series of other entities like departments, people, processes, and resources nested within the entity or within the structure itself. In this work, author considers organizational competences and CSFs in the form of assets and resources (based on RBV theory), dynamic capabilities (based on capability-based theory), organizational learning (based on learning theories) and a multitude of strategies (for the strategy development process) essential for constituting the structure of the organization.
3. *Causal power (P)* – According to Sayer (1992), *'to ask for the cause of something is to ask 'what makes it happen', what 'produces, 'generates', 'creates' or 'determines' it, or, more weakly, what 'enables' or 'leads to' it'*. In variance theory, causal relationship refers to the logic used to explain what causes an event to occur (Van de Ven 1992). In this thesis, the causal power of the organization to generate crisis resilience is described by the crisis strategic planning (CSP) process.
4. *Context (C)* – Social processes are deeply embedded in the inner and outer contexts that produce them and surround the firm level processes thus shaping them through interaction

(Pettigrew 1997). Outer contexts refer to economic, social, political, competitive and sectorial environments in which the firm is located while the internal context refer to the structural, cultural and political environments in consort with the outer context that shape the processes. Simply speaking these refer to the relevant circumstances and in this thesis only economic crises in Sweden have been considered.

5. *Events (E)* – Events or outcomes refer to what the critical realists investigate, i.e. the external or visible behaviour of people, systems, and things as these occur, or as these have happened (Easton 2010). In this thesis, author pays particular attention to the process of resilience development in organizations considered to be a precursor in fostering success. Hence organizational resilience (ORes) is the outcome or event of this processual framework.

Sayer's (1984) view of causation based on critical realism thus characterizes the external reality about organizational success based upon resilience in a constant change. This is dependent upon describing the reality or 'getting it right about the reality' about the structures and causal mechanisms when combined with the facts of the events and in explaining how and why these took place. Such an explanation is not aimed at knowing about the truth but in understanding the mechanism that exists in an empirical domain and changes over time. This integrative causal explanation is evaluated on how well the causal mechanism, structures and descriptions are interwoven to describe the economic or financial outcome as also considered by heterodox economists (Lee 2012). This specifically demands explanation of the actual economic/ financial performance of the organization (critical realist view) used in measuring resilience, hence success, based on subjective grounded theory method (GTM). Consequently, GTM is used to create socially constructed knowledge of the causal relationship and in devising an analytical explanation of the economic reality as studied.

From this methodological standpoint a need to look into critical realist-grounded theory (CR-GT) approach for theory creation and evaluation is important and has the potential to overcome the shortcomings of CR (says little about theory) and the GTM (lacks ontological foundation) (Lee 2012). By combining the two, CR provides the ontological realist foundation for GTM and identifies the objects (structures and causal mechanisms) for empirical grounding, while the GTM provides the conceptually dense analytical explanation of the actual events represented in the data. In this regard, Lee (2012) stated, '*hence the CR-GT approach is not based on deductive or inductive logic, but on a reflective form of scientific knowledge creation data that is interactively fused with the creation of theory. So the theory is of the data – not separate from it; if new data supports the theory, it becomes part of it; while if the new data does not support it, then that data becomes part of a new theory with different structures, causal mechanisms, and perhaps demi-regularities*' (pp. 26).

It is argued by some critical realists that abduction is not the right methodological approach in contributing towards construction of such realist theory and also it does not indicate how the causal processes should be articulated as claimed by Sayer (1992), Oliver (2012) and others. Moreover, critical realists claim that the theoretical description of the causal process, in case of abduction, is weak on realism and there is no evidence that it is empirically grounded. In this context, the schema of the GTM is claimed to explain the process of data collection, theoretical analysis and theory building simultaneously as shown in Figure 3.2. This claims not to ignore or reject particular data, simplify and/or deform the construct. By doing this GTM tends to capture the complexities of data used to project the interwoven structure and causal mechanisms.

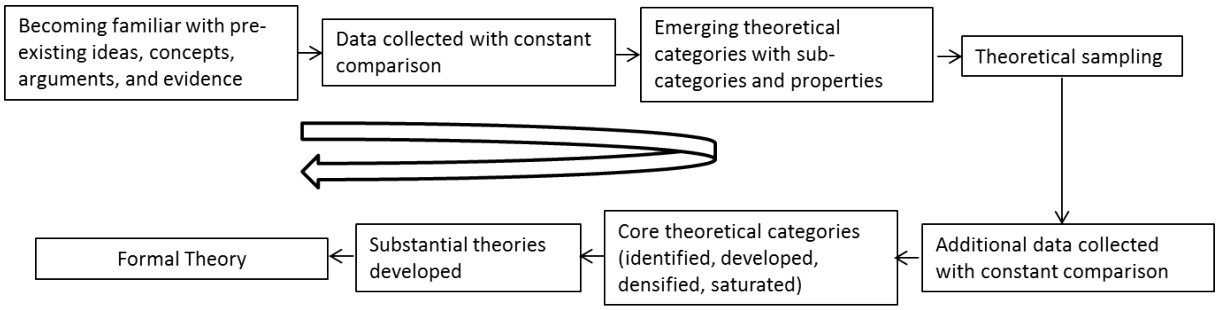


Figure 3.2. Schema for the grounded theory approach

However, it must be realized that the systematic schema as suggested above just shows the linearity in constantly dealing with data and theory for subsequent modification. However, the research process in this thesis requires constant iteration of the pre-understanding, the understanding (through literature review) and the empirics related to real-case to develop and refine the resilience frameworks or models. This call for a perfect hermeneutic research spiral which cannot be explained exactly by the GTM, instead by following an abductive reasoning approach (cf. Figure 3.6). Thus the process of abduction in connection to CR-GT approach is explained under section 3.3 (scientific reasoning).

3.2.2. At Operational Levels

Translating from the metaphysical level of discussion to the operational level, it is evident that the causal mechanism in application follows a process-based view or processual approach. A generic definition of a process highlights three major issues, viz. (i) it should use a logic to explain a causal relationship, (ii) it should use a category of concepts that refer to activities of individuals or organizations, and (iii) it should have a sequence of events that describe how things change over time (Van de Ven 1992). This working definition of process fits well with the causal explanation of ORes processual framework (cf. Figure 3.1). Such a processual analysis links between the context, processes and outcomes along with pattern recognition and explains various analytical complexities (Pettigrew 1997). In this context, Pettigrew (1997) highlights five internally consistent guiding assumptions: embeddedness (studying processes across a number of levels of analysis), temporal interconnectedness (studying processes in past, present and future times), explanation for context and action, search for holistic rather than linear explanation of processes, and a need to link process analysis to the location and explanation of outcomes. In such process research the overall cycle of constant iteration of deduction and induction includes the key steps of pattern recognition, thematic coding and comparative analysis.

3.2.3. Organizational resilience (ORes) processual framework

Resilience is a dynamic developmental process changing in response to changes in the external environment or context (Gibson and Tarrant 2010). This undoubtedly calls for unfolding the 'flow of events, identifying the underlying actors, attributes and mechanisms and highlighting the outcomes' over time in the study of organizational resilience in a processual framework. This approach supports the proposition that *'resilience depends on the behaviour of a system due to the structure of its attributes and the interaction between them'* (Lissack and Letiche 2002). Madni and Jackson (2009) in their conceptual framework highlighted a heuristic for developing resilience based on how it can be enabled by system attributes even after being affected by disruptions, however, this lacks a process-oriented approach in representation. In this regard, author claims the necessity to identify the critical leverage points for incorporating resilience into organizational processes by suggesting an ORes development conceptual process-based framework by understanding the irreducible linkage existing between context, processes and outcomes as in case of processual analysis (Pettigrew 1997).

From the perspective of ORes processual study organizational responses for generating resilience merit are considered to be embedded in an external or internal environment. Quite evidently,

resilience exists over a range of conditions observed differently among organizations facing the same event and within the same organization experiencing different types of events over different time periods, thus translating into different measures of resilience (Gibson and Tarrant 2010). This makes it an organizationally contingent concept (Sullivan-Taylor and Branicki 2011). It is relative to the emerging and changing circumstances and challenges, hence resilience at one period may not be sustained over time but broadly generates competence to adapt and strengthen capabilities for future (Egeland *et al.* 1993, Staudinger *et al.* 1993). As illustrated by Woods (2006), all systems have some degrees of resilience and sources for it. In reality this can be attributed to a complex interplay of various elements or attributes having different levels of contributions in shaping ORes in the changing context (environment) providing a multi-dimensional viewpoint to it (Ponomarov and Holcomb 2009). This renders a transient and emerging characteristic (Pettigrew and Webb 1996) to resilience unfolding the forces of interaction (mechanism); critical realist in paradigm. Thus in this processual analysis of ORes the (environmental) context is responsible in shaping the actors and agents (organizational competences) driven by various mechanisms (crisis strategic planning) for delivering the outcome (resilient firm's response) as ultimate source of competitive advantage and strategic growth options (Hamel and Välikangas 2003).

Yet again, looking from the 'outcome' perspective if a firm does not meet the needs of its environment then its competitive performance is going to suffer. According to Hamel and Välikangas (2003) and Sheffi (2005), ORes has become the core for success in the changing environment as the new source for sustainable competitive advantage (SCA). Stoltz (2004) stated that resilience is the key to develop sustainable strategic plans to prosper in chaotic times and organizations those are capable of making a sense of their environment, generate strategic options and realign their resources are able to produce results better than the less resilient competitors. This relates to the stages followed in developing the agility frameworks by Ismail *et al.* (2006) and Ismail *et al.* (2011) or the resilience management process of McManus *et al.* (2008). Several researches like 2004), Bordia *et al.* (2005), de Waal (2008), Keller and Price (2011) and others have shown in many ways how resilient organizations perform better both financially and operationally.

Thus according to the processual analysis explaining the causal mechanism of the ORes framework (cf. Figure 3.1), the following relationship processes (RPs) are key: (i) RP1: Between C (economic crises) and E (ORes for successful financial performance), (ii) RP2: Between S (organizational structure) and E (ORes for successful financial performance) for a particular C (economic crises), (iii) RP3: Between P (crisis strategic planning) and E (ORes for successful financial performance) for a particular C (economic crises, and (iv) RP4: Between P (crisis strategic planning), S (organizational structure) and E (ORes for successful financial performance) for a particular C (economic crises). This is analysed in chapter 5 (cf. chapter 5 - Analysis and Discussion).

3.3. Scientific reasoning

There are basically three approaches to research: inductive, deductive and abductive reasoning. Deductive reasoning deals with creating hypotheses from general laws and testing the existing theories on specific cases. In inductive reasoning specific cases or a collection of observations are studied to create general laws and theories (from empirical data). The third approach, abductive reasoning comes from the understanding that great advances in research does not originate from pure deductive or inductive reasoning but rather from a combination of the two (Figure 3.3). Abductive reasoning starts with an observation of a real-life event (1) but with certain prior theoretical knowledge or pre-understanding (0). This observation is then matched against existing theories (2) in an iterative process (Kovács and Spens 2005). Dubois and Gadde (2002) call this process as systemic combining. The aim with systemic combining is to understand the new process or phenomenon and to create or develop a new theory or new framework that explains the process/phenomenon (3) and finally to apply the conclusions (4) (Kovács and Spens 2005).

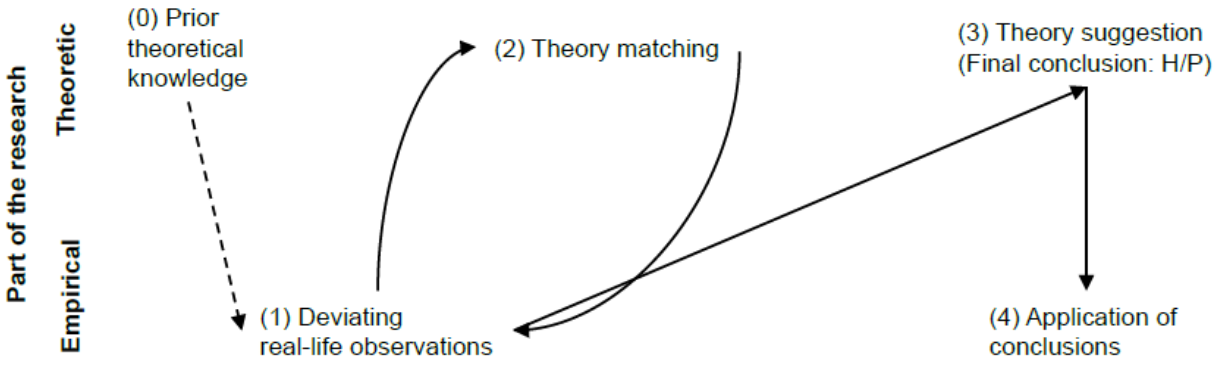


Figure 3.3. Abductive Research Process

As for the purpose of the thesis is concerned two things need critical explanation in following an abductive approach, viz. (i) how is systematic combining followed in case of a processual analysis of the causation mechanism?, and (ii) how is systematic combining followed in case of CR-GT approach?

The first question is answered in section 3.6. (cf. Research Process). Briefly stated, the systematic combination is adopted along each hermeneutic spiral by augmenting the pre-understanding through constant iteration between the consulted literature base and empirics to propose a theoretical framework hence develop the pre-understanding for the next level till conceptual or theoretical saturation is established. Along the causation mechanism for OREs framework, Table 3.2 explains the relation between the spirals and the RPs.

Table 3.2. Relationship between the hermeneutic spirals and RPs

Spirals	Relationship Processes
Spiral 1	RP 1 – Identifies the need for OREs in crises RP 2 – Differentiates successful financial performance based on CSFs in economic crises
Spiral 2	RP 1 – Quantifies resilience based on multivariate financial indicator during economic crises RP 2 – Highlights the antecedents of resilience in economic crises
Spiral 3	RP 1 – Categorizes firms in terms of financial performance-based OREs in economic crises RP 2 – Highlights the antecedents and strategies of resilience in economic crises RP 3 – Develops the CSP model based on planning and adaptation for OREs in economic crises
Spiral 4	RP 1 – Categorizes firms in terms of financial performance-based OREs in economic crises RP 2 – Highlights the antecedents and strategies of resilience in economic crises RP 3 – Proposes the 6-step CSP framework in economic crises RP 4 – Empirically tests the CSP based OREs framework in economic crises

The second question is answered in detail in section 3.4 (cf. Table 3.3). Briefly stated, the systematic combining in each spiral is followed in certain sequence which can be explained along Table 3.3.

Another important aspect of scientific reasoning is the natural or artificial dimension in researcher's work (Craighead *et al.* 2007). This is concerned with the positioning of the research between reality and perception and how the findings can be generalised for theory development. This is crucial in investigating the OREs developmental framework following a CR-GT approach. Evidently, Craighead *et al.* (2007) has categorised this into 3 dimensions, viz. (i) direct observations of object reality – by researcher through field studies etc., (ii) people's perception of object reality – through somebody else as in surveys, interview etc., and (iii) artificial reconstruction of object reality – mostly in case of modelling and system analytics or *constructivism* (Sternberg 2011). In this thesis a combination of these natural/artificial dimensions has been used for answering various research questions along the appended papers. Paper 1 incorporates survey 1 and is thus based upon people's (here respondents') perception of the reality about their organization. Paper 2 incorporates data from annual reports of firms which is utilized for developing a resilience measurement index fitting with the fact that there is

an artificial reconstruction of object (organizational) reality based on author's own belief about the property of resilience to set up the information construct. Papers 3 and 4 incorporate survey 2 and interviews and follow the aspect of scientific reasoning through people's (respondents') perception of object reality. Finally, paper 5 includes a combination of both, people's perception (in surveys and interviews) and artificial reconstruction of object reality by the researcher (in case study).

3.4. Research Strategy

The choice of the research strategy is dependent upon the research purpose and the type of research questions along with the scientific area it aims at contributing towards. Therefore the research strategy should outline the set of pre-specified procedures on how empirical evidence needs to be collected and analysed (Yin 2003). In turn this research strategy must be aligned with the researcher's philosophy of science, scientific reasoning and selected research approach along with available time and resources (Saunders *et al.* 2007). Saunders *et al.* (2007) listed a multitude of options on how to conduct research suggesting a range of research strategies to be considered, like experiments, surveys, action research, grounded theory, ethnography, archival research, and case studies.

Author believes that the research conducted here is not an experiment as it is not conducted in laboratories under controlled environment and is not a feasible option in case of business and management researches as also considered by Saunders *et al.* (2007) nor it is purely a survey-based work as it incorporates multiple methods of data collection apart from just surveys. From the points of view of action research and ethnographic studies the research does not fit perfectly in these domains as the researcher here does not actively involve himself in the change process of the studied firms nor does he embed himself in the field/context to capture the social or cultural meanings. Saunders *et al.* (2007) described ethnographic studies to be mostly appropriate with an inductive approach to describe and explain the social world. Moreover, the research conducted here does not exclusively use current and historical documents set as the primary source of information to focus on the change process thus not qualifying it to be an archival research. Even though case studies based on both qualitative and quantitative evidences form a major data collection method in this research (Näslund 2002, Yin 2003) the author considers that the research incorporates causal mechanisms and processes with sufficient degree of developing explanatory theories through epistemological relativism thus considering it to be more fitted to the method of grounded theory (Strauss 1987, Strauss and Corbin 1998). Also along the beliefs of heterodox economists, this grounded theory approach helps the author not only to recognize the observations, data and descriptions and compare them with the existing theories but also reinforces the latter to enter into theory creation by comparing, analysing, and interpreting them along a modified or constantly adjusted theoretical concept justifying an abductive procedure (Lee 2012). However, considering the research interest of selecting a method of identifying an organization's resilience outcome from the point of view of economic reality and then assigning a structure and causal explanation, it was necessary to understand the following: assign an economic reality (to organizational resilience) that is principally observable (ontological realism), produce an underlying set of causal mechanism and structure, and finally elucidate it through contingent or even counteracting explanations (epistemological relativism), thus summarizing the need to use CR-GT approach (Lee 2012). Clearly the frame of reference diagram (cf. Figure 3.1) justifies the choice of a newly developed research strategy (CR-GT approach).

Considering the need to support the array of structures as highlighted in Figure 3.1, primary or secondary, the data needed to ground them is diverse since some structures are based on statistical or quantitative data while others are based on social-relational data (qualitative in nature). Thus data triangulation is an important requirement in developing real, observable and measurable economic structures and the causal mechanisms (as seen in this research) as one type of data is not suitable for theory construction (Goulding 2002, Olsen 2003, Downward and Mearman 2007, Lee 2012). So this research uses data collected through surveys, interviews, case studies, and secondary data (both qualitative and quantitative in nature). The sampling techniques followed in the appended papers were also suitable for mixed methodological approach (cf. Table 4.2, column 4). Furthermore, the data

analysis was also conducted following mixed methodology; using thematic coding for interpreting most of the qualitative data collected while analytical statistics for the quantitative portion (Patton 1990, Miles and Huberman 1994). Details of the data collection, sampling design and data analyses is provided under section 3.5 (Research Design).

Along the schema for grounded theory (in Figure 3.2), author adapts and summarizes the adopted CR-GT approach using mixed methods in this research to determine the choice of the unit of analysis, data collection and analyses techniques and sampling procedures along the following steps: (i) critical investigation of the pre-existing ideas and concepts, (ii) data collection, constant comparison and establishing theoretical categories, (iii) theoretical sampling and saturation, (iv) setting out structures, causal mechanisms, demi-regularities, and grounded theories, (v) evaluating grounded theories, and finally (vi) summarizing the critical realist-grounded theory (CR-GT) approach, as shown below in Table 3.3.

Table 3.3. CR-GT approach used along the hermeneutic spiral in the thesis

CR-GT approach	Along the Hermeneutic spiral used in this thesis (cf. Figure 3.6)
Critical investigation of the pre-existing ideas and concepts	Spiral 1: Pre-understanding of 'business competency mapping' and literature review on 3-DCE and CSFs Spiral 2: Pre-understanding of 'resilience' and literature review on ORes and its antecedents Spiral 3: Pre-understanding of 'ORes for SME practice' and literature review on resilient SMEs Spiral 4: Pre-understanding of 'crisis strategic planning' and literature review on it
Data collection, constant comparison and establishing theoretical categories	Spiral 1: Data collection through survey 1 for constant comparison to propose the first model for organizational designing to yield success Spiral 2: Data collection from secondary data sources (extant literatures and company annual reports) for constant comparison to propose resilience model 1 Spiral 3: Data collection from survey 2, interviews and case study for constant comparison to propose resilience model 2 Spiral 4: Data collection from case study for constant comparison to propose resilience model 3
Theoretical sampling and saturation	Spiral 1: Survey 1 based on convenience- and judgement-based non-probabilistic sampling Spiral 2: Criterion-based non-probabilistic sampling for collecting secondary data; Convenience sampling for choice of pilot company Spiral 3: Theory-based sampling for survey 2 and interviews Spiral 4: Critical case: Combining purposeful and convenience sampling for case study
Setting out structures, causal mechanisms, demi-regularities, and grounded theories	Spiral 1: Establishing RP 1 & RP 2 Spiral 2: Establishing RP 1 & RP 2 Spiral 3: Establishing RP 1, RP 2 & RP 3 Spiral 4: Establishing RP 1, RP 2, RP 3 & RP 4
Evaluating grounded theories & Summarizing CR-GT approach	Along the hermeneutic spiral: Spiral 1: Proposing the first model for organizational designing to yield success Spiral 2: Propose resilience model 1 Spiral 3: Propose resilience model 2 Spiral 4: Propose resilience model 3 (resilience development process framework)

3.5. Research Design

Having selected the research strategy, the next step is to design the research on the basis of a logical sequence of the adopted CR-GT technique using mixed methodology along the hermeneutic spiral. This is a way of relating the set of research questions to the empirical data and derive the conclusions (Yin 2003). The research design can be regarded as a roadmap for determining (i) the unit of analysis, (ii) sampling techniques, (iii) relevant data collection methods, and (iv) data analysis techniques.

3.5.1. Unit of analysis and observation

The fundamental issue in designing research studies is to establish the unit of analysis which helps in addressing the purpose and research questions and in relating them to the research findings (Dubois

and Gadde 2002, Yin 2003). According to Yin (2003), the unit of analysis can be an organization, an individual, a process etc. which is studied as a 'case' during the investigation to draw conclusions while the unit of observation is the unit on which one collects data. The selection of appropriate unit of analysis is clearer when the research questions are specified. Considering the different research purposes and various research questions addressed in the five appended papers the choice of the units of analyses were different. Table 3.4 summarizes the units of analyses and observations as derived from the research purposes and used in the five appended papers.

Table 3.4. Units of analyses and observations

Papers	Research purpose	Data collection methods	Unit of observation	**Unit of analysis** (of Swedish textile-related companies)
1	Investigate the need to develop an extended 3-DCE model for organizational designing for synthesizing and sustaining CSFs in dynamic environments	Survey	Individuals (Company owner/CEO)	Organizational design related to 3-DCE and CSFs
2	Relate resilience to the degree of business health in terms of economic viability and quantify it	Secondary financial data	Annual reports	Business health and economic resilience
3	Identify constraints faced by Swedish textile-related SMEs during economic crises, identify the antecedents and their effects on economic resilience	Semi structured interviews Survey Secondary financial data	Individuals (Company owner/CEO) Individuals (Company owner/CEO) Annual reports	Antecedents of resilience (factors)
4	Categorize resilient and less resilient SMEs in terms of their financial performance and identify what strategic initiatives differentiate their respective responses in crises	Semi-structured interviews Secondary financial data	Individuals (Company owner/CEO) Annual reports	Strategies for resilience (factors)
5	Focus on resilience development process along a crisis strategic planning-based framework to achieve economic resilience	Case study (through multiple interviews, surveys and assessment of secondary data)	Organization	Resilience development process

3.5.2. Methods of Data Collection

3.5.2.1. Methods of data collection in the appended papers

Data collection and analysis methods can be broadly classified into two categories: quantitative and qualitative. Mostly quantitative methods are used to collect and/or generate numerical data while qualitative works are mostly concerned with the techniques and procedures that use and/or generate non-numerical data (Saunders *et al.* 2007). On the other hand, by combining the collection and analysis of both quantitative and qualitative data an integrated research strategy can be used to enhance the construct validity (a form of methodological triangulation). Such mixed method researches can be conducted with *single approach designs (SAD)* in which quantitative or qualitative strategies are employed to enhance the research quality for a single analytical interest or through *multiple approach designs (MAD)* employing distinct research strategies and approaches for pursuing multiple analytical interests. In this research, such MAD is pursued to address two analytical interests. The first aims at exploring the organizational CSFs and how they can be utilized or combined together for designing for resilience and also investigate whether resilience is a precursor for organizational

success. This is addressed both quantitatively (using analytical statistics) and qualitatively (thematic coding for pattern and process analyses). The second analytical interest aims at recognizing patterns in operations and strategies required in developing firm resilience to establish the resilience development process. This is predominantly addressed through qualitative approach of thematic coding for pattern and process analyses. They both integrate together to investigate and establish the structured causation mechanism in yielding organizational resilience.

In this research different data collection methods were used to address the research questions. They are described here along with the adopted sampling techniques.

3.5.2.2. Sampling designs

Sampling designs comprise of two critical components: the sampling scheme denoting the explicit strategies to select the unit of observation and the sampling size indicating the number of units selected for the study (Onwuegbuzie and Collins 2007). In case of mixed method researches, 24 such schemes were identified by Onwuegbuzie and Leech (2007) using the frameworks of Patton (1990) and Miles and Huberman (1994), of which five were based on random sampling techniques and the rest were non-probabilistic.

The choice of the major sampling schemes in this research is highlighted in Table 3.5. Also the choice of the right sample size (cf. Table 3.5) is critical to increase representation of the population. This is predominantly based upon probability computations of statistical power analyses in case of quantitative works while it depends on expert opinions in case of qualitative researches (Onwuegbuzie *et al.* 2004, Collins *et al.* 2007).

Table 3.5. Sample selection criteria

Method	Sampling Scheme	Sample Size
Survey 1 for paper 1	Combining convenience- and judgement- based non- probabilistic sampling	42 Swedish textile, clothing and fashion (TCF)
Secondary data for paper 2	Criterion-based non-probabilistic sampling	20 Swedish textile-related firms
Case study for paper 2	Choice of pilot company based on convenience sampling	1 Swedish textile-related firm
Survey 2 for paper 3	Theory-based sampling	8 Swedish textile and clothing SMEs
Interviews for papers 3 & 4	Theory-based sampling	8 and 12 Swedish textile and clothing SMEs respectively
Case study for paper 5	Critical case: Combining purposeful and convenience sampling	1 Swedish textile-related firm

The table suggests that in case of survey 1, 42 Swedish companies representing various levels in the TCF value chain were chosen out of 290 contacted firms. Initially the firms were selected by contacting TEKO – the business and employers' organization for the Swedish textile and fashion companies, and searching through Europages directory, thus following a combined convenience- and judgement-based non-probabilistic sampling technique using certain pre-determined criteria, like all the firms were Aktie Bolag (public listed in Sweden), were common in both the lists and had a proper contact detail convenient for mailing survey. The sample size chosen was very much comparable to that recommended for correlational research designs (Onwuegbuzie *et al.* 2004).

In case of paper 2, the 20 firms chosen from the 42 responding firms used in survey 1 were based upon the sample selection criteria shown in Figure 3.4. This is purely criteria-based non-probabilistic sampling. The pilot case company was chosen on the basis of long association of the author with the company since commencement of the research project in Q2 of 2010 and due to the company's long enriched history. The same company was used as a critical case for the study in paper 5 considering additional selection criteria like locational proximity, convergences and divergences perceived in the company's analysis in the periods of crises and interesting transition in the business health of the group over a timeline thus matching the phenomenon of interest.

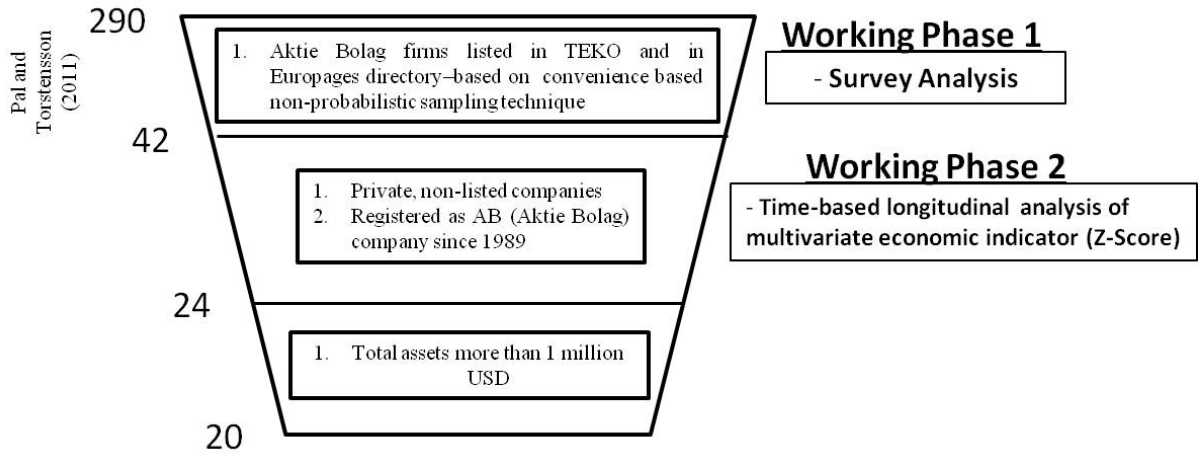


Figure 3.4. Sample selection criteria (as in paper 2)

Finally, the survey and interviews conducted for papers 3 and 4 were based on theoretical sampling techniques with the purpose of developing a theory related to resilience development process based on crisis strategic planning model. This also demonstrates the role of appropriate organizational structure on ORes along Figure 3.1.

3.5.2.3. Survey

There are four main survey research methods, viz. mailed surveys, in-person interviews, telephonic interviews and internet-based surveys (Shaughnessy *et al.* 2011). In the present research, two mailed surveys were conducted; the first was conducted in the hermeneutic spiral 1 while the other one was conducted in spiral 3.

Survey 1: Survey 1 was conducted between December 2009 and February 2010 by sending a properly framed survey questionnaire, by mail, containing questions divided into five sections viz. general business information, critical success factors, product design, supply chain design and process design. The survey was first drafted in English but then translated into Swedish for gaining better response. The basic results indicate how product-process-supply chain designs are vital for organizations and what are the critical success factors synthesized by them to be successful. The survey employed four different question formats: Likert scales (1-5), multiple responses, metric scale measurement and open-end questions. The survey template is provided in appendix 2. The respondents included various firms classified into three groups, viz. Group 1: consumer goods manufacturer/marketer (B2B), Group 2: consumer goods retailer (B2C) and Group 3: industrial goods manufacturer (B2B).

Survey 2: Survey 2 was conducted between November 2011 and January 2012 as a part of spiral 3. The survey questionnaire was developed deductively and was categorised into four sections aimed at finding out the major challenges faced during crises and to what extent the respondents regarded the influence of the three major resilience antecedents (resources and assets, dynamic capabilities and organizational learning) to affect their economic resilience. The predominant nature of the question was 'how do you relate the significance or lack […] to the economic transition profile […]'? The questionnaire was translated from English to Swedish and then mailed to the companies for higher comprehensibility. All the respondents were owner-managing director of Swedish textile-related SMEs. The survey was customized in a way as each of the companies was provided a project description and brief analysis and an explanation of its 20 years Z-score transition profile. Following the survey an acknowledgement and a synopsis of the research findings were e-mailed/mailed to each of the respondents and they were asked to participate in a short face-to-face interview. The eight responding

firms thus qualified for the next phase of interview to get more in-depth knowledge on the issue. See paper 3 for the survey template.

3.5.2.4. Interview

The interviews used in this thesis were conducted at various stages of the research process. As outlined by Silverman (2006) interviews can be structured, semi-structured, open-ended or focus group studies depending upon the degree of flexibility for determining the nature of the interview in real-time. Interviews are structured when the researcher takes a positivistic approach with no improvisation while the unstructured or semi-structured interviews are mainly flexible or adjustable during their course. Interviews can also be like historical narratives or focus group discussions.

In this thesis, the first set of interviews was conducted in Q2 (2010) as a part of the spiral 2 from a single firm as a pilot case. This was helpful for developing the first resilience model and also for explaining the resilience quantification system as in paper 2. These interviews were like narratives or very open-ended aimed at capturing both historical and current organizational perspectives amidst economic crises over a timeline since 1990. The primary concern when using these interviews as a data collection method was to capture the object reality by interviewing the right person in the right company. Thus this first set of interviews with a single company was aimed at interviewing the owner/managing director and the Chief Financial Officer (CFO).

The next set of interview study was conducted as a part of the spiral 3 in between Q1-Q2 (2012). Interviews were conducted with twelve Swedish textile-related SMEs and each interview lasted between 45 and 90 minutes and with a combination of both focused and semi-structured forms of questions (Flick 2009). The aim of the interviews was to have a clear understanding of the responses in survey 2. For this purpose all the firms were emailed a scanned copy of their survey responses. Some of the interview questions were aimed at identifying directly the reasons (as they emerged out of the survey results) behind the organizations' Z-score transition profiles and the contributing ratios (focussed in nature) while some were more open in nature (semi-standardized). All the interviews were conducted in English and at the respondents' premises.

Some additional focussed yet open-ended interviews were conducted between Q2 (2010) and Q4 (2012) (i.e. over a period of two and a half years) but only with the main case study firm in order to capture the interviewee's extensive experience of business resilience from a practitioner's perspective. Further discussion on these historical and theoretical narratives is made in the next section (cf. case study).

3.5.2.5. Case study

Case study as a research strategy is the most suitable technique for investigating contemporary events as suggested by Yin (1994) and Ellram (1996). This is because case studies focus on holistic situations in real life settings and have certain boundaries of interest (unit of analysis) and can thus be considered as an established method for exploratory, theory-building research (Eisenhardt 1989, Yin 2009). The object or theme of a case study can be either historical or current real-life event by combining multiple data sources like interviews, observations, surveys, documentation etc. enabling data triangulation (Eisenhardt 1989, Patton 1990).

Even though interviews are considered to be one of the commonly used data collection techniques in case study researches, in the present thesis they are considered separately. This is because the case study conducted in this thesis is on a single organization and is more like a comparative study of the same unit of interest in different time periods. This qualifies the present case study as a combination of both historical and current events in a narrative analysis. Such narratives include structures and causal mechanisms which when combined with the history or facts of the event explains how and why it took place (Lee 2012). In this thesis, the case study is of an individual business enterprise and the theme of the study (investigating organizational resilience from the perspectives of crisis strategic planning), as derived from the research objective, is delineated into an interplay of structure

(competences), causal power (crisis strategic planning), context (economic crisis) and event (resilience outcome) along a process framework. Hence this type of case study fits well with the motives of historical and theoretical narratives, thus integrating the theory with the event. Such case studies of historical and current events are the backbone of a robust substantive CR-GT approach.

In the present thesis, the case study on ACG Group was based upon a close nexus with the firm from Q2 (2010) to Q4 (2012) due to several reasons, like that of close proximity and the match between the research objective and interesting Z-score based resilience profile of ACG. During this period of study, a multitude of techniques have been followed for data collection purposes. Table 3.6 below shows it:

Table 3.6. Data collection techniques in the case study research

Official sources & databases	Survey	Interviews
- Annual reports from 1989-2010 obtained from Bolagsverket and Retriever database[14] - Internet-based documents - Internal financial documents from CFO	Surveys 1 and 2 answered by owner/MD	**Narrative interviews:** *In Spiral 2:* Owner/MD – 3 **Semi-structured interviews:** *In Spiral 2:* Owner/MD – 1; CFO – 1 *In Spiral 3:* Owner/MD – 1; CFO – 1; Owner/MD & CFO – 1; CEO of 2 group subsidiaries – 1 each **Semi-structured interviews:** *In Spiral 4:* Owner/MD – 2; CFO – 1

The historical perspective of the company was aimed at investigating the resilience development during the 1990's crisis. Data was collected from open-ended interviews and archived data from the company along with old financial reports obtained from Bolagsverket (http://www.bolagsverket.se/).This motivated in making a time period study of the firm since 1990. Similar narrative case study was also conducted for the same firm during the economic crises since 2007 (recent global credit crunch onwards) thus providing the current event perspective. Along with this a transition analysis of the resilience outcome of the case was conducted to generate a comparison.

3.5.2.6. Secondary data

Secondary data collected from various documents qualify as an important source of evidence. Documents are, *'standardized artifacts, in so far as they typically occur in particular formats: as notes, case reports, contracts, drafts […] statistics, annual reports […]'* (Wolff 2004b). In a more dynamic and user-oriented definition Prior (2003) mentioned, *'if we are to get to grips with the nature of documents then we have to move away from a consideration of them as stable, static and pre-defined artifacts.'* These documents can be either analysed quantitatively or qualitatively depending upon the research purpose and should not just be considered as 'information containers' rather than as *methodologically created communicative turns* used in constructing versions of events (Flick 2009). These documents are mostly available as texts (in a printed form) but they can also be in the form of an electronic file (a database, for example).

In the present thesis secondary data were collected from annual reports (particularly the income statements and balance sheets) of all the studied firms in order to provide a detailed account of their financial performances for quantifying resilience. One potential limitation of using annual reports in representing the truth about organizational financial performance (as highlighted earlier) has been the problem in tackling and controlling numerous accounting mismanagements and malpractices to manipulate accounts in the corporate world. The failure of companies such as Enron due to inappropriate accounting tactics stands out as perfect example. Companies can also devalue their

[14] https://web.retriever-info.com/services/archive.html

assets in order to evade taxes. However, certain regulatory systems like US-GAAP 1 or the new IFRS scheme have eliminated these discrepancies to a large extent. These annual reports were obtained either in printed form from Bolagsverket through contact or they were downloaded electronically from database like Retriever or Allabolag.

Secondary data were also obtained from the companies interviewed in various studies conducted throughout the research process in the form of printed leaflets, magazines and information brochures.

Furthermore, electronic articles and webpages of the studied firms also provided the author with adequate information for analysis. Particularly, press releases were very informative about the latest developments in the organization. Subsequently, printed and electronic internal documents were also obtained from the case study company (ACG Group) over the period of study owing to regular email contact with the CFO. These documents provided information about the internal financial plans, policies and investments of the organization. Similar documents listing turnover and profits of all the group subsidiaries and also of the major product innovation projects of the firm were utilised to reflect upon the effect of various businesses and strategies on the overall business health of the group.

Swedish statistical database (SCB[15]) was also used to compile data about the Swedish textile and clothing sectors in terms of their bankruptcy rates and various other industrial statistics.

3.5.3. Methods of Data Analysis

Combination of quantitative and qualitative approaches in studying various social or business phenomena has been advocated by an increasing number of researchers thus referring to the new movement of mixed methods research designs (Collins *et al.* 2007). However, the tension in using mixed method approach is not only felt in the stages of data collection and sampling but it also pertains to the integration of both qualitative and quantitative research methods during the data analysis phase. The four challenges of using mixed method approach as summarized by Collins *et al.* (2007), viz. (i) sampling problems, (ii) validity or legitimation issues, (iii) data integration or triangulation, and (iv) challenge of politics related to comparison, are discussed under the quality criteria of this thesis in the section 3.7.

This section instead, firstly addresses the various data analysis methods followed in the papers appended with the thesis. They are statistical analyses and thematic coding. This is followed by discussing the data analysis through mixed method triangulation used in answering the research objective (RO) posed in the thesis for relating the different causal mechanisms of the ORes framework (as shown in Figure 3.1). This highlights the cross-case analysis (Miles and Huberman 1994) by integrating data along seven stages of mixed method data analysis process, viz. (a) data reduction, (b) data display, (c) data transformation, (d) data correlation, (e) data consolidation, (f) data comparison, and (g) data integration (Onwuegbuzie and Teddlie 2003) in analysing the RO. This is provided in chapter 5 – Analysis and Discussion (cf. Table 5.10).

The two data analysis methods used in the appended papers are statistical analyses (descriptive and principle component analysis – PCA) and thematic coding.

3.5.3.1. Statistical analyses

Descriptive statistics are useful for presenting data in Tables, charts (pie, bar, pareto) etc. for proper organization and categorization. Descriptive statistics used in paper 1 help to organize the findings of the survey 1 along different categories, like CSFs and competitive advantage of the responding firms, product-, process- and supply chain- designs and CSFs of these firms, and also concurrent designing aspects and CSFs. Such pictorial representation is important to separate the 'vital few' from 'trivial many' factors for enabling focus on crucial categories (here organizational designing aspects). They

[15] http://www.scb.se/Pages/StatisticStart 348961.aspx (accessed on 17.02.2013)

are powerful tools for prioritizing improvement efforts. Apart from that the various organizational designing aspects or groups, like process-supply chain designing and CSFs, are also described using numerical variables like mean and standard deviation (cf. Tables IX and X in paper 1). Z-score transition profiles of the studied firms are also pictorially represented in Figure 7 (cf. paper 2). Figure 3 (cf. paper 3) and Figure 1 (cf. paper 5) while the bankruptcy statistics of Swedish textile firms are represented in Figure 1 (cf. paper 3). However these descriptions contribute negligibly towards the thematic coding procedures of the data analyses adopted in these papers. So author considers data analysis in papers 2, 3 and 5 predominantly qualitative in nature.

Numerical variables obtained by collecting data from survey 1 in the form of likert scale are also used to analyse the relationship between two sets of variables as seen in Tables IV, V and VI in paper 1. Pearson correlations (r) are useful in relating two set of variables (innovation as a CSF and product innovation characteristics in case of Table IV, supply chain designing and CSFs in case in Table V, and extent of process engagement and CSFs as in Table VI) to highlight these relationships.

Inferential statistical analyses in the form of factor analysis and principle component analysis are used in Tables VII, VIII and XI (in paper 1). Tables VII and VIII highlight the categorization of the organizational CSFs for loading various product design and supply chain specifications, respectively (cf. paper 1). On the other hand, Table XI highlights the factor loading by the CSFs onto organizational designing (component 1 representing concurrent product and supply chain designing; component 2 representing concurrent product and process designing, component 3 representing concurrent process and supply chain designing; component 4 representing value designing while component 0 representing the most holistic organizational designing aspect in dynamic environments and is termed as extended 3-DCE designing).

3.5.3.2. Thematic coding

Against the backdrop of grounded theory method developed by Strauss (1987), thematic coding was developed by Flick to interpret data along a multi-stage procedure and compare them. As compared to Strauss's grounded theory approach, this coding system applies a theoretical sampling technique based upon a topical criterion and aims at generating a theory (Glaser and Strauss 1967). However, the difference from Strauss's (1987) procedure lies in conducting a deepening analysis of a single case at first, followed by developing a system of categories for the analysis through open and selective coding (similar to Strauss) but not aimed at developing grounded theory across all cases rather than at generating thematic domains and categories for the single first case. After the first case analyses, cross-checking of the developed categories or thematic domains is done for further cases in order to increase the comparability (Flick 2009).

As in paper 2, the theoretical sampling was done while choosing company X as a case through non-probabilistic convenience sampling in order to explain the adopted scoring system developed via repeated testing. The thematic coding used in the paper is based on a 5-step resilience management process suggested by Allen and Davis (2010) (cf. paper 2). Initially the coding scheme developed was tested with company X in explaining its resilience characteristics from financial health. This was done by following open coding/categorization of the financial indicators obtained from annual reports by using multivariate Altman's Z-score ranges. This was followed by selective coding by categorising the Z-score transition profile into resilience schemes in order to characterise ORes. This data analysis sequence along ORes measurement relationship as mentioned in Figure 5 of paper 2 was then adopted for cross-case analysis wiht 20 firms for emergent pattern recognition.

In case of papers 3 and 4, thematic coding was followed firstly by open coding or categorization of the interview data along relevant convergent themes related to either antecedents or strategies. The long association of the author with the company ACG since Q2 (2010) helped in developing the pre-understanding for these categorisation schemes for directing towards pertinent search for literature base. Information gathering from this case study company for over two years contributed towards a deepened case analysis. In case of paper 3, the open coding of the interviews was done by

categorising the data into various antecedents of SME resilience (cf. Figure 2 of paper 3), followed by putting the data back together by making connections (integrating the fractured data under 3 broader resilience antecedents: assets and resourcefulness, dynamic capabilities, and learning and culture). This resulted in finding out new categories called process initiatives and exogenous factors contributing towards SME resilience. However the research lacked a view towards integration of the categories again through selective coding in the form of a narrative underpinning the phenomenon 'how resilience is fostered by its enablers'. Finally comparative pattern recognition was conducted by using cross-case analysis with 8 firms.

Similarly for paper 4, the open coding of the interviews was done by categorising the data into four strategic dimensions of crisis strategic planning (cf. Figure 1 of paper 4) followed by putting the data back together by making connections through integration of the fractured data along planned and adaptive resilience categories (cf. Figure 4 of paper 4 for axial coding schemes). This was followed by drawing conclusion on the overall resilience profile of the organization for CSP model development (selective coding). Finally comparative pattern recognition was conducted by using cross-case analysis with 12 firms.

In case of paper 5, the thematic coding was conducted along the 6-step crisis strategic planning-based resilience development framework. A deepened case analysis of ACG Group was conducted along the stages of open and selective codings. Open coding was done by categorizing the collected information along the 6 identified steps under the process. Selective coding was done by finally weaving the categorized data into a narrative for highlighting mainly the business health transition of the case firm followed by redefining the facets of CSP by relating a multi-strategic repertoire over a timeframe of development (cf. Figure 2 of paper 5).

3.5.3.3. Processual analysis

As identified by Pettigrew (1997), the research design for a processual analysis involves a constant repetitive interaction of deduction and induction. Such deductive structuring serves as a prelude to an open-ended inductive reasoning and pattern recognition. This includes: having a core question of study, relating the themes and questions, preliminary data collection, early pattern recognition and writing, disconfirmation and verification followed by elaborated themes and questions and further data collection, additional pattern recognition across more cases, and finally making a comparative analysis (Pettigrew 1997).

Similarly, in answering the overall research objective in this thesis a processual analysis was used to combine the findings of each appended paper for answering a multitude of RQs. Each of the RQs was answered using mixed methods technique (cf. Figure 5.1) while the overall RO of *investigating the inevitable requirements to develop resilience through crisis strategic planning* for Swedish textile-related SMEs was deconstructed into four resilience development relationship processes. The overall research objective was answered along the seven-staged data analysis process as proposed by Onwuegbuzie and Teddlie (2003) (cf. Table 5.10).

The constantly iterative cycle of deduction and induction as highlighted in processual research is typically followed in this thesis along the hermeneutic spirals. Each spiral contains or answers some RQs (contributing towards the overall RO). For example, spiral 1 contributes in answering RQ 1, spiral 2 contributes in answering RQ 2b and partly RQ 1, while spirals 3 and 4 delve into answering RQs 2a, 3a and 3b totally and RQ 1 partly. Also each of the paper has a theme to relate the observations and findings to the RQs (either through statistical or thematic analyses). This is followed by data collection followed by pattern recognition and comparative analysis for all the appended papers (along various stages of the hermeneutic spiral). For example in spiral 1, data collected through survey 1 is analysed statistically for pattern identification (cf. Table XI in paper 1 for PCA) to answer RQ 1 partly. This is followed by spiral 2 where-in paper 2 is devised for answering RQ 2b. Here data is collected for thematic evaluation (cf. Table 4.2) for pattern recognition in relating aggregate scoring of ORes and business 'health' and contributing financial ratios (cf. Table 2 in paper 2). In the next spiral 3, pattern

recognition is carried out to evaluate the relative importance of the resilience antecedents (cf. Table 2 in paper 3) required to answer the other RQs posed in this thesis. These RQs are also answered from their strategic perspective by paper 4, where pattern in the response repertoire of the responding firms is identified along an underlying multi-strategic framework (cf. Table 3 in paper 4). Finally, paper 5 highlights the recognisable pattern existing in the resilience development process of organizations along a crisis strategic planning framework. It also makes a comparative analysis of the CSP-based ORes development process in different time frames. The overall mission of the processual analysis is thus concluded along this rigorous hermeneutic spiral.

3.6. Research process and chronology

The research journey developed was an interactive dynamic process as the route or course of the research was guided by the hermeneutic spiral along an iterative process where each stage of the research starts with certain pre-understanding, provides us with knowledge or understanding and takes us to a different or preferably higher level of understanding (Alvesson and Sköldberg 1994, Gummesson 2000).

The research process is illustrated first in Figure 3.5 in relation to the time horizon on how the chronology of actions: data collection and analysis, literature review, framework development etc. were organized along with the development of the scientific papers. This is followed by Figure 3.6 where the chronology is represented from the perspective of matching the theory, framework and real-life observations in an abductive process along the hermeneutic spiral.

The research started in March 2009 with a project proposal to identify the critical success factors (CSFs) underpinning success or survival strategies for Swedish Textile, Clothing and Fashion (TCF) industries aimed predominantly at identifying the concurrent engineering approaches (derived from the initial project proposal). A pre-understanding on business competency mapping was developed (by author) through previous teaching experience. As the next step in the research, a survey (survey 1) was conducted on the Swedish TCF firms between Q4 (2009) and Q1 (2010) to align the CSFs to existing organizational designs along with a literature review on three dimensional concurrent engineering (3-DCE) and CSFs. This resulted in the paper 1. This originated insights on the potential requirements to generate an extended organizational model from the existing 3-DCE model and also in context to dynamic environments thus generating the need to explore, explain and verify the constructs of resilience capacity (cf. paper 1). The understanding yielded scope for investigation along two pathways. The first path aimed at realizing the resilience framework while the second path highlighted the need to relate organizational resilience to success by quantifying it.

The first pathway inevitably brought up the importance to study the extant literature base on resilience, particularly organizational and supply chain resilience, from the operational and strategic levels perspectives in Q2/Q3 (2010). This adopted development of a pre-understanding related to a preliminary resilience framework based on author's discussion with some other researchers in CAV (Centrum för Arbetsvetenskap) who did a KK-Stiftelsen funded project on organizational resilience in Sjuhärad region (in April-May 2010) highlighting economic, technological and social resources as three pillars for creating resilience. The first draft of the resilience framework was further developed and refined based on three extensive interviews conducted with ACG Group – the case company used in this research. Association with the case company has started since end of Q2 (2010). This resulted in proposing the resilience model 1 (cf. appendix 3).

The second path, on the other hand, was aimed at operationalizing the construct by relating ORes to success by quantifying it. This combined use of secondary data source (annual reports) for empirics, *a-priori* and conceptual foundation (related to systems theory, finance and resilience engineering) to create a relationship (RP 1) through sufficient matching of the two yielding paper 2.

Along path 1, the potential explorations so far served as the next level of pre-understanding to refine and develop the resilience framework from an SME perspective thus requiring another phase of literature review on 'resilient SMEs'. The review of the special issue on 'Resilient SMEs' in International Journal of Production Research (Volume 49, Issue 18) provided a complete overview of the topic and subsequently helped to refine model 1. From the data collection point of view another survey (survey 2) was conducted in between Q4 (2011) and Q1 (2012) supported by an interview study (in Q1/Q2 - 2012). This firstly, helped the author to think about modifying the model 1 for application from the SME's resilience development perspective (proposed as resilience model 2 – cf. appendix 4). Secondly, to develop paper 3 for the thesis and thirdly, to provide a fresher perspective to the resilience development framework (as the resilience model 2 was termed) to propose the resilience model 3 (termed as the resilience development process framework) based on crisis strategic planning. This stage of the research continued in Q1/Q3 of 2012 by iterative matching of the data collected through survey 2, interviews and case study to the proposed frameworks for subsequent refinement of the model to establish the crisis strategic planning based resilience development process framework. This stage of the research also contributed two papers (4 and 5). Finally, the doctoral thesis was written between end of Q4 (2012) and Q1 (2013) to aim at the public defence of the thesis in Q4 (2013).

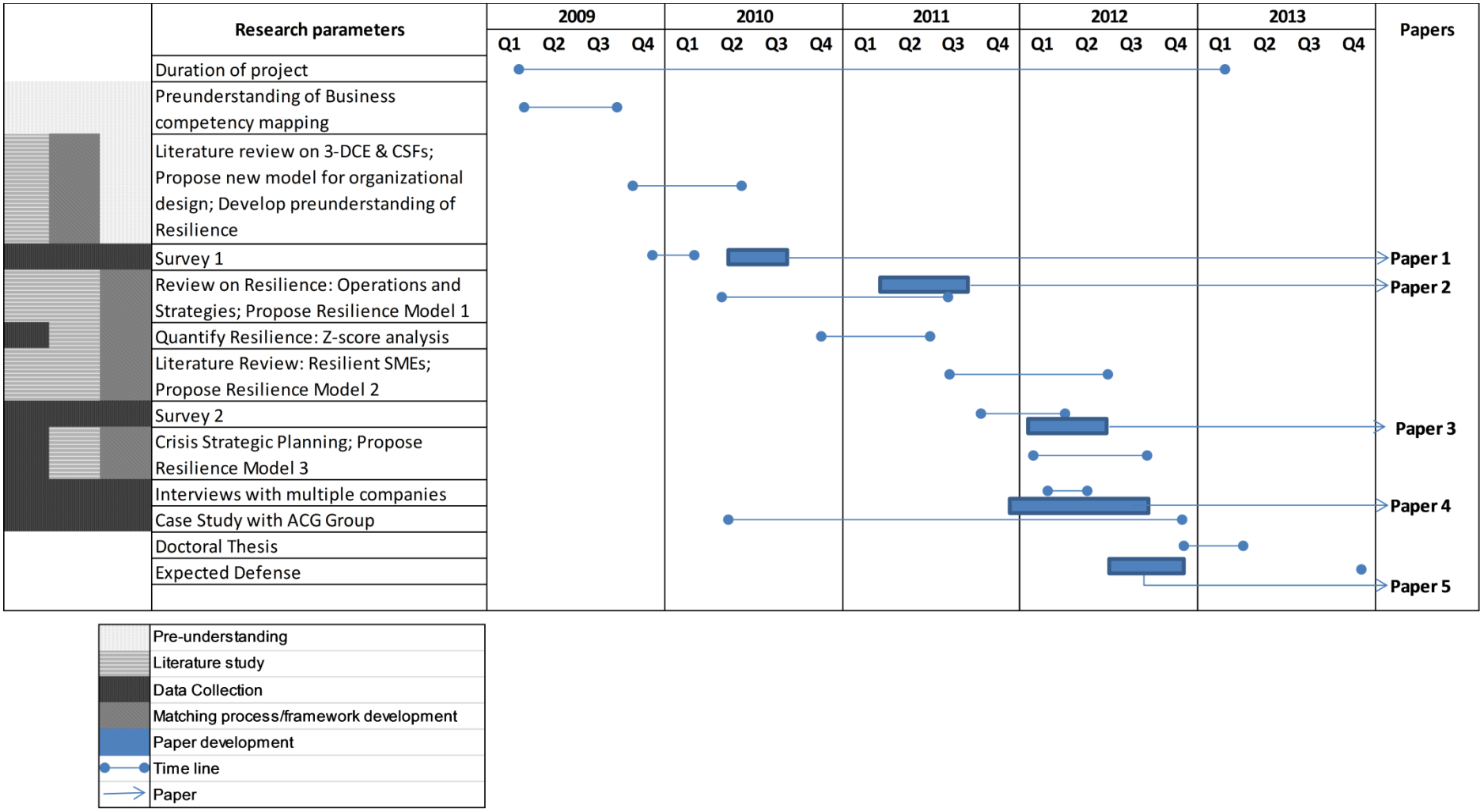


Figure 3.5. Research Chronology

Along the research process the iteration of the pre-understanding, the understanding (through literature review) and the empirics related to real-case develops and refines the resilience frameworks/models constantly by following a perfect hermeneutic research spiral through abductive reasoning (Figure 3.6). The starting point for Figure 3.6 is the shaded nomenclature used in the Figure 3.5 based upon the sequence of following the theory matching and refinement processes. This takes place as follows:

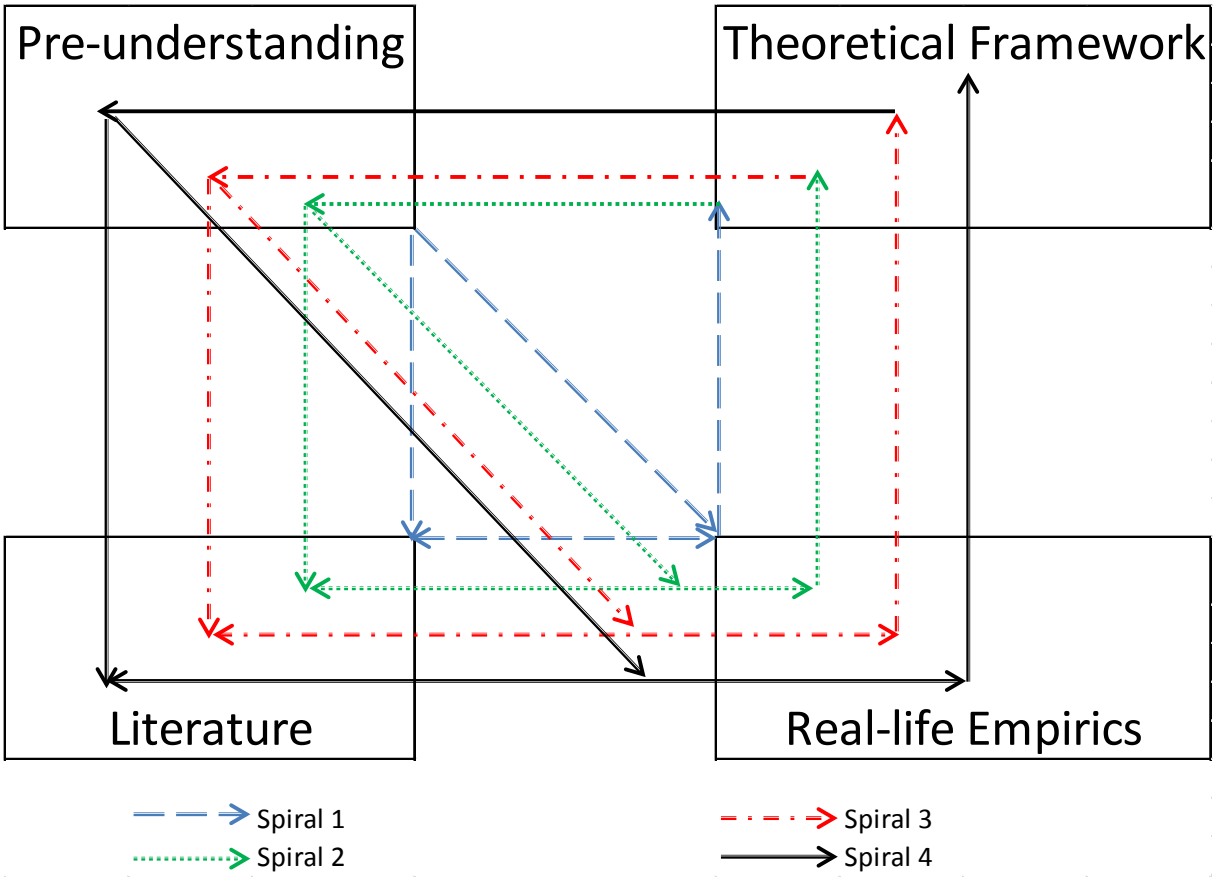


Figure 3.6. Research Process

As outlined in the processual framework studies it is always necessary to study an emerging phenomenon (Pettigrew 1997). The relative dearth in proper theorization of the concept of organizational resilience and its processes along with how can it render success thus intricately demands the development of the phenomenon by the systematic combining of the existing theoretical frameworks, empirical studies and author's progressively developed and refined models to establish an emerging new perspective. Thus it is inevitable to incorporate the repetitive matching of the four elements, viz. pre-understanding, extant literature, developed/proposed frameworks and real-life empirics as highlighted in Figure 3.6. This calls for undertaking an iterative abductive approach (Kovács and Spens 2005) in the present research through systematic combining as proposed by Dubois and Gadde (2002).

In this context, spiral 1 starts with author's pre-understanding of related subject within the research field of 'business competency mapping'. Based on this a survey questionnaire was developed for a survey-based study that was conducted between December 2009 and February 2010 (cf. appendix 2). Close relationship was maintained between the survey objective and existing literature on '3-DCE and CSFs' for matching the two. Results of the survey were used in proposing the first model (for organizational designing to yield success in dynamic environments – cf. paper 1). This originated the pre-understanding of 'resilience' research and was the starting point of spiral 2.

Spiral 2 started with the pre-understanding of 'resilience' and was polished using literature review on topics focussing on theories, operations and strategies related to organizational and supply chain resilience along with exploration from the initial phases of the case study. The literature review addressed different schools of thought related to concepts of resilience (summarized in Table 2.1). Author primarily relied on two articles, viz. Madni and Jackson (2009) and Sutcliffe and Vogus (2003) for the framework and then carried out further review of the articles cited in their references. Strategically author included the concepts of resilience proposed by different authors and summarized by Sheard and Mostashari (2008) along with scanning of the book 'Resilience Engineering: Concepts and Precepts' by Hollnagel *et al.* (2006) for relevant theorization by highlighting *organizational resilience* and *resilience at organizational level* as the most critical keywords in the search; the scope was however broadened by incorporating articles related to 'resilience' from other fields as well. Typically as the research methodology demanded author searched for articles highlighting multi-facets of ORes processes as proposed by Madni and Jackson (2009), like 'organizational resilience as/for adaptation, recovery and absorption process' and 'organizational resilience as/for positive functioning' (as in Table 2.1). For related journal articles author also searched using Google Scholar for *organizational resilience* as the keyword by selectively altering the list of references based upon personal knowledge of the literatures and requirements. The review also demanded a study of the contributing actors and underlying mechanisms shaping the ORes development process and its outcomes. For this, author referred to two different streams of literatures, viz. (i) *dynamic capabilities* and *slack resources* narrowed down to the study of 'product-, resource- and capability- based views of organizational adaptation and change', 'dynamic capabilities and slack resources for/as competitive advantage, and 'dynamic capabilities and slack resources for organizational resilience' and (ii) *organizational learning* narrowed down to the study of 'organizational learning for/as competitive advantage' and 'organizational learning for organizational resilience'. Scopes were further refined by looking into literatures related to 'organizational competence', 'learning organizations', 'sense-making', 'positive organizational scholarship' etc. High-impact articles related to organizational adaptation and change were referred, in this regard, also to define the gap existing in this literature base in studying survival or success strategies in organizations amid market turbulences. As organizational resilience is such a diverse and multi-disciplinary philosophy that is currently undefined and unstructured; author somewhat adopted a convenience sampling of the literatures (by selecting appropriate high-impact literatures from top journals like Academy of Management Review, Strategic Management Journal and Harvard Business Review and academic books by prominent publishers like Harvard Business Press and Ashgate Publishing) for articulating the processual relationship. Author rounded-up the framework by considering 'competitive advantage', 'high performance organizations' and 'organizational performance' as the outcomes of the ORes processual sequence by using them as keywords for relevant literature search as well. Author also considered linking supply chain risk management and resilience to the organizational perspective. This started with the reference list of Ponomarov and Holcomb (2009) that included key words like 'supply chain management', 'risk management' and 'adaptability' providing a quite diverse list of articles related to multiple facets of resilience. The paper Gibson and Tarrant (2010) also provided six interesting conceptual models related to organizational resilience and was also used extensively to derive concepts proposed in it.

This resulted in developing the first resilience model between Q2 (2010) and Q2 (2011). On the other hand, this model was complemented by the objective of quantifying resilience thus requiring a study of secondary data sources to make the resilience model 1 more outcome and causation oriented (cf. paper 2). This was the outcome of spiral 2 which acted as the pre-understanding for spiral 3 along the hermeneutic spiral.

Spiral 3 started in Q3 of 2011 with the objective of adapting the resilience model for SME practice. With this a literature review was conducted on 'resilient SMEs' or 'resilience of SMEs'. A major part of this literature review was based on summarizing the special issue of International Journal of Production Research on 'Creating Resilient SMEs' (Volume 49, Issue 18) (cf. Table 2.2) and articles referenced by them. Simultaneously empirical data was also collected using survey, interviews and

case study. The survey was conducted between November 2011 and January 2012 while the interviews were conducted between February 2012 and April 2012. Details of these data collection methods are provided in papers 3 and 4. The longitudinal case study also yielded sufficient information for matching the literature review to the collected and analysed data and thus refining the model 1 for prescribing the resilience model 2 (also termed as the resilience development framework). However, the results of this matching of literature and data along a particular thematic coding scheme highlighted the need for addressing new areas of research and relate them to resilience model 2 for further refinement/adjustment. This was the starting point of the last research spiral (spiral 4).

Spiral 4 started in Q2 (2012) with the pre-understanding of incorporating 'crisis strategic planning' into 'resilience' research. Author's search on 'Google Scholar' on this topic yielded very limited academic articles to be referenced. Some of the eminent authors referred in this literature search were Preble (1997), Herbane *et al.* (2004), Burnett (1998), Mitroff *et al.* (1992) and Vargo and Seville (2011). Data was collected over a longer period of time considering that the case study was conducted since Q2 (2010). The matching of data from the case study-based research and the model 2 refined it to finally propose resilience development process framework (resilience model 3) (cf. paper 5). This was matched with rival models by authors mentioned above (cf. Table 2.3) leading to its theoretical saturation. This is quite a compulsory requirement for grounded theory approach (Eisenhardt 1989). At the end of the spiral 4, thus theoretical saturation resulted in finalizing the resilience development process framework contributing towards theory refinement.

In each spiral the systematic combination of the pre-understanding developed from the previous spiral in the process (emerging perspective), the available theoretical framework, literature and empirical data were combined and applied along the matching technique to refine/adjust the proposed framework and also to develop the next level of pre-understanding. This is in fact quite similar to the circular model of research process proposed by Glaser and Strauss (1967).

3.7. Research Quality

Four conventional criteria viz. internal validity, external validity, reliability and objectivity are used to establish the quality of any empirical social research (Guba and Lincoln 1989). This supports Yin's criteria in designing tests for judging quality of research (Yin 2009) as shown in Table 3.7. These conventional criteria are matched along the four parameters for measuring 'trustworthiness', viz. credibility, transferability, dependability and confirmability, respectively, as paralleled by Guba and Lincoln (1989) (Halldorsson and Aastrup 2003). This is particularly necessary as the present research uses mixed methods characterizing both quantitative and qualitative aspects. In case of mixed methods research the challenge of representation is often intensified because both the qualitative and quantitative components of studies bring in their own challenges. These are pertaining to either (i) sampling, (ii) validity or legitimation issues, (iii) data integration or triangulation, and (iv) the challenge of politics related to comparison (Collins *et al.* 2007). Furthermore, the samples that are selected for the qualitative and quantitative components should (a) generate adequate data pertaining to the phenomenon of interest under study for allowing thick, rich description to increase the descriptive validity and interpretive validity (Maxwell 2005), (b) help the researcher to develop data saturation, theoretical saturation, and/or informational redundancy (Lincoln and Guba 1985, Strauss and Corbin 1998), and (c) allow the researcher to make statistical and/or analytical generalizations.

Table 3.7. Conventional quality criteria

Criterion & Explanation (Guba and Lincoln 1989)	Criterion & Explanation (Yin 2009)	Tactics (phases)	Problems (Collins *et al.* 2007)
Internal validity: Extent to which variations in an outcome or dependent variable can be attributed to controlled variation in an independent variable	Internal validity: Addresses rival explanations, does pattern matching and uses logic models to explain the concept building	- Pattern matching (Data analysis) - Explanation building (Data analysis) - Address rival explanations (Data analysis) - Use logic models (Data analysis)	Credibility of the design and explanation
External validity: Approximate validity with which we infer that the presumed causal relationship can be generalized to and across alternate measures of the cause and effect and across different types of persons, settings and times	External validity: Ensures the generalizability of the study either statistically or analytically	- Use theory in single-case studies (Research design) - Use replication logic in multiple cases (Research design)	Challenges pertaining to integration through triangulation; and comparison and consolidation of quantitative and qualitative data
Reliability: A given study's consistency, predictability, dependability, stability and/or accuracy […] of the phenomena being assessed and of the instruments used to assess them	Reliability: Demonstrates that the operations of the study can be repeated, following a fixed protocol, to come up with the same results/conclusion	- Use case study protocol (Data collection) - Develop case study database (Data collection)	Dependability of the explanation for analytical generalisation
Objectivity: A demonstration that a given inquiry is free of bias and/or prejudice	Construct validity: Establishes correct operational measures for the concepts being studied using multiple sources of evidence and intermittent reviews	- Multiple sources of evidence (Data collection) - Establish chain of evidence (Data collection) - Review draft case study reports (Composition)	Challenges of politics (in combining qualitative and quantitative approaches related to contradictions and paradoxes, sample size problems)

For addressing these research quality issues, the tactics outlined above are used in various degrees in the studies conducted in this thesis. These four quality criteria mentioned above are highlighted below, first paper-wise and then along the entire thesis.

3.7.1. Internal validity/ credibility

In paper 1, internal validity of the research was justified by building up a logical model of extended 3-DCE framework based upon quantitative pattern matching using survey data gathered from 42 companies. For the data analysis, inferential statistical observations like factor analysis and principle component analysis (PCA) were conducted to identify the differential loading or importance by various CSFs in designing different organizational models. The PCA conducted in Table XI (paper 1) highlighted various rival explanations of achieving organizational success either through concurrent designing or 3-DCE or designing value propositions vs. a holistic 'extended 3-DCE designing'.

In paper 2, internal validity of the research was concerned with the addressing of the topic of interest (ORes for successful business health) using rival theories or explanations along with pattern matching during analysis. Firstly, the areas of 'organizational resilience' and 'health of business systems' are

related by addressing various business system states and the transitional behaviours to different acts of resilience (cf. Figure 1 in papers 2). Secondly, the rival explanations of measuring business health by using univariate ratios as compared to Altman's Z-score and their possible shortcomings to holistically capture the issue was also explained in the paper. Finally pattern matching in the aggregate scoring of ORes and its relation to business health was conducted as indicated in Table 4 of paper 2.

Papers 3 and 4 were quite similar in the nature of data analysis. Interview-based studies were conducted and pattern matching was achieved during the data analysis phase (cf. Tables 2 and 3 in papers 3 and 4 respectively) to come up with rival explanations. For example, in paper 3 rival or supplementary explanations other than antecedents for favouring SME were identified as process initiatives and exogenous factors. These process initiatives were further studied in paper 4. Even though pattern matching was a large part of the research conducted in paper 4 however rival explanations to the studied phenomenon of 'crisis strategic planning' for yielding ORes were not looked into.

Paper 5 adopted a case study research to explore the resilience development process through CSP. Explanation of rival/complementary concepts in developing ORes was provided in Table 1 of paper 5 to highlight their potential shortcomings. Furthermore, pattern matching was achieved by comparing the phenomenon of interest in two different time periods for identifying potential convergences along the resilience development process framework and also by comparing notes and data from multiple interviews and discussions to reflect upon rival explanations.

Finally, internal validity of the overall thesis was strengthened along all the spirals of the hermeneutic process through repeated pattern matching in all the conducted studies and also by identifying the rival explanations to most of the key subject areas, even though rival explanations of organizational success from viewpoints other that ORes (like sustainable competitive advantage etc. have not been detailed).

3.7.2. External validity/ transferability

The use of thematic coding principle based upon development of thematic domains from single case analysis at first, followed by cross-case analysis along the established logic is essential for achieving analytical generalizability in research.

Paper 1 aimed at achieving statistical generalisation by using results from 42 responding Swedish TCF firms. The inferential statistical observations used in paper 1 for relating various organizational designing aspects to CSFs were conducted under low type I errors of 1% & 5%, respectively.

Paper 2 used a conveniently chosen sample size of 20 for evaluating the Altman Z-score-based transition profile for each company over 20 years period. The operational measure of Z-score itself has low type I and type II errors of 6 % and 3%, respectively (Altman 1968). Also the use of a thematic coding principle based upon Allen and Davis (2010) by establishing the thematic domains through initial investigation of company X and then following the same procedure for the rest of the firms resulted in analytically generalising the model for quantifying resilience (cf. paper 2).

In papers 3 and 4, analytical generalisations were established by using multiple cases for the studies along the thematic coding principle (Flick 2009). In both the papers, thematic coding was conducted as follows: (i) open coding along convergent themes: either in terms of antecedents or multi-strategy initiatives, (ii) axial coding through categorization: either along ORes enablers or planned and adaptive strategic initiatives, (iii) selective coding: drawing conclusion on overall resilience (only in paper 4), and finally (iv) comparative pattern analysis: of multiple cases. This procedure ensured external validity of the conducted studies.

In paper 5, the generalizability was achieved by following a thematic coding principle as well (cf. paper 5 and Table 4.2) followed by conceptualising the theoretical framework (that of CSP-based resilience development). The case study chosen also reflected upon the choice of a critical case to relate different degrees of success to ORes and its processes.

Overall in the thesis, external validity was ensured by following mixed method approaches (using triangulation for data analysis) and by testing the developed frameworks using multiple cases along certain thematic coding principles.

3.7.3. Construct validity/ dependability

Paper 1 was based upon survey 1 which was answered by 42 Swedish TCF firms. The survey was designed based upon a deductive literature review followed by its pilot testing with a company for ensuring its construct validity. Also by relating the organizational design to most common CSFs, the construct of the study was made robust through selection of correct operational measures of organizational success.

In case of paper 2, the financial results of the participating companies were obtained from multiple sources like Allabolag[16], Retriever database[17] and Bolagsverket to ensure the dependability on the financial data. Also the dependability on the chosen operational measure to quantify resilience (Altman's Z-score based transition profile) was strengthened by using an established thematic procedure (cf. paper 2).

Construct validity in papers 3 and 4 depended on the use of multiple sources for collecting data (survey 2 and interviews) for addressing the same phenomenon of interest. The survey 2 was conducted at first, followed by devising similar set of interview questions, closed in nature, for the same respondents (mainly the company owners) to reflect upon. Iteration of some of the critical questions in the survey 2 and the interview enhanced the construct validity of the studies. Communicative validation of the interviews through transcriptions, development of summary sheets and discussion over the contents of researcher's interpretation with the respondents resulted in establishing a chain of evidence in data collection and proper review of the draft cases for measurement or analysis. Most of the interviews were done by two interviewers and all of them were recorded.

In case of paper 5, a single case study research was made by using different types of data collection methods like surveys, interviews, secondary documents etc. for methodological triangulation. Different types of interviews were conducted as well, some were closed in nature, and some were semi-structured while the rest were open narratives. This ensured redundancy in the collected data necessary for subsequent contrasting for comparison.

Overall, the construct validity of the entire thesis was established by following methodological triangulation (using surveys, interviews, cases and secondary documents), reviewing gathered data either by transcribing or by maintaining summary sheets, by using multiple interviewers, and by identifying in each case the right operational measure.

3.7.4. Reliability/ confirmability

Reliability of the paper 1 was dependent upon the interpretability of the questionnaire (during the survey) as it was subjected to certain extent of respondent's biasness and also to the researcher's categorization of the variables/components during inferential analyses, like that of segregating or clustering the CSFs based upon their loading onto different organizational designing components. The

[16] www.allabolag.se (accessed 16.02.2013)
[17] https://web.retriever-info.com/services/archive.html (accessed 16.02.2013)

level of significance of such tests (which is quite high in this case) also determines the reliability in coming up with similar conclusions repeatedly.

Paper 2's reliability was dependent upon the two aspects of the conducted study, viz. (i) accountability of the financial reports used, and (ii) researcher's coding scheme for quantifying resilience. Collection of data from reliable and official databases demonstrated reliability of the financial information. The annual reports can be easily traceable. Also the multivariate Z-score model used was sufficiently robust since it has been used extensively in the field of corporate finance in predicting business health for over fifty years (Altman 2000). The only concern was that the coding scheme was developed through abductive testing and thus incorporated significant interpretation by the researcher.

In papers 3, 4 and 5, within the permissible limits of the researcher's biasness subjected to constructivism in grounded theory approach (in terms of the ORes construct and process framework) and interpretivism during the analysis, the raw data (from interviews) were obtained by jotting down a chronology of actions & events, from press releases and also from the annual reports and internal documents. In each study, the interviewees were asked to narrate their viewpoint on the object reality (the organization) by reflecting upon a causation mechanism (cf. Figure 3.1), hence to some extent lacked objectivity by incorporating interviewees' biasness. However, triangulation of data obtained from multiple sources was evidently a way to improve the reliability of the work.

Overall, the entire research process was documented chronologically following certain research design protocols (as highlighted in section 3.5). Hence the biasness existing in researcher's construction of the framework during the data interpretation and respondent's biasness during data collection phase were sufficiently reduced.

4. Summary of the appended papers

This chapter summarizes the appended papers and gives an overview of the relationship among the papers. For each paper, the purpose & overview, research questions, related concepts and theories, methods used and principal findings are outlined. Finally the relationship between the overall research questions and the papers are shown. In Table 4.1 the sign "X" denotes that the information in a specific paper is helpful to answer a research question under the specified subject.

4.1. Framework diagram

The individual researches carried out in the five appended papers in this thesis contribute in underpinning the resilience development process framework to different degrees and in different ways as highlighted in Figure 4.1.

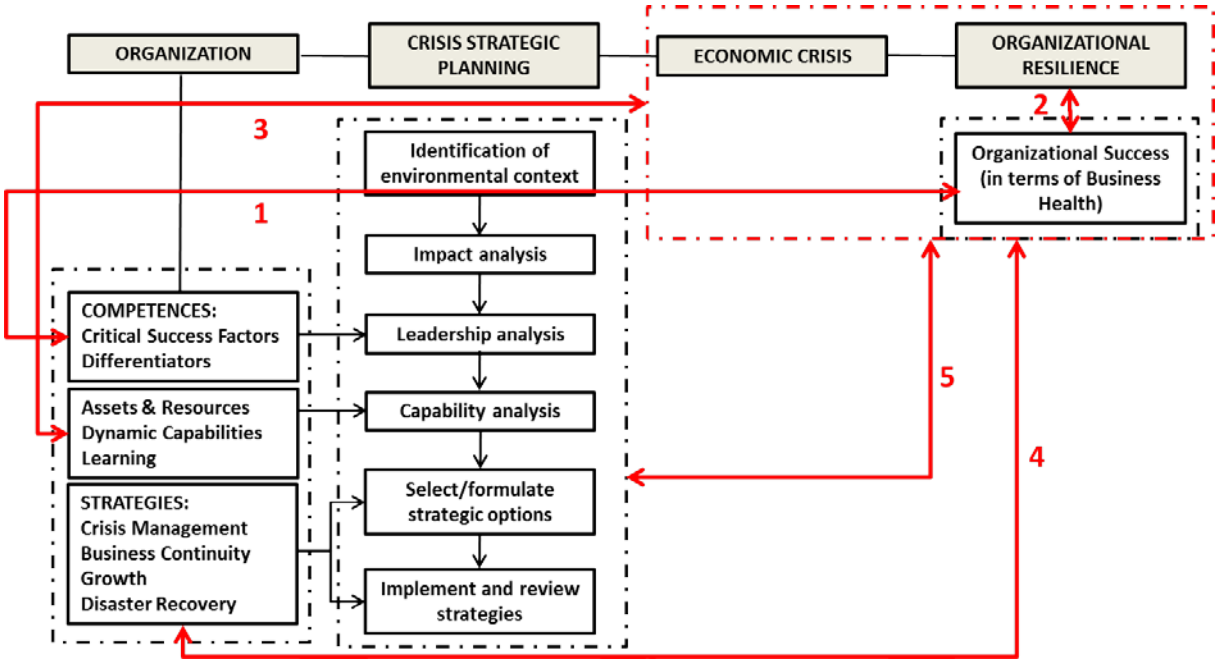


Figure 4.1. Framework Diagram

4.2. Relationship between the papers and RQs

The results of the appended papers are used to answer the research questions stated at the beginning of this thesis. The sign 'X' denotes that in this paper there is information for answering a research question under the specific subject.

Table 4.1. Relationship between the research questions and the articles

Papers	RQ 1	RQ 2A	RQ 2B	RQ 3A	RQ 3B
	Is organizational resilience development a precursor for successful financial performance in crises?	How can organizational resilience be developed?	How can organizational resilience be monitored?	What are the antecedents of resilient SMEs and how do they differ from less resilient ones?	What are the key strategic initiatives of resilient SMEs and how do they differ from less resilient ones?
1	**X**				
2	**X**		**X**		
3	**X**	**X**		**X**	
4	**X**	**X**			**X**
5	**X**	**X**		**X**	**X**

4.3. Paper 1

4.3.1. Purpose and Overview

The conventional approach to organizational design is to assign representatives from support functions to review and recommend changes as the design evolves. The more recent concept of concurrent design involves multi-functional design teams that are highly structured and have greater responsibility and authority. This is done by designing of products but also of processes for product innovation and specialisation and of supply chains.

Organizational business success in terms of financial performance for any company in the global value chain is a resultant of its distinctive competences along the fundamental blocks of three-dimensional concurrent engineering, 3-DCE, i.e. the simultaneous development of products, processes and – most critically – supply chains (Fine 1998). This has proved to be beneficial in rendering holistic, market-responsive architecture to organizations through linkages created by dynamic capability development and innovation.

The purpose of paper 1 was to investigate the promises of 3-DCE in synthesizing and sustaining critical success factors (CSFs) for organizations, and also to underpin the existing gap between its offerings in devising the CSFs and the 'real solutions' essential from a dynamic system's perspective.

4.3.2. RQs

1. How synthesis of CSFs is related to 3-DCE linkages and their interact-abilities?

2. What gap is evident in devising CSFs, hence organizational success, from 3-DCE perspectives?

3. What wider lens is required to extend the 3-DCE model, how and why? What is the common denominator existing in developing the success factors?

The three RQs in paper 1 aim to answer RQ 1 of the thesis, partly. RQ 1 of paper 1 investigates how the principles of 3-DCE (an established concept for addressing organizational success) can synthesize and sustain the major CSFs for textile and clothing firms. Second, RQ 2 highlights the existing gap in devising CSFs, hence organizational success, from a 3-DCE perspective. This results in investigating the phenomenon of yielding success in firms from a systemic view rather than from a component-view. Finally through RQ 3 a wider 3-DCE model is proposed which is comparable to a resilience development model (both include 'assets and dynamic capabilities' and 'organizational learning' as key antecedents). RQs in paper 1 provide a prelude to the theme of this thesis of "exploring organizational resilience as the precursor for business success".

4.3.3. Related concepts and theories

The foundation of paper 1 was based on Fine's model of 3-DCE corroborating and formalizing product, process, and supply chain designing necessary for firms to achieve competitive advantage and generate success factors. Extant literature like Petersen *et al.* (2005), Fisher (1997) and Kopczak and Johnson (2003) etc. have highlighted the combined effect of 3-DCE designing in improving financial performance while Ellram *et al.* (2007), Repenning and Sterman (2001) and McCann (1991) have confirmed the support of 'soft' success factors like organizational governance, culture and leadership for proper alignment of 3-DCE to conform to market turbulences. A detailed literature review on 3-DCE concepts and their contributions in synthesizing and identifying organizational success factors was made in paper 1. Furthermore, organizational design decisions along each of the three domains were also highlighted in the paper along with concurrent engineering (CE) linkages.

4.3.4. Methods

Conceptual development of the paper was initiated deductively using extant literature review on 3-DCE and CSFs separately and binding them loosely. However, the interplay of product-process-supply chain designing aspects and CSFs for underpinning organizational success along with the complementariness of 3-DCE design aspects and intangible value design holds a constructivist epistemological position. A rational viewpoint was developed based on prior observations and post-survey results. The clustering of the CSFs along the categories of 3-DCE was also based to a large extent on author's interpretation. The proposition of an 'extended' 3-DCE framework was justified through abduction principles of combining empirics to conventional 3-DCE framework and hence postulating the need to extend it. The derived research framework diagram is shown in Figure 4.2.

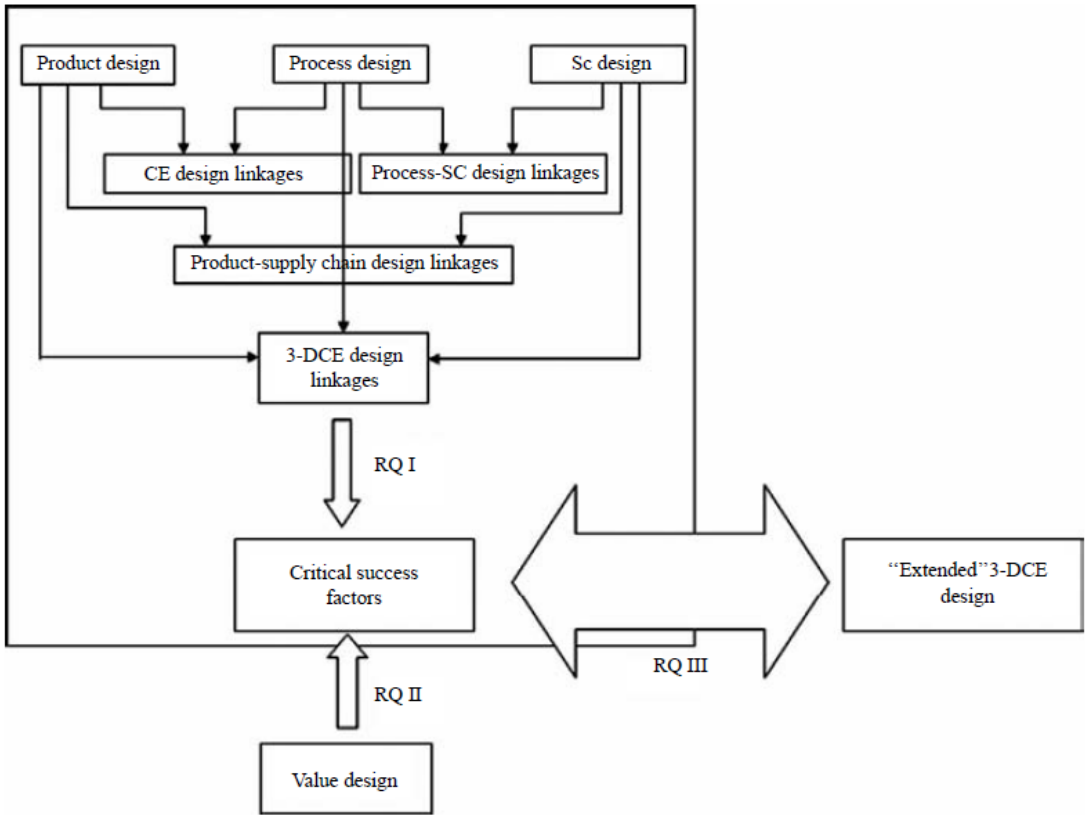


Figure 4.2. Research design (cf. paper 1)

Data collection for paper 1 was pursued using a survey of 42 Swedish textile, clothing and fashion (TCF) firms. Convenience- and judgement-based non-probabilistic sampling techniques were combined for selecting the companies based on a particular selection criteria (cf. paper 1). The survey employed four different question formats: Likert scales (1-5), multiple responses, metric scale measurement and open-ended questions.

The basic results indicate how product-process-supply chain design is vital for organizations and what are the key success factors synthesized by them to be successful. Data analysis was quantitative in nature using both descriptive statistics and inferential analysis (through correlation and principal component analysis).

The inferential statistical analyses along with cross-tabulation of answers were carried out to determine the simultaneous and concurrent effects of 3-DCE designing attributes on the CSFs. Component factor analyses were also carried out for resolving the variables determining product and supply chain designs into various categories (cf. Tables VII and VIII) and how they make a relative strategic fit for synthesizing and sustaining CSFs in organizations.

The aim of conducting principle component analysis (PCA) (cf. Table XI) was to find the common denominators (the different 3-DCE linkages) devising the CSFs. Designing the common denominator (or identified 3-DCE linkage) possibly synthesized the required success drivers in the organization. In the PCA the positive factor loadings were retained for identifying all the possible variables adjusting those factors, rather than attempting to prioritize them.

4.3.5. Principal findings

Paper 1 showed how the development of the building blocks of three dimensional concurrent engineering perspectives and complementary value systems, along with the appropriate harnessing of these capabilities/competencies can develop a multitude of critical success factors for organizations to yield business success, as shown in Figure 4.3. This is crucial for firms to understand the key areas in which to invest and how to invest their resources and time. However, results showed that even though most of the key success factors were synthesized and sustained through 3-DCE designing they failed to represent the intangible organizational values as CSFs. This highlighted the necessity to incorporate intangible or 'soft' value propositions into the existing 3-DCE model to generate an 'extended 3-DCE' framework for mediating better operational performance and hence organizational success. This also corroborated that a trajectory/commonality exists in synthesizing these CSFs for leading organizational success. Furthermore, there is also a need for making the 'extended 3-DCE' model more adaptive to dynamic environments for developing resilience in organizations.

	Component 0	Component 1	Component 2	Component 3	Component 4
Product quality	0.319	0.292	0.030		0.397
Lead time	0.520				
Cost min.	0.410	0.139	0.488		
Price level	0.141	0.432	0.166	0.218	
Productivity	0.538	0.519		0.176	
SC and prod. flexibility	0.790	0.048			
Coordination and trust	0.709		0.016	0.303	
Brand value	0.257	0.276	0.366	0.253	0.675
Service level	0.542		0.019	0.301	0.085
Info. sharing	0.547		0.523	0.036	0.234
Innovation	0.195	0.687		0.268	0.351
Sustainability	0.337			0.040	0.449
Org. culture	0.293	0.023	0.199		0.678
	Extended 3-DCE designing	Product + SC designing	Product + process designing	Process + SC designing	Value designing

Note: Principal component analysis, five components extracted, other items deleted due to negative loadings

Figure 4.3. Principle component analysis of CSFs

4.4. Paper 2

4.4.1. Purpose and Overview

A critical aspect for organizations is to adapt positively to unexpected changes in their business environment over time, and there lies at the heart of this 'positive self-organising' effort the need to facilitate the emergence of resilience (Sutcliffe and Vogus 2003). Resilience in organizations is requisite for success and survival and a lack of it can lead to catastrophic organizational failures or

bankruptcies in today's turbulent and uncertain environment. While organizational resilience (ORes) generally has been analysed qualitatively in past researches, the study in paper 2 attempted to relate resilience to the degree of business health in terms of economic viability thus quantifying it. Financial statements between 1989 and 2009 of 20 textile, clothing and fashion firms in Sweden were analysed to draw the appropriate conclusions. The study used the multivariate Altman's Z-score (Altman 1968, Altman 2000) as an indicator of business health which includes discriminant ratios related to both short-term and long-term goals of a firm. Furthermore, the Z-score transition profile helps the company assess its business health and resilience during a crisis, and further analyse the underpinning attributes.

4.4.2. RQs

1. How can we measure 'health' of business systems?

2. How can ORes be related to the business 'health'?

3. Why are they important to be related?

4. What illustrates the use of a financial performance indicator to operationalize ORes?

The four RQs in paper 2 aim at answering RQ 1 partly and RQ 2B entirely. RQs 1-3 stated above relates to RQ 1 in the thesis: "Is organizational resilience development a precursor for successful financial performance in crises?" First, it tries to explore how to measure healthiness of business systems followed by relating it to organizational resilience. This aims at establishing the relationship between healthy organizational financial performance and resilience, thus ensuring that resilience development is a precursor for business success. RQ 4, on the other hand, aims to operationalize ORes so that resilience can be monitored through quantification. The use of financial indicator to operationalize resilience makes monitoring of ORes more outcome-based. This relates to RQ 2B of the thesis.

4.4.3. Related concepts and theories

The concepts dealt in the paper 2 were health of business systems, organizational resilience (ORes) and Altman's Z-score. In this context, organizations or business firms, in many ways, are compared to open systems interacting dynamically with the environment thus possessing various system characteristics as highlighted by system theorists (Bertalanffy 1952, Starik and Rands 1995). Such systems are characterized by business goals and 'health' to determine their behaviour (Sundström and Hollnagel 2006).

So if an organization is successful in achieving its stated business goals and meet the risks then it will then enjoy a *healthy* business state, while if it slips from its goals it soon enters an *unhealthy* state (showing negative transition) by incurring losses in terms of its objectives. It further slips into a *catastrophic* state if the system behaves in such a way that either one or more elements of the system or the overall system ceases to function (adapted from Sundström and Hollnagel (2006)). Companies can also make effective recoveries to bounce back after slipping to an *unhealthy* state (showing positive transition).

As highlighted by Sutcliffe and Vogus (2003) the main aspect of ORes is the timely recovery from disturbances in a more strengthened and resourceful way. Operationally, financial theorists suggest that organizations rebound in different ways, as recession ends. For example, it can be a steep recovery following a deep recession (V-shaped), or gradual slide down followed by a gradual slide up (U-shaped) etc. (Riley and Dart 2009, Olson 2010). Organizations can also show proactive or reactive feed-forward behaviour by anticipating or responding to the risks and taking necessary actions to deal with them as highlighted by Weick and Roberts (1993), Weick *et al.* (1999) etc. This emphasises the

ability of organizations to rarely fail and maintain a stable performance despite encountering unexpected situations (Linnenluecke and Griffiths 2010). Along this line, paper 2 define ORes as the system's ability to maintain a growing or constant *healthy* state over time despite being subjected to negative and/or destructive events or to make a quick positive turnaround from one state to the other to finally enter the *healthy* state.

Another term dealt in the paper was organizational success. Sundström and Hollnagel (2006) considered it as, *'the organization's ability to maintain economic viability as defined by the economic markets'*. Along similar lines, authors adopted the same definition and characterised economic viability in terms of a multivariate financial indicator called Altman's Z-score preferably chosen as a composite and reliable economic indicator of business health. The Altman's Z-score includes factors considering the working capital, total assets, retained earnings, profitability, net worth or shareholder's equity, total liabilities and total sales, all in one index, cumulatively effecting economic viability of an organization (Altman 1968, Altman 2000).

4.4.4. Methods

A deductive approach was used to develop the frame of reference for quantifying resilience, based on: (i) fundamental business systems states and transition behaviours highlighted by Sundström and Hollnagel (2006), and (ii) Altman's Z-score for categorising business health (Altman 1968, Altman 2000, O'Marah and Hofman 2010). However, the coding mechanism devised for quantifying resilience was derived iteratively by combining systematically knowledge from the existing literatures and empirics (Z-score transition diagrams) along the adapted resilience measurement relationship of Allen and Davis (2010).

Financial data (for calculating Z-scores) was collected from the income statements and balance sheets of 20 Swedish textile-related firms from 1989 to 2009. This selection criterion was based on a criterion-based non-probabilistic sampling technique (Draucker *et al.* 2007) for selecting the companies based on a set selection criteria to meet the requirements along the research questions (cf. paper 2 for details). One more company was added to this list which acted as the pilot company for the next working phases of the research based on convenience sampling.

Data analysis was pursued by adapting a five-step sequence called resilience measurement relationship proposed by Allen and Davis (2010) to strengthen the construct validity. Following this sequence, five themes along five levels, viz. (i) attributes, (ii) base measures, (iii) derived measures, (iv) indicator, and (v) information need; were characterized. In the study, these were re-themed as identification of business goals in terms of economic viability (Level 1), a MDA using Altman's Z-score to measure business health (Level 2), a derived coding scheme to study the nature of transitions in the business health interpreted in terms of resilience concepts (Level 3), an aggregate scoring method to operationalize ORes over a time period (Level 4) and finally characterise ORes in terms of the indicators and business goals (Level 5). The four research questions actually highlighted the four relations between the levels viz. RQ1 (between Levels 1 and 2), RQ2 (between Levels 2 and 3), RQ4 (between Levels 3 and 4), and RQ3 (between Levels 4 and 5).

Overall, a systematic combining (Dubois and Gadde 2001, Dubois and Gadde 2002) of the empirical evidences on the economic viability of organizations over a time-period and the analytical framework related to the pre-understandings of ORes and business health successively reorients the conceptual development related to study of transitions. This helps in devising a coding scheme for ORes along a reiterative process. The method was based upon a continuous reconfiguration of the theories, cases, reality and the framework using thematic coding needed for analytical generalisation of the related concept.

4.4.5. Principal findings

The principal findings of the study pursued in paper 2 were manifold.

Firstly, achievement of organizational business goals in terms of multivariate Z-score contribute towards better business system health while univariate ratios are deficient in assessing firms' true financial health. However, it was evident that generally the *healthy* firms showed higher average values of most of the univariate financial ratios compared to the *unhealthy* ones though not in all periods thus suggesting higher reliability of using multivariate scores like Z-score. For example, four of the studied firms in *healthy* business state during the economic crisis of 2007-09 showed higher average values of all the discriminant financial ratios over seven firms those were unhealthy throughout the crisis. However, during the 1990 crisis the *healthy* firms showed average leverage and solvency ratios lower than the average for all firms while the firms classified to be in *unhealthy* or *distress* conditions had these values higher than the average for all studied firms. This to some extent illustrates the inherent shortcoming of univariate measures in reflecting the state of business health, potentially highlighting the effectiveness of a multivariate measure, like Altman's Z-score.

Secondly, the proposed coding scheme to study transitions was beneficial for a deepened analysis of ORes characteristics (feed-forwards behaviour and recoveries) aimed at relating organizational health to ORes. The Z-score transition profile of company X illustrated its lack of resilience in the 1990s crisis thus recording a decline in financial conditions for leading into the *unhealthy* state. In 2003-08, company X however showed consolidated restructuring which reflected onto the growing capital-turnover and solvency accounting for its feed-forward resilient behaviour in the pre-crisis situation.

Thirdly, Z-score transition profiles of organizations based upon an aggregate scoring system are effective in studying the relationship between ORes and business health to demarcate firms into successful and surviving ones from those which are failing or bankrupt.

The findings support that there is a relation between the levels of organizational resilience and business health. It was seen, in the study, that firms classified as 'not at all' or 'hardly' resilient in the specified time periods were generally poor in terms of business health and had a risk of slipping into distress situations anytime. This complements the work of Sundström and Hollnagel (2006) describing a similar phenomenon of catastrophic organizational failure of Baring PLC as the company slipped into an *unhealthy* and subsequently a catastrophic business state due to unfavourable market events illustrating a lack of resilience. The 'highly' resilient firms, on the other hand, enjoyed a *healthy* business state in crisis situations and de Waal (2008) termed these organizations as high performance organizations (HPOs) – having strong financial results, satisfied customers and employees, high productivity, etc. (Epstein 2004) hence showing resilient characteristics. These HPOs showed higher/better achievements in terms of financial and non-financial results than the rest over a period of at least five to ten years (de Waal 2006, de Waal 2007). Along similar lines, the study in paper 2 demonstrated that a number of investigated businesses (five out of twenty firms) consistently showed lack of resilience by staying just two years (on an average) in the healthy state compared to eight years for rest of the studied firms, between 1989 and 2009.

It is therefore proposed that a business health transition profile (of Z-score) and its systematic coding is effective to differentiate firms in terms of resilience level. The contributions of the five important financial ratios to the resilience level in different periods were also assessed for the studied organizations. The contributions of most of these univariate ratios were observed to be more in the resilient firms compared to those non-resilient. For example, in case of two analysed firms during the recent economic crisis the higher liquidity, leverage, and solvency, compared to the other studied firms, resulted in maintaining a healthy state, while for two other firms liquidity, profitability and capital-turnover contributed to their resilience development (in the period 2004 to 2006) so that they could be 'partly' resilient in the crisis. A fifth firm maintained a high resilience during the 1990s economic crisis, by generating higher capital-turnover and liquidity, which probably yielded a high recovery potential for

the company after the crisis, and it could also generate higher liquidity, sales, profitability and more. On the other hand, it is evident that the firms not resilient during different time periods in context to the crisis event were poor in terms of the economic ratios, compared to the overall average of all the studied firms. The lack of proper development of economic resources and assets in the companies, in terms of liquidity, capital-turnover, leverage, profitability, etc. resulted in poor resilience, particularly for three of them, which were totally non-resilient during all the studied periods. One of those showed negative working capital for six consecutive years (2004 to 2009) and negative EBIT for four consecutive years (1989 to 1993), while another generated negative profits for five consecutive years (2005 to 2009), proving their distress conditions during crisis (according to Slatter (1984)). This may characterise organizational resilience in terms of attaining favourable business health, related to key financial ratios.

Such an investigation of ORes is imperative for companies to devise strategies and nature of response to crisis events, either feed-forward (readiness or responsiveness) or recovery, essentially understand the company's recovery potential during crisis events and what financial indicators underpin such response, strategically position the company to optimize its cash flow, assets and liabilities, profit margin, sales etc., and lastly to differentiate companies into resilient or non-resilient, over time and different contexts.

4.5. Paper 3

4.5.1. Purpose and Overview

The recent economic recessions and global trade conditions have created challenges for many western economies and their embedded industries particularly to the SMEs. They are susceptible to financial fluctuations (i.e. cash flow), legislation, supply network relationships (i.e. power issues), changing customer requirements and demands and even collapsing of national financial systems (as it happened recently in Greece) (Bhamra and Dani 2011). The Swedish textile and clothing industries were no exception as it was reflected in the higher bankruptcy rates, higher losses incurred or in terms of other structural indicators like net turnover or total assets that plummeted during these crises years. It is manifest that the Swedish textile-related SMEs faced major threats to their financial performances and ultimately to their survival at times of economic crises, and thus economic resilience has become a prerequisite to be fostered in such firms in order to be successful.

In this context, paper 3 concentrated on what constraints were faced by Swedish textile-related SMEs during economic crises of the past two decades (1990-93 and end 2007-09) and identified the key antecedents and their differential degrees of influence on economic resilience. It also deepened the understanding of the underlying patterns in the antecedents observed in SMEs thus favouring or inhibiting resilience due to their significance or deficit, respectively.

4.5.2. RQs

1. What nature of problems and constraints were faced by Swedish textile-related SMEs in economic crises of 1990-93 and 2007-09?

2. What are the key antecedents and their differential degrees of influence on economic crisis resilience?

3. Is there any underlying patterns favouring or inhibiting resilience in such firms?

The three RQs in paper 3 aim at answering RQs 1, 2A and 3A partly. RQ 1 of paper 3 provides a prelude to the context of the research by investigating the nature of problems and vulnerabilities faced by the Swedish T&C SMEs in economic crises. RQ 2 aims at identifying the key antecedents of resilience and their contributing effects on ORes thus answering RQ 3A: "What are the antecedents of

resilient SMEs" and RQ 2A: "How can organizational resilience be developed". RQ 3 of paper 3 aims at finding the underlying patterns among these identified resilience antecedents and how the lack or significance of these could either inhibit or favour ORes. This relates to the RQ 3A in the thesis by exploring "how does the resilient firms differ from less resilient ones" in terms of these key antecedents of resilience. RQ 1 of the thesis, on the other hand, relates to RQ 2 and 3 of paper 3 as the influence of the identified antecedents on economic resilience of organizations during crises is investigated in terms of business health (measured in terms of Z-score), thus correlating ORes to organizational success to establish a connection.

4.5.3. Related concepts and theories

The paper highlights three broad assets generally required by firms to bolster economic resilience in their performance. They are resourcefulness, like finances, materials, people (social assets) etc., competitiveness (flexibility, networking, robustness and redundancy) and 'learning and cultural' aspects.

A unifying resource-based view (RBV) framework justifies how an organization's competitive advantage can be achieved through possession of various assets and resources (financial, physical, human, technological, organizational and reputational) (Grant 1991a, Grant 1991b) for resilience development. Though resource constraint is widely considered to be a key inhibitor of SME resilience, its availability, on the other hand, can be a potential enabler as well (Sullivan-Taylor and Branicki 2011). Extant studies (Ghobadian and Gallear 1997, Vossen 1998, Van Gils 2005, Herbane 2010b) have highlighted how lack or significance of crucial antecedents like varied resources predominantly material, financial and technological have respectively led to failure or success of SMEs.

Apart from the assets and resourcefulness their effective deployment also results in the development and reconfiguration of core competences in firms (Prahalad and Hamel 1990, Grant 1991a, Grant 1991b, Eisenhardt and Martin 2000). For example, long-term flexibility, redundancy and robust responses (Sheffi 2007) foster competitive advantages and are instrumental in reducing or absorbing effects of market turbulence. Such dynamic capabilities are important for developing resilient response in crises (Burnard and Bhamra 2011) as a key determinant of organizational flexibility or 'adaptive capacity'.

Rice and Caniato (2003) also highlighted the common approach of firms especially SMEs using reactive instruments like flexibility and redundancy to build resilient supply chains. Hence four categories are in focus in the paper, viz. (a) flexibility, (b) redundancy, (c) robustness, and (d) networking and their relationship to resilience development.

Resilience merit in organizations is also hinged to various softer and less tangible aspects such as their culture, leadership and vision (Seville *et al.* 2006). Previous organizational learning theories, from various perspectives, articulate two common traits or behavioural patterns in organizations, viz. (i) collective awareness and learning, and (ii) change of organizational structure in response to change in environment (Appelbaum and Gallagher 2000) (adaptation). Senge (1990) and Edmondson and Moingeon (1998) have popularized the later one as a newly-conceived concept of organizations for adaptation to the changing environment. Moreover, group or team learning also develops sufficient organizational motivation, efficacy and skills for positive adjustment in turbulences for mastering new situations (Bunderson and Sutcliffe 2002a, Bunderson and Sutcliffe 2002b, Sutcliffe and Vogus 2003). This highlights the pivotal role of entrepreneurial learning and cultural aspects in enabling higher degree of performance and growth in SMEs (Deakins and Freel 1998) leading to organizational resilience. The framework used initially in the paper is shown in Figure 4.4.

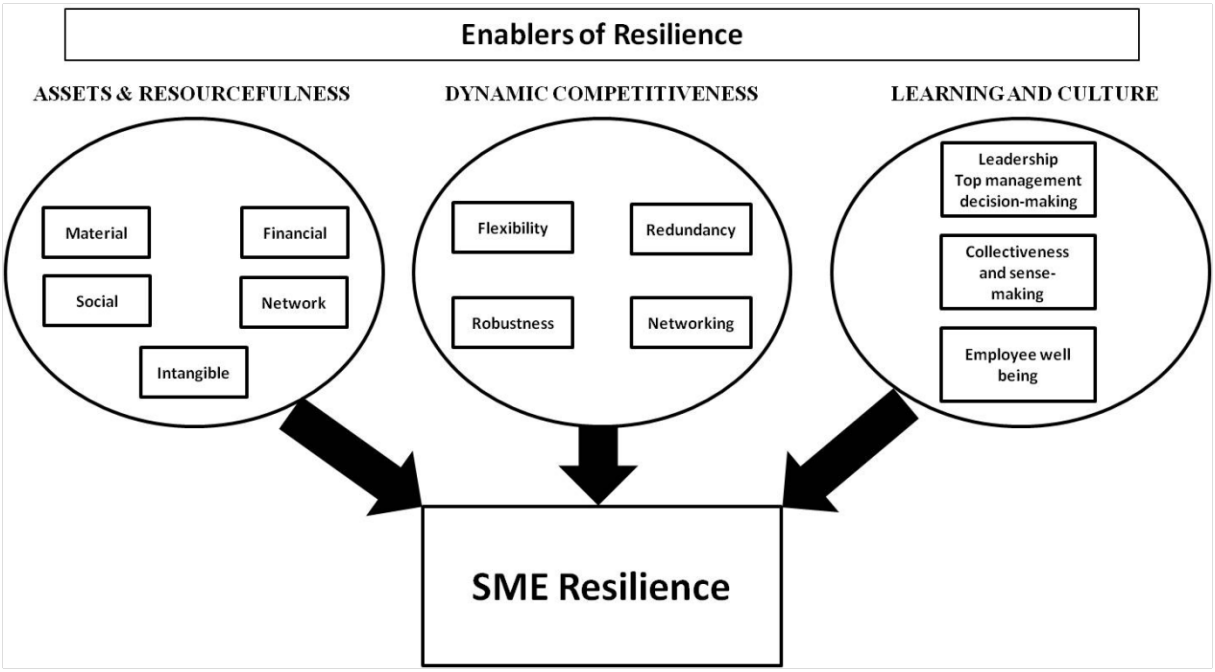


Figure 4.4. Enablers of resilience

4.5.4. Methods

Data collection in paper 3 involved an exploratory investigation conducted in two phases, first through a survey and then a series of interviews, responded by eight Swedish textiles and clothing SMEs. Prior to that, a deductive framework for relating SME resilience to its various enablers/antecedents has been proposed through a comprehensive literature review. Annual reports (particularly the income statements and balance sheets) of the studied firms also provided a detailed account of the financial performances.

Data analysis was done through a thematic coding procedure (Flick 2009). First, the survey results were analysed using descriptive statistics suited to the research objective using a scoring system based upon the frequency of the response options, viz. (i) 'significant', (ii)'moderate', and (iii) poor. This was followed by categorizing the firms in terms of their economic resilience expressed by Altman's Z-score (cf. paper 2 for the detailed analysis of the 'Z-score to economic resilience' coding procedure). The thematic coding pursued firstly, an analysis of each case firm individually along the coding scheme by breaking down the gathered data into the resilience antecedent categories (open coding), secondly, a deepened analysis of each case company to highlight the broader critical antecedents and other engendering factors identified (axial coding) and finally, a cross-case analysis of the studied firms to identify and describe the emergent pattern in the antecedents and how their inhibition or facilitation influences economic resilience.

4.5.5. Principal findings

Findings provided insight on how the responding firms considered resourcefulness, viz. cash flow and investment finance, relational networks and material assets, along with 'dynamic competitiveness' through strategic and operational flexibility to be key enablers of resilience and financial performance, mostly through generation of profitability, liquidity and sales-turnover. Responses also highlighted the indirect influence of the 'soft' learning and cultural aspects, like attentive leadership and collectiveness on economic resilience, considered tacit and ingrained in small and medium-sized businesses. Additional process initiatives (growth and continuity strategies) were also emergent patterns to properly utilize and direct the antecedents for resilience development. These are beneficial for firms to understand the key areas in which to invest for developing resilient business models.

In terms of the financial resources (cash flow and investment finance), authors found that they purport significant influence on economic resilience at crises in many ways. Cash flow constraint arising out of exchange rate problems affected the liquidity ratios, while rising costs of production and overheads also affected cash reserves. A decrease in sales turnover due to volume and margin ramp-down and a decrease in customer base and low price competition also inhibited firms' cash flow affecting the leverage ratios. Cash flow problems due to a shift from supplier's credit to cash payment scheme or sudden postponement of orders were among the other reasons. An investment finance constraint due to misjudged business ventures, bankruptcies of group subsidiaries or newly made investments in acquisitions and new product development (NPD) limited the financial reserve of firms for quick crisis recovery, and this was further aggravated by lack of proper credit support from banks.

Sound relational networks by working closely with the suppliers, customers and marketing partners to get more order volumes were essential enablers of resilience development for Swedish firms amid the recent credit crunch thus contributing towards the development of capital-turnover ratio. The analysis emphasized several factors contributing to the shrinking supply and customer relational networks of SMEs as pointed out by the owners/managers, like 'consolidation of suppliers into few large ones', 'lack of alternate high-quality suppliers', 'restricted customer base due to low-price competition' etc. Current asset problem due to sudden decrease in orders was common during the crisis. Such constraint was evident during the recent credit crunch, in terms of excess raw material stocks or sometimes shortage of supply or huge storage of finished goods, potentially inhibiting economic resilience by affecting profitability, sales-turnover and leverage ratios. This also compelled the firms to depreciate their stock values and consolidate internal restructuring for higher efficiency planning.

On analysing the dynamic capability issues, strategic flexibility in terms of decision-making, flexible strategic planning and long-term rolling plans were considered essential to maintain strategic readiness during the crises. Such strategic flexibilities were also essential to devise changes in organizational design/business model by delocalizing production completely or shifting product core etc. Operational flexibility, on the other hand, also proved to be quintessential for the SMEs emphasized by both operational and structural readiness. The role of structural flexibility in determining the make-buy decisions in case of small manufacturing firms is essential for resilience development by increasing profitability and cash flow. Such control over one's own manufacturing pipeline results in lower lead-time and inventory management advantages as well. However, lower flexibility in inventory management for handling raw materials or finished goods inventory, lower flexibility in manufacturing or in make-buy decisions also result in a lack of resilience by affecting profitability and liquidity.

Continuous quality improvement was also a key antecedent of resilience as observed in few firms. This was essential for improving production efficiency, reduce lead times and be sufficiently lean thus enhancing operational agility.

Learning and cultural aspects also showed a strong degree of correlation in bolstering resilience though the interviewees could not justify the exact reason. This is because these 'soft' aspects like employee collectiveness, know-how and well-being etc. are very much ingrained in small firms, so whether in crises or not these are considerably high and do not directly facilitate economic resilience development unlike in large organizations. Moreover, authors perceive such learning or cultural aspects as long-term development for enhancing firm performance and not crisis dependent, where small firms mostly rely on short-termism. However, the role of good leadership and management decision-making were influential factors in facilitating resilience during the recent crunch and firms those could break-away from the 'command and control' culture generally prevalent in small firms and become more entrepreneurial and open showed better economic resilience.

Additional factors engendering resilience were clustered as processes to deploy the antecedents of resilience and develop a constant growth/business continuity initiative. This answers more towards

‘how’ resilience is developed (through ‘strategic and operational’ process initiatives) rather than ‘what’ is essential for it (antecedents).

The non-resilient responding firms lacked sufficient contingency planning, proper product portfolio structuring, proper market penetration or product/capability development strategies along with lack of market development and diversification strategies due to less innovative product launches and lack of additional sales channels to enter new markets or customer base. Other exogenous factors like ‘foreign exchange fluctuation’ and ‘low-price competition’ also emerged as predominant macro-economic inhibitors of resilience development in the recent credit crunch, while ‘SEK devaluation’ and ‘change in basic textile industry structure from make-to-buy’ were more deliberating factors in the 1990s crisis.

Overall, the resilient respondents were able to efficiently utilize their slack financial and material assets through better relational networking, higher flexibility and continuous improvement and steered attentively through realistic leadership and decision-making to develop resilient economic performance in crises.

4.6. Paper 4

4.6.1. Purpose and Overview

The global economic crises of 2007-11 have created tremendous impact on the Swedish credit system for organizations, particularly small and medium enterprises (SMEs), as nearly 10% of the SMEs went bankrupt in 2008. In such a context, study of organizational resilience to survive and thrive becomes increasingly significant. A key to economic resilience is upheld by crisis management, business continuity and growth perspectives. Thus the crisis strategic planning initiatives become fundamental in underpinning resilience. In this context, paper 4 aimed at categorizing the resilient and the less resilient SMEs in terms of their financial performances and identifying the strategic initiatives and how these differentiate their respective responses.

4.6.2. RQs

1. How the Swedish textile and clothing SMEs dealt with recent economic crises (2007 onwards), in terms of key strategic initiatives?

2. Is there some identifiable pattern or difference in the responses along these underlying strategies between the resilient companies and the less resilient ones?

3. Can organizations be classified in terms of different levels of resilience and what recommended strategies can enable higher resilience in less-resilient firms?

The three RQs in paper 4 aim at answering RQs 1, 2A and 3B partly. RQ 1 of paper 4 provides a prelude to the context of the research by investigating the key strategic initiatives of the Swedish T&C SMEs in economic crises. RQ 2 of paper 4 relates to the RQ 3B in the thesis by exploring “how does the resilient firms differ from the less resilient ones” in terms of these key strategic initiatives for yielding resilience. Both RQs 1 and 2 necessitate the need to investigate what are the key strategies within an organization’s repertoire required for yielding ORes. Thus relating to the requirements of RQ 2A of the thesis. RQ 3 of paper 4 aims at classifying the organizations in terms of different levels of resilience that is investigated in terms of business health (measured in terms of Z-score), thus correlating ORes to organizational success to establish a connection with RQ 1 of the thesis. By recommending strategies that can enable higher resilience in less-resilient firms, RQ 2A: “how can organizational resilience be developed” is also addressed.

4.6.3. Related concepts and theories

The paper draws its theoretical underpinnings from the concept of crisis strategic planning as highlighted by Preble (1997) and Vargo and Seville (2011). Crisis strategic planning is a way of integrating and balancing the defensive and preventive capabilities of crisis management, more short-term in nature, to the offensive product-market positioning orientation of strategic management (Preble 1997).

Comprehensive crisis strategic planning initiatives offer a broad response repertoire to firms to sustain as well as grow in crises. Such growth or sustenance strategies construct a holistic response repertoire by combining two complementary organizational behaviours, of planning and adaptation into one resilience development process (Seville 2009, Vargo and Seville 2011). Vargo and Seville (2011) underscored an organization's ability to effectively manage a crisis by 'finding the silver lining' of strategic opportunities (combining planning and adaptiveness). The four strategic dimensions of crisis strategic planning are shown in Figure 4.5.

	Growth	Sustenance
Planned	Long-term Growth strategies	Long-term Business continuity strategies
Adaptive	Short-term Growth strategies	Short-term Crisis management strategies

Figure 4.5. The four strategic dimensions of crisis strategic planning

The growth strategies (both planned and adaptive) are structured along the basic strategic growth options in Ansoff matrix (market penetration, market development, process capability development and diversification) (Ansoff 1957) and the three major growth perspectives highlighted by Li and Tan (2004), Li *et al.* (2011) viz. (i) breadth-on-top-of-depth (BTD) strategies, (ii) diversification strategies by expanding into new markets through various inter-organizational relationships (IORs), and (iii) transformational strategies by engaging in acquisition or by transforming business models.

On the other hand, the sustenance strategies are either short-term crisis management (CM) strategies mostly characterized by turnaround strategies (Hofer 1980, Hambrick and Schecter 1983, O'Neill 1986, Cater and Schwab 2008), 'fire-fighting' approaches (Smart and Vertinsky 1984, Deakins and Freel 1998, Poolton *et al.* 2006) or disaster recovery planning (DRP) (Swartz *et al.* 1995, Swartz *et al.* 2003, Herbane *et al.* 2004) to underpin adaptive responses or they are long-term business continuity approaches based upon planning. Such business continuity management (BCM) incorporates both proactive and reactive strategies to cope up with crises or to build crisis management plans (Smith 1990, Pearson and Mitroff 1993, Preble 1997, Herbane 2010b).

The basis of the crisis strategic planning model developed in paper 4 to yield resilience was adapted from Vargo and Seville (2011) and was structured along planned and adaptive resilience calibres. They were planned resilience, adaptive resilience, latent resilience (low in degrees of planning and adaptiveness) and dynamic resilience (high levels of both planning and adaptiveness).

4.6.4. Methods

The research methodology adopted in the study conducted in paper 4 was based upon a comprehensive literature review for developing the frame of reference involving the keywords like, resilience, crisis strategic planning, and growth and business continuity strategies. This was followed by two ways of data collection, first, semi-structured interviews with the owner/managing director of

twelve Swedish textile-related SMEs. Secondly, secondary data sources like firms' annual reports (balance sheets and income statements) over 2007-11 for calculating Z-scores and economic resilience.

Data reduction and coding was followed using thematic coding principles (Flick 2009). First open coding was conducted for analysing and clustering interview information along the identified convergent themes related to strategies, antecedents and pathways to develop resilient response repertoire. This was followed by categorising the multiple strategic initiatives into three emergent themes referenced from the literature review. Axial coding of the strategic initiatives was done by developing a crisis strategic planning model by positioning firms in terms of their level and type of resilience (based upon long-term planning and short-term adaptation) and finally conducting selective coding by drawing conclusion about the overall resilience along the crisis strategic planning-based resilience model. A deepened analysis of the interview data for each case firm was conducted separately to understand the process of devising and prioritizing the crisis strategic response repertoire of each firm along with a comparative pattern analysis of the multiple strategic repertoires of firms grouped as resilient and non-resilient to identify the convergences and divergences.

For categorising the responding firms into resilient and non-resilient ones (on the basis of their financial performance) the Altman's Z-scores were calculated and were related to the degree of resilience using a coding technique highlighted in paper 2.

4.6.5. Principal findings

Economic resilience is linked to crisis management, business continuity and growth perspectives. Thus crisis strategic planning initiatives become fundamental in supporting resilience and form the strategic differentiating point in relation to the response repertoire of resilient and less resilient businesses.

The study in paper 4 addresses the categorization of the resilient and the less resilient firms in terms of their financial performances by identifying the shortcomings in the recent crises, and then differentiating the strategic initiatives underpinning the responses of these groups of resilient and less resilient SMEs.

A majority of the case firms identified a decrease in order-volume as the major problem during the crises. In terms of key strategic initiatives the resilient firms showed better short-term crisis management strategies due to higher operational flexibility through various cost-cutting measures, such as retrenchment, reduced fixed overhead costs or decreasing customer and supplier base, and an ability to ramp down production when necessary. The less resilient firms, on the other hand, lacked strategic readiness due to resource scarcity. Almost none of the firms could develop any crisis-based growth strategy. The resilient firms differed from the less resilient ones mostly in terms of long-term strategic initiatives by showing long-term continuity planning through unique initiatives to improve cost-effectiveness, such as delocalization of manufacturing, continuous improvement and lean management, and in terms of growth strategies as well, like market penetration by increasing sales and product ranges, long-term diversification strategies through market expansion, and long-term transformational initiatives by focusing more on acquisitions and production outsourcing.

Such multiple strategic initiatives are essential for developing a model for crisis strategic planning to categorize firms into four groups based upon types of resilience, viz. *latent*, *planned*, *adaptive* and *dynamic*, along two dimensions characterized by low and high degrees of planning and adaptation respectively, as shown in Figure 4.6. It was observed that the resilient Swedish textile-related SMEs mostly showed *planned* resilience in economic crises through long-term continuity plans and growth initiatives. Such a model essentially serves as a reliable benchmarking tool to measure resilience and position the firms in a competitive landscape for evaluating their strategic response repertoire in crises.

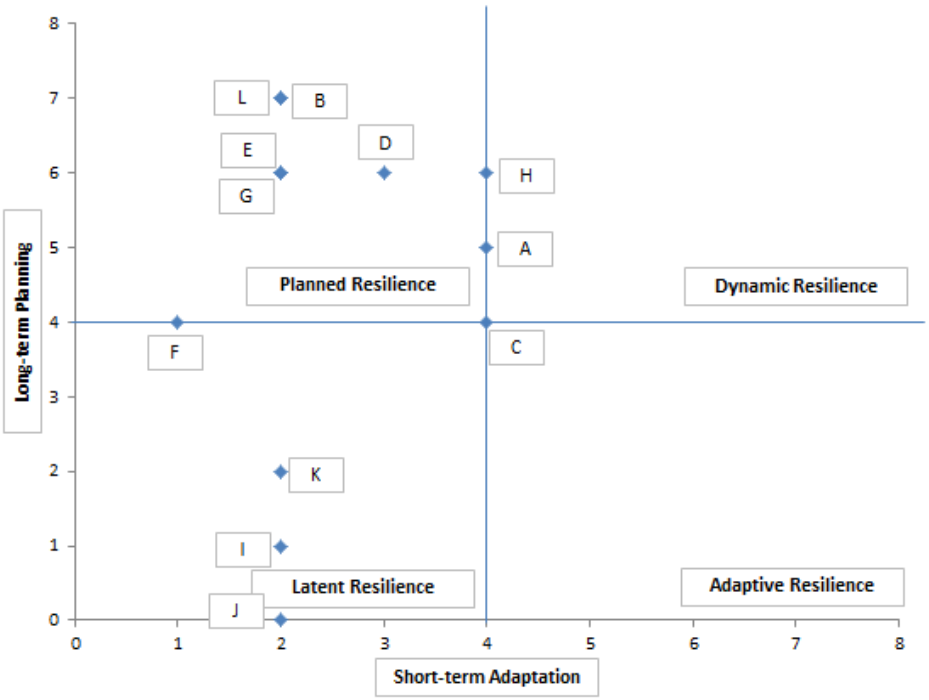


Figure 4.6. Type of resilience achieved depending on approach to crisis strategic planning (cf. paper 4)

Moreover, creation of slack resources through cost minimization techniques and implementation of growth initiatives were the keys toward development of an organized response repertoire in resilient firms as compared to the less resilient ones. Operational costs were minimized by following short-term CM strategies through retrenchment or by diminishing the customer base but the resilient firms also sought legal union's support to decrease the salary and working hours so that they can retain competence even in crises. Delocalization of production, adjustment of the product pyramid to invest in product range extension as well as cost-effective process management were also initiatives taken by the resilient firms to retain operational excellence. The resilient firms also used flexible production systems along with incorporation of value adding products in their range while some of them shifted from high volume-low margin products to very specific core products. Furthermore, the resilient firms also concentrated on increasing sales by extending the product ranges through cross selling and add-on products and services. These register as sufficient degrees of innovation in the resilient firms. Co-management of innovation and excellence provided the right dynamic balance for creating slack resources and assets for utilization during strategy formulation.

4.7. Paper 5

4.7.1. Purpose and Overview

Global economic crisis has taken its toll by exasperating the survival rate of firms particularly the small and medium ones. Swedish textile and clothing SMEs were no exception showing higher bankruptcies in the global economic crises. The SCB database used in paper 5 show the supporting statistics. In such a context, resilience development in firms is vital and this is upheld by crisis management, business continuity management and strategic planning thus forming the construct of an integrated crisis strategic planning (CSP) framework as proposed in paper 5.

Economic resilience in crisis so far have mostly been studied on macro- or meso- levels while firm-level resilience studies have been related to qualitative researches on organizational behaviours and dynamics with a theory building perspective (Bhamra *et al.* 2011). From methodological standpoint, case studies and model development were found in only 20-25% of the studies (Bhamra *et al.* 2011). Hence the study of resilience development process by identifying the trends and turbulences (in the

operating environment), the organizational capabilities (antecedents and strategies for resilience) and devising a comprehensive response repertoire (crisis strategic planning) has become an inherent choice for investigating economic resilience as also highlighted by Preble (1997) Ismail *et al.* (2011) and Vargo and Seville (2011).

In paper 5 authors focused on this resilience development process along a proposed framework of crisis strategic planning to achieve economic crisis resilience.

4.7.2. RQs

1. How can the resilience development process be formulated, implemented and evaluated along the crisis strategic planning framework?

2. How can lack or significance of crisis strategic planning monitor degrees of organizational resilience?

The two RQs in paper 5 aim at answering RQs 1, 2A, 3A and 3B partly. RQ 1 of paper 5 directly answers RQ 2A in the thesis by addressing "how can organizational resilience be developed". In this process, key antecedents and strategic initiatives for yielding resilience are assessed and thus relates to RQs 3A and 3B in the thesis respectively. RQ 1 of paper 5 also aims at evaluating and reviewing the outcome of the resilience development process (by following a crisis strategic planning framework) in terms of business health (measured in terms of Z-score), thus correlating the resilient response repertoire along with its underlying strategies to organizational success. This establishes a connection with RQ 1 of the thesis.

RQ 2 of paper 5 also handles these overall questions posed in the thesis. Apart from that, RQ 2 also classifies the case study organization over different time periods in terms of different levels of resilience measured using the Z-score transition profile. This also establishes the relationship between OREs and organizational success, thus addressing overall RQ 1.

4.7.3. Related concepts and theories

The frame of reference for paper 5 was developed by integrating aspects of operational and strategic agilities (Ismail *et al.* 2006, Ismail *et al.* 2011), crisis strategic planning (Vargo and Seville 2011), integrated strategic management (Preble 1997) and resilience management process (McManus *et al.* 2008). The organizational resilience process prescribed highlighted the development and implementation of crisis strategic planning (CSP) model. Different stages of this CSP based resilience development process were built on extending the operational and strategic agility frameworks proposed by Ismail *et al.* (2006) and Ismail *et al.* (2011). It also incorporates the integrated strategic management model of Preble (1997) along with corporate turnaround or recovery strategies (Sudarsanam and Lai 2001) and short-term approaches. Moreover, it encourages increased adaptive capacity and situation awareness as specified in the 5-step resilience management process (McManus *et al.* 2008) along with finding the right strategic opportunity by moderating both reactive and preventive instruments (Thun *et al.* 2011) thus underpinning different levels of planning and adaptability (Vargo and Seville 2011).

The theory underpinning these referenced frameworks and models are based on well-researched areas of resource-based view of firms (RBV) (Wernerfelt 1984, Barney 1991, Grant 1991b, Wernerfelt 1995, Barney *et al.* 2001), dynamic capabilities (Teece *et al.* 1997, Winter 2003, Teece 2007), and organizational learning (Senge 1990, Edmondson and Moingeon 1998) as antecedents/facilitators of resilience development. Proper utilization and channelization of these resilience antecedents through operational and strategic agilities devise a resilient response repertoire in crises (Ismail *et al.* 2006, Lengnick-Hall and Beck 2009, Ismail *et al.* 2011).

4.7.4. Methods

Firstly, a deductive approach was used to deduce the frame of reference for the crisis strategic planning-based resilient development process model used in the paper. However, to a large extent the refinement of the referenced models and frameworks (cf. paper 5) to derive the proposed model was based upon the intended purpose of investigation along with the data and information gathered through long term association with the case company. Particularly, at the commencement of the research project with the company there was no idea of developing a CSP framework but it developed gradually along the research process. Along this line, the research was deemed as abductive in its nature through systematic combination of the empirics and referenced models to propose the resilience development process framework.

Data collection was based upon an exploratory case study analysis through convergent data reduction and coding. The case company was chosen due to criteria matching both purposeful and convenient sampling techniques (cf. paper 5). The case study was done through a series of interviews (semi-structured and face-to-face or group information gathering sessions) with the top management. One of the co-authors of paper 5 was the owner-CEO of the company and provided with sufficient internal perspectives and reflections about the company. Apart from that, two surveys were conducted and these were answered by the owner-CEO, followed by an extensive evaluation of the annual reports and secondary data sources available.

Data analysis was carried out using thematic coding principles as data was first categorised into proposed themes or steps 1-6 of the resilience development process. This is quite similar to open coding. Typically, large data sheets were used and analysed to structure the gathered data. This was followed by relating and making connections in the fractured data along the proposed CSP model thus highlighting the interplay, and finally relating it to resilience development (selective coding principle – total integration along the framework). This was first done for the case in the context of the recent credit crunch followed by applying the whole procedure in another crisis context for making a comparative analysis, followed by analytical generalization and thus it led to theoretical saturation.

4.7.5. Principal findings

Resilience development/roadmap for SMEs could be modelled through crisis strategic planning framework along the following steps (i) identification of environmental context in terms of trends and turbulences, (ii) impact analysis in terms of key financial indicators, (iii) leadership analysis along Porter's 5-force model and CSFs, (iv) capability analysis identifying the available assets, dynamic capabilities and learning perspectives as antecedents through SWOT, (v) formulation/selection and implementation strategies, and finally (vi) evaluation and review of these strategic options.

This also demonstrates 'how' and 'what' can make companies transit from a lower to a higher level of resilience by understanding this transition process through wide-spread practice of the framework to potentially improve both responsiveness and preparedness in an integrated way and review its impact on financial health of the organization to underpin economic resilience. This is useful for SME owners and managers to identify firm problems and their impacts, ensure competitive market positioning, devise a fundamental strength-weakness-opportunity-threat analysis, followed by development and review of strategic response repertoire comprising both articulated action plans and reactive measures, both long- and short- term in nature along the time frame of development, using a set of simple strategic tools and techniques.

In the research arena, the conceptualization of the resilience development process through CSP essentially relates all organizational strategies over a timeframe of development for subsequent modelling. The contributions by the resilience development processual framework integrate both adaptive and planned initiatives either developed before, during or after the crisis for sustenance and

growth. This relates the strategies over a timeframe of development as shown in Figure 4.7 thus modifying what was used as the frame of reference in paper 4 (cf. Figure 1 in paper 4).

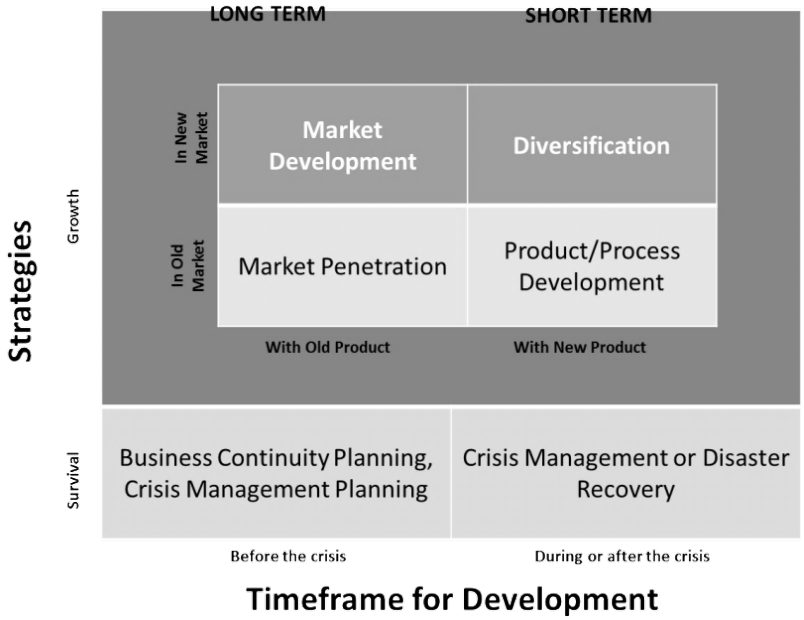


Figure 4.7. Facets of crisis strategic planning

This model suggests that a more refined relationship exists among the strategy development processes over a timeframe and this should be investigated through further empirical research.

4.8. The appended papers at a glance

This section is segmented into two Tables. The first, Table 4.2 provides a brief summary of all the papers appended in this thesis including their purpose, conceptual underpinning, methods of data collection and analysis and the key findings. The second, Table 4.3 highlights the relationship between the research questions and the papers as indicated in Table 4.1.

Table 4.2. Brief summary of the appended papers

Paper	Purpose	Conceptual Underpinning	Data collection	Data analysis	Findings
1	To identify the need for research on resilience for firms' success in dynamic environments going beyond traditional component-based views to synthesize CSFs	3-DCE and CSFs	Survey based on convenience- and judgement-based non-probabilistic sampling	Descriptive and inferential statistical analyses	Propose an extended 3-DCE framework for organizational success in dynamic environments fitting the need to design for resilience
2	To find a quantified measure for organizational resilience related to organizational health	Health of business systems, organizational resilience and Altman's Z-score	Sampling - criterion-based non-probabilistic sampling, convenience sampling Data collection - Secondary data (annual financial reports)	**Quantifying resilience –** Coding system developed via abduction **Resilience management –** Thematic coding based on 5-step resilience management process by Allen and Davis (2010)	Outlines an investigation to relate ORes to business 'health'; conceptualize and operationalize the relation for benchmarking
3	Identify the constraints faced by Swedish textile-related SMEs during economic crises and also the antecedents and their differential degrees of influence on economic resilience	Organizational resilience, RBV (assets & resources), dynamic capabilities, organizational learning	Theory-based sampling Semi structured interviews; Survey; Secondary financial data (annual reports)	Thematic coding (open coding along convergent themes: resilience antecedents; axial coding: categorization along 3 broader ORes enablers); cross-case analysis for emergent pattern recognition	Establish a framework of resilience antecedents in SMEs. Cashflow, investment finance and relational networks along with strategic and operational flexibilities emerged as key antecedents for bolstering resilience; Firms' growth and continuity strategies emerged to be essential paths for utilizing the antecedents and develop resilience
4	To identify the strategic initiatives that differentiate the response repertoire of the resilient and the less resilient SMEs during crises and develop a multi-strategy based CSP model	Organizational resilience, crisis strategic planning, growth and business continuity strategies, crisis management	Theory-based sampling Semi-structured interviews; Secondary financial data (annual reports)	Thematic coding (open coding along convergent themes: categorisation along multi-strategy initiatives; axial coding: connecting strategic initiatives to planned and adaptive resilience types; selective coding: drawing conclusion on overall resilience type); comparative pattern analysis & develop crisis strategic planning model	Establish a multi-strategy based CSP framework for ORes in SMEs. Address categorization of resilient and less resilient enterprises in terms of financial performance and differentiate the multi-strategic initiatives underlying responses along planned and adaptive initiatives
5	Develop and validate a resilience development processual framework using simple strategic tools and techniques	Organizational resilience, crisis strategic planning	Critical case selection Single case study (through multiple interviews, surveys and assessment of secondary data)	Thematic coding along a 6-step crisis strategic planning-based resilience development framework (deepened case analysis, open coding: along the 6 steps; selective coding: for weaving the narrative)	Outline the resilience development/roadmap for SMEs using generic tools modelled through crisis strategic planning framework thus integrating both adaptive and planned initiatives for sustenance and growth over a timeframe of development

Table 4.3. Relationship between the research questions and the papers

Papers	RQ1	RQ2a	RQ2b	RQ3a	RQ3b
1	Proposes an extended 3-DCE framework for organizational success in dynamic environments fitting the need to design for resilience				
2	ORes is related to business 'health' in terms of economic viability by using Altman's Z-score. This is requisite for success/survival and is a helpful tool for firms to benchmark against competitors		Transition profile of a firm's financial performance based on multivariate Altman's Z-score outlines the relation between ORes to business 'health'		
3	Swedish textile-related SMEs possessing better/higher resilience enablers like cash flow, investment finance, networking, flexibility etc. showed higher economic resilience, hence better financial performance	Keys antecedents like resources and assets, dynamic capabilities and organizational learning are modulated to develop economic resilience during crises		Cash flow, investment finance and relational networks along with strategic and operational flexibilities emerged as key antecedents for bolstering resilience for Swedish textile-related SMEs	
4	Key to economic resilience is upheld by crisis management, business continuity planning and growth perspectives. Resilient firms differ from the less resilient ones in terms of successful financial performance in terms of Z-score	Firms' growth and continuity strategies are essential paths for utilizing the resilience antecedents. Resilient firms are better in developing their multi-strategic initiatives underlying responses along planned and adaptive approaches, thus contributing towards better financial performance			Resilient firms show more long-term strategies through BCP and growth plans through market penetration, diversification and transformations
5	CSP model is crucial to monitor and develop ORes during crises. For the case firm, a CSP process is useful in constructing the response repertoire for sustenance/ growth. Concrete strategy implementation and revisions in terms of economic performance highlights the positive business health transition and hence resilience, from a period of lack of CSP to that of significant CSP	ORes can be developed through CSP based on a six-step process: (i) identification of environmental context, (ii) impact analysis, (iii) leadership analysis, (iv) capability analysis, (v) formulation/selection and implementation of strategies, (vi) evaluation and review of strategic options		Resilience development is modelled through CSP framework by enabling resilience antecedents. The case highlights the business health transition from low resilience due to lack of cash flow, high debts, low innovation and lack of attentive top-management decision-making in 1990-93 to high resilience due to high innovation, financial reserve, high operational flexibility etc.	A multitude of strategies (CM, BCM and growth initiatives) can be formulated, implemented and executed in a firm and further be reviewed for adjusting the response repertoire for resilient financial performance. The case firm showed comprehensive diversification & BTD initiatives, higher business consolidation and market development etc. to make a positive transition in resilience profile

5. Analysis and Discussion

This chapter analyses the appended papers within the frame of reference used in the chapter 2 in response to the research questions and the overall research objective using the appropriate data analysis techniques. At first the chapter provides an in-depth presentation of the contributions to each research question, followed by an overall synthesis towards fulfilling the research objective.

5.1. Methods of interpretation in the appended papers

The analysis of the results of the papers presented in chapter 4 is done along the following sequence. First two broad data analysis methods are chosen, viz. (i) statistical analysis, and (ii) thematic coding. This represents mixed-methodology (Tashakkori and Teddlie 1998, Creswell *et al.* 2003) by combining qualitative and quantitative data analyses for method triangulation (Denzin 1978, Denzin 2006). The research questions (RQs) are answered using these techniques. For responding to each RQ, multiple data collection sources (surveys, interviews, case study, secondary data) are used to gather information which leads to data triangulation (Denzin 1978, Denzin 2006). Finally the overall research objective (RO) is addressed by an overarching processual analysis method which combines all the RQs answered using mixed methods (cf. Figure 5.1). The processual analysis is done by answering the RO along four linkages/relationship processes (RPs) highlighted in section 3.2.3, viz. (i) Relationship Process (RP) 1: Between C and E, (ii) RP2: Between S and E for a particular C, (iii) RP3: Between P and E for a particular C, and (iv) RP4: Between P, S and E for a particular C.

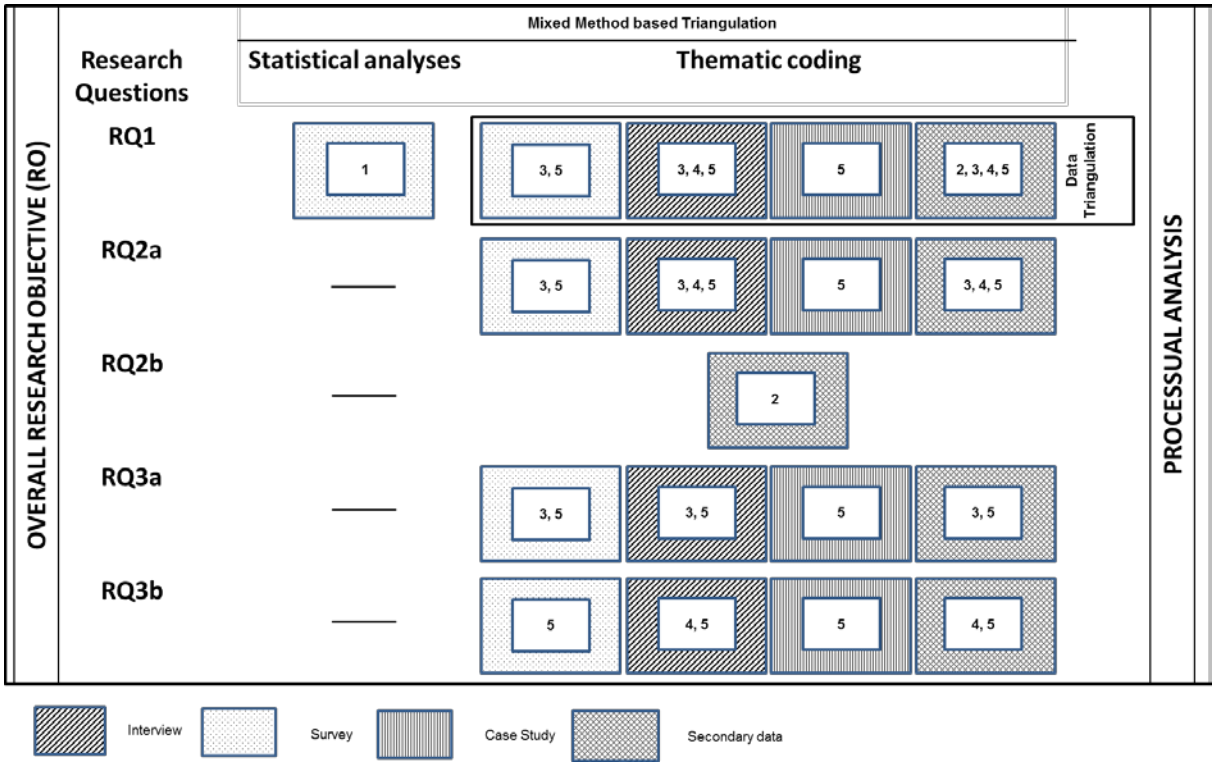


Figure 5.1. Combining research questions and objectives with methods

5.2. Analysis of research questions

RQ 1: Is organizational resilience development a precursor for successful financial performance in crises?

The question of whether resilience is a precursor for organizational business success during crises is addressed by all the appended papers, in different ways. Paper 1 tries to draw out the limitations of the present organizational design models through 3-DCE approaches in order to synthesize major

CSFs. It carries out statistical analysis of the data collected from Swedish TCF firms using a survey-based technique. On the other hand, papers 2-5 uses various qualitative data collection methods (cf. Figure 5.1) to answer RQ 1 qualitatively from diverse perspectives, viz. (i) how resilient firms are more viable in terms of their financial health (answered by paper 2), (ii) how better/higher resilience enablers yield better business success/performance (answered by paper 3), (iii) how resilient firms' strategies are better and significantly foster better financial performance (answered by paper 4), and (iv) how crisis strategic planning-based resilience development yields better financial performance (answered by paper 5).

Extensive work has been done on concurrent engineering (CE) incorporating the facets of product and process designing along with its extension into 3-dimensional concurrent engineering (3-DCE) by including a third designing aspect (i.e. supply chain designing), necessary for corroborating the principles of organizational designing (cf. Table 1 of paper 1 for a review on extant literatures contributing to this domain). Such organizational designing aspects are considered to synthesize critical success factors (CSFs) and competitive advantage in organizations for improved financial performance (Fisher 1997, Kopczak and Johnson 2003, Petersen *et al.* 2005). Such 3-DCE approach is supposed to generate a holistic view of the interact-ability of all the necessary components like customer involvement, quality management, early supplier involvement (ESI), CE etc. to essentially map and also generate the CSFs, like improved quality, reduced lead time and time-to-market, cost minimization, improved manufacturability, reduced relationship risk, improved product innovation etc. However, the analysis shown in Figure 4.3 highlights the existence of a research gap from the point of view of 3-DCE being unable to foster all CSFs necessary for contributing towards a firm's successful performance, especially the intangible elements like value system, knowledge, image, relationships and organizational culture those are critical for the future success of businesses (Repenning and Sterman 2002, Molnar 2004, Marr 2007) (also cf. section 1.2). In this context, extant researches like Senge (1990b), Dooley (1997), Bobbitt and Ford (1980) and some others signify the need to capture the holistic interactions in organizations and supply chains with their surrounding dynamic environment from a system's perspective rather than from a component perspective. Such a system's perspective certainly demands investigating organizational success as an evolving phenomenon or process. Principle component analysis (PCA) shown in Figure 4.3 highlights the proposition of incorporating CSFs like value propositions/designing, contingency factors and human factors etc. into the existing 3-DCE domain and create an 'extended 3-DCE concept' (represented as Component 0 which author terms as designing for organizational resilience). This process or phenomenon of yielding organizational resilience provides a complete business system's view and acts as a common denominator in managing and embracing most of the key success drivers identified as CSFs in firms. This 'extended 3-DCE concept' acts as the basic building block for devising organizational structure and strategies in the next stage of the crisis strategic planning roadmap as also highlighted by Miles and Snow (1978) – based on adaption to changes through product offerings, internal structures and transformation processes etc. Thus the design framework of an organization has been proposed to be based on product-process-supply chain-value designing on different hierarchical levels and integrated into an 'extended 3-DCE' model which has a positive mediating effect on the operational and financial performances and hence organizational success. Along the lines of Robb (2000) it is also evident that the basic building blocks of organizational design are 3-DCE architecture, skills and culture as the key organizational capabilities and these need to be adjusted to the requirements of a dynamic environment (turbulences and crises) to achieve higher operational and financial performances. Paper 1 thus answers the research question (RQ 1) in proposing that the 'extended 3-DCE' framework should act as the basic building block/structure for the organization to adapt to changing environment and devise a more complex adaptive system. This asks for designing resilience in the organization to cope with a dynamic environment thus proposing further research (as addressed in the other appended papers) for sufficient exploration, explanation and verification for relating this to the construct of resilience capacity development.

Research works by Bordia *et al.* (2005), de Waal (2008), Epstein (2004) and many others established that resilient organizations show better financial performances and are the healthiest in terms of their organizational DNA among all. de Waal (2008) termed these organizations as High Performance Organizations (HPOs) showing high achievements in terms of their financial and non-financial results, like strong financial results, satisfied customers and employees, high productivity etc. thus showing resilient characteristics (de Waal 2006, de Waal 2007). Similarly in line with the work by Sundström and Hollnagel (2006) which described the catastrophic failure of Baring PLC as it slipped from *unhealthy* business state to a *catastrophic* business state; the present research highlights the relation between different levels of ORes and business health for Swedish textile-related firms over a period of 20 years, as shown in Table 5.1.

Table 5.1. Aggregate scoring of ORes and business 'health' and contributing financial ratios, coding**

	Level of Resilience for supporting case firms				
	Not at all	***Hardly***	***Partly***	***Mostly***	***Completely***
Recent Crisis	*Unhealthy Business State**	*Unhealthy Business State**	*Just in Healthy Business State**	*Healthy Business State**	*Healthy Business State**
T_1	– (–)	+ (+)	= (–)	+ (+)	+ (+)
T_2	– (=)	+ (+)	+ (+)	= (+)	+ (+)
T_3	– (–)	+ (+)	– (–)	+ (+)	+ (=)
T_4	– (–)	– (–)	+ (+)	– (–)	+ (+)
T_5	– (–)	– (–)	– (–)	+ (+)	– (–)
Before Crisis (2004-06)	*Unhealthy Business State**	**-**	*Healthy Business State**	*Healthy Business State**	*Healthy Business State**
T_1	– (–)	-	+ (+)	+ (+)	+ (+)
T_2	– (–)	-	+ (+)	+ (+)	= (+)
T_3	– (–)	-	– (–)	+ (+)	+ (+)
T_4	– (–)	-	+ (+)	+ (+)	– (–)
T_5	– (–)	-	+ (–)	– (–)	+ (+)
After Crisis (1994-98)	*Unhealthy Business State**	*Unhealthy Business State**	*Healthy Business State**	*Healthy Business State**	*Healthy Business State**
T_1	– (–)	– (–)	+ (+)	+ (+)	+ (+)
T_2	– (–)	– (–)	+ (+)	+ (–)	+ (–)
T_3	– (–)	+ (+)	+ (+)	+ (+)	+ (+)
T_4	– (–)	– (–)	+ (–)	+ (+)	+ (+)
T_5	– (–)	– (+)	+ (+)	– (+)	+ (+)
1990 Economic Crisis	*Unhealthy Business State**	*Unhealthy Business State**	*Just in Healthy Business State**	*Healthy Business State**	-
T_1	+ (–)	– (–)	+ (+)	+ (=)	-
T_2	= (–)	– (–)	+ (+)	– (+)	-
T_3	– (–)	+ (–)	+ (–)	– (–)	-
T_4	+ (–)	– (–)	– (–)	– (–)	-
T_5	– (–)	-	+ (+)	+ (+)	-

Notes: *****Average Z-score for the companies in the period, mentioned; ****** +[+] indicates that the average value of the indicator, say T_i, in a certain period for the healthy or unhealthy firms – categorized in terms of the Z-score, is higher than the average value of the T_i for all the firms over the period and also higher compared to the overall T_i average for all firms from 1989-2009.

Based upon Table 5.1 it can be interpreted that the highly resilient firms ('mostly' or 'completely' resilient) enjoyed *healthy* business states in the crisis situation while firms consistently showing lack of resilience stayed mostly in *unhealthy* state.

Also the five contributing financial ratios loaded ORes differentially in different periods. The contributions of most of these ratios were observed to be more in case of the resilient firms compared to those non-resilient. During the recent economic crisis, firms having higher liquidity, leverage and solvency maintained a *healthy* state compared to the other studied firms. Similarly firms maintaining high resilience during the 1990's economic crisis by generating higher capital-turnover and liquidity, possessed higher recovery potential after the crisis and also generated higher liquidity, sales,

profitability etc. On the other hand, it is evident that the firms not resilient in the crisis were poor in terms of most of these financial ratios compared to the average for all the firms. A lack of development of financial resources and assets in terms of liquidity, capital-turnover, leverage, profitability etc. resulted in poor resilience, particularly, for firms 'not at all' resilient in all the periods under observation. This eventually characterized ORes in terms of attaining favourable business 'health' in terms of key financial ratios.

Further RQ 1 was addressed from the perspective of investigating the resilience enablers and finding out whether financially successful firms possessed better/higher resilience enablers, hence resilience, or not. Evidently there is a lack of empirical research investigating the differential effects of various organizational capabilities, unifying resource-based view, dynamic capabilities and organizational learning to explore their support towards resilience development in crisis situations. In this line, Freeman (2004) emphasized four categories of organizational resources as (i) wealth as cash and other assets, (ii) systems: internal coordination, processes and technical expertise, (iii) human resources: people with requisite skills, and (iv) network connections and relationships with stakeholders, as essential contributors to superior organizational performance and in turn resilience. It is evident from Table 5.2 that assets and resourcefulness lead to considerable development of economic resilience thus reflecting upon sound economic health of businesses as well. The study provides sufficient evidence on cash flow and investment finance being key financial contributors to generate economic resilience and favourable financial performance in organizations during crisis (cf. paper 3). Evidently, mobility and deposits of the financial assets along with insurance coverage are important resources to create a critical asset stock to absorb and prevent the impacts of economic crisis (Gittell *et al.* 2006). Along with it, networked organizations possess greater agility and adaptability by securing quality relationships with stakeholders (suppliers, customers, financers etc.) thus favouring development of organizational success patterns (Starr *et al.* 2003, Leiblein 2011). The study demonstrated strong degree of correlation between organizational 'resourcefulness' and 'Z-score transition profile' in turn influencing economic resilience in the recent credit crunch, while demonstrating moderate degrees of correlation in the 1990's crisis (cf. Table 2 in paper 3). Further, extant literature (like, Prahalad and Hamel (1990), Grant (1991a), Grant (1991b), Eisenhardt and Martin (2000) etc.) have highlighted that effective deployment of heterogeneous slack resources results in development and reconfiguration of core competences like long-term flexibility, redundancy and robust responses (Sheffi 2007) in firms and is necessary to develop competitive advantages by reducing or absorbing market turbulences (Lengnick-Hall and Beck 2005). Along similar lines, Table 5.2 shows that firms that were financially successful and maintained healthy business state (in terms of Z-score) also showed higher economic resilience significantly built upon operational and strategic flexibilities. Overall, 'dynamic competitiveness' of firms exhibited a moderate degree of correlation with the 'Z-score transition profile' for bolstering economic resilience (cf. Table 2 in paper 3). Further, Keller and Price (2011) showed in their research how the role of employee accountability and sense of ownership along with continuous improvement through knowledge sharing, learning and right mind-set are essential for building resilience and, hence, long-term performance. In the study, 'learning and cultural' factors exhibited significantly strong correlation with the 'Z-score transition profile' of the studied firms amid the economic crisis of 2007-09 but a moderate degree of correlation in the 1990's crisis (cf. Table 2 in paper 3) which in turn resulted in better financial performance hence business success.

Table 5.2. Relation between business health and economic resilience and its enablers (adapted from paper 3)

Case	Business Health in terms of Z-score Notations: H – Healthy, U – Unhealthy, C – Catastrophic		Economic Resilience (degrees of available antecedents)	
	1990-93	**2007-09**	**1990-93**	**2007-09**
1	**U**	**Mostly H**	No (Lack of cash flow and investment finance; Lack of strategic and operational flexibilities)	No (Lack of cash flow and investment finance, workforce lay-off; Lack of strategic and operational flexibilities)
2	**Mostly H**	**Partly H**	Yes (Significant strategic and operational flexibilities)	Partly (Considerable cash flow, investment finance, relational networks and asset management; Significant strategic and operational flexibilities)
3	**U**	**Mostly H**	No (Lack of cash flow and investment finance; Lack of leadership and employee collectiveness; Lack of strategic flexibility)	Yes (Considerable cash flow, investment finance, relational networks and asset management; Good leadership and employee collectiveness; Significant strategic and operational flexibilities)
4	**U**	**Mostly H**	No (Lack of cash flow and investment finance; Lack of strategic flexibility)	Yes (Considerable cash flow, investment finance, relational networks and asset management Good leadership, employee collectiveness; Significant strategic and operational flexibilities)
5	**U**	**Mostly U**	No (Lack of cash flow and investment finance; Lack of leadership and employee collectiveness; Lack of strategic flexibility)	No (Moderate influence of lack of relational networks with suppliers and financing; Lack of formal leadership)
6	**U**	**Mostly U**	No (Lack of cash flow and investment finance; Lack of strategic and operational flexibilities)	No (Lack of cash flow and investment finance, workforce lay-off; Lack of strategic and operational flexibilities)
7	**U**	**Fully U**	No (Lack of cash flow and investment finance; Lack of leadership and employee collectiveness; Lack of strategic and operational flexibilities)	No (Moderate influence of lack of relational networks with suppliers and financing; Lack of formal leadership; Lack of strategic and operational flexibilities)
8	**U**	**Mostly H**	No (Lack of financial reserve; Lack of strategic flexibility)	Yes (Good bank relationships; Good operational flexibility)
◯	Marks/denotes the direct and positive causal relation between *healthy* business state and higher/better economic resilience with the availability of higher resilience antecedents, for each firm in each period			

Existing management research suggests that the relationship between crisis strategic planning and firm's economic health/financial performance is positive for both large firms (Miller and Cardinal 1994) and SMEs (Schwenk and Shrader 1993, Peel and Bridge 1998), and this is the key point of investigation in paper 4. Paper 4 answers the RQ 1 by highlighting the role of CSP in generating better financial health based upon balancing of the defensive and preventive crisis management strategies mostly short-term in nature with the offensive and long-term strategic management initiatives as also suggested by Preble (1997), Burnett (1998) and few others (as discussed in Table 2.2 and in section 2.5). Key to economic success in terms of healthy business state is thus upheld by crisis management, business continuity planning and growth perspectives – all integrated into one resilience development process. The ability to survive is addressed by crisis management while the aspect of thriving is in strategic planning (Seville 2009, Vargo and Seville 2011). This outlines the role of complementary organizational behaviours of planning and adaptation for constructing the growth and sustenance processes. According to paper 4, the resilient firms differ from the less resilient ones in terms of successful Z-score based financial performance. Table 5.3 summarizes two things in this regard:

(i) Resilient firms are mostly in the healthy zone in terms of their Z-score transition profile compared to the less resilient ones. The resilient firms were mostly or completely in the healthy zone (with Z-score above 2.9) during the crises period. On the other hand, the less resilient firms were mostly or completely in the 'unhealthy' zone (showing their Z-score values below 2.9 over the period). This certainly demarcates the resilient firms from the rest in terms of overall financial health.
(ii) Resilient firms showed higher/better long-term strategic planning activities and hence overall resilience compared to the less resilient ones. The resilient firms mostly showed a competitive edge over the rest in terms of their potential to develop long-term growth or business continuity initiatives. This catapulted the overall economic resilience of the firms even though short-term CM strategies did not prove to be a major strategic factor differentiating between the two categorised groups.

Overall, these two causations explain the favourable role of higher or better crisis strategic planning on the financial performance of SMEs by building resilience.

The crisis strategic planning framework is crucial to monitor and develop resilience hence organizational financial success during crise. Evidence of such a relationship between business health and economic resilience and its enablers was seen in the case study conducted in the thesis. The study showed the transition in the Z-score profile of the organization (from unhealthy to healthy business state) due to enhancement in organizational capability from low cash flow and high debts (signifying low resources), low degrees of innovation and lack of attentive top-management decision-making in the period 1990-93 to that of high operational flexibility (signifying better capabilities), higher innovation and financial reserves (signifying higher resources) and right leadership (signifying better culture) during the recent credit crunch. The CSP process was useful in constructing the response repertoire for sustenance and growth. Concrete strategy implementation and its revision in terms of economic performance highlight the business health transition and hence resilience from lack of CSP to that of significant CSP in the firm (in section 2.2.5). Paper 5 outlines the transition in the Z-score profile of the organization (from unhealthy to healthy business state) considerably based upon proper selection/formulation, implementation and review of a multitude of growth and sustenance strategies (both planned and adaptive) (cf. Table 6 in paper 5). From a period of lack of strategic initiatives in the organization (in 1990-93) the company made a transition towards better implementation and execution of strategies for healthy Z-score yielding higher resilience (cf. Table 5.4).

Table 5.3. Relationship between business health, economic resilience and crisis strategic initiatives

	A	B	C	D	E	F	G	H	I	J	K	L
Z-SCORE TRANSITION PROFILE	Mostly in 'unhealthy' zone	Fully in 'healthy' zone	Fully in 'unhealthy' zone	Fully in 'healthy' zone	Mostly in 'healthy' zone	Mostly in 'unhealthy' zone	Mostly in 'healthy' zone	Fully in 'healthy' zone	Mostly in 'unhealthy' zone	Mostly in 'unhealthy' zone	Fully in 'unhealthy' zone	Fully in 'healthy' zone
ECONOMIC RESILIENCE	**Less Resilient**	**Very Resilient**	**Less Resilient**	**Very Resilient**	**Very Resilient**	**Less Resilient**	**Partly Resilient**	**Very Resilient**	**Lowly Resilient**	**Lowly Resilient**	**Lowly Resilient**	**Very Resilient**
STRATEGIES												
SHORT TERM												
Short-term Crisis Planning	High	High	Medium	Medium	High	Medium	High	High	High	Medium	High	High
Short-term BTD	High	Low	High	High	Low	Low	Low	High	Low	Medium	Low	Low
Short-term Diversification	Low	Low	Medium	Low	Low	Low	Low	Low	Low	Low	Low	Low
Short-term Transformation	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Short-term Adaptation	**Medium**	**Low**	**Medium**	**Low**	**Low**	**Low**	**Low**	**Medium**	**Low**	**Low**	**Low**	**Low**
LONG TERM												
Long-term Business Continuity	Medium	High	Medium	Medium	Medium	Medium	High	High	Low	Low	Low	High
Long-term BTD	Medium	High	Medium	High	High	Medium	Low	High	Medium	Low	Medium	High
Long-term Diversification	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Low	Low	Low	Medium	Medium
Long-term Transformation	High	High	Medium	High	High	Medium	Medium	High	Low	Low	Low	High
Long-term Planning	**Medium**	**High**	**Medium**	**High**	**High**	**Medium**	**High**	**High**	**Low**	**Low**	**Low**	**High**
OVERALL RESILIENCE	**MEDIUM**	**HIGH**	**LOW**	**HIGH**	**MEDIUM**	**LOW**	**MEDIUM**	**HIGH**	**LOW**	**LOW**	**LOW**	**HIGH**

Marks/denotes the direct and positive causal relation between *healthy* business state and higher/better economic resilience with the crisis strategic planning based overall resilience for each firm

RQ 2: How can organizational resilience be developed and monitored?

This research question is answered along two sub-questions. The first research question encompasses a discussion on the entire relationship process of 'how' resilience is developed and thus addresses the relationship process (RP) 4 holistically. This provides an explanation to the process of building the event (or resilience outcome) by attuning the structure (based upon competences and strategies) and the causal power (crisis strategic planning). RQ 2a is answered by appended papers 3, 4 and 5 using data collected through multiple methods like surveys, interviews, case studies and secondary data. However, as stated in the CR-GT approach of causation the final result should be outcome-oriented to provide a critical realist view (Sayer 1984, Lee 2012). RQ 2b in this regard attempts to quantify resilience in terms of organizational financial health by adapting the resilience measurement framework proposed by Allen and Davis (2010). RQ 2b is answered by paper 2.

RQ 2a: How can organizational resilience be developed?

To be resilient at times of crises, organizations need to navigate through a set of contradictory strategies that juxtapose effective planning with adaptability to the changing circumstances, thus making the role of crisis strategic planning crucial (Vargo and Seville 2011). However, at present there is a very little advice and scientific research available on how to do this most effectively. Hence, in this regard RQ 2a attempts to propose a solution for resilience development through crisis strategic planning.

Extant literature on crisis strategic planning (CSP) or similar/related concepts are limited, like Vargo and Seville (2011), Preble (1997), Ismail *et al.* (2011) and a few others (cf. Table 2.3) thus making the scope of developing a practice-based analytical framework very vital. Such a framework is expected to: (i) have an orientation to promote business growth with clear targets, (ii) be easy to apply in practice, (iii) be less difficult to frame from data collection and analysis points of view, (iv) lead to capability development with practical action plans, (v) enhance resilience by developing capabilities serving multiple growth avenues, and finally (vi) induce a shift from a culture of just survival to a more structured and strategic behaviour in SME (Ismail *et al.* 2011). Paper 5 in this context first outlines such an organizational resilience developmental process framework based upon a six-step crisis strategic planning approach and then validates it using a comparative study of a case firm in two different crises periods, demonstrating resilience in one while lack of resilience in the other. This supports the relationship process (RP) 3 highlighting the inexorable linkage between the *causal power* (here crisis strategic planning) and the *event* (here resilience outcome).

In developing the analytical framework, a wide range of generic tools and techniques were identified from academic and practitioner literature like impact analysis, leadership analysis, SWOT analysis (Weihrich 1982), capability analysis, assessment of strategic options etc. (Prescott and Grant 1988, Frost 2003, Ismail *et al.* 2011) resulting in prescribing a one-size-fits-all approach to resilience development process. For adaptation of these tools in an SME setting to match the response repertoire to the operating environment, a six-step process was proposed as follows:

(i) **Identification of environmental context –** Similar to the strategic agility framework by Ismail *et al.* (2011), industry trends and turbulences can be examined to identify the potential for failure – internal or external to the firm. Analytical tools like STEEP (social, technological, economic, environmental and political) etc. are effective in auditing environmental influences to devise organizational capabilities and strategies effectively (Preble 1997, Lengnick-Hall and Beck 2005, McManus 2008) (cf. section 2.2.1).

(ii) **Impact analysis –** This highlights how industry trends and turbulences can be examined and indicated strategically along the likely problems and their severity on organizations, preferably in terms of key financial indicators (Ismail *et al.* 2011) (cf. section 2.2.2). Such industry turbulences can be resource scarcity (financial, technological or human resources) (Vossen 1998, Sullivan-Taylor and Branicki 2011), in an SME context, resulting in an increase in day-to-day pressures

related to time, cost, growth and profits particularly during crises. Furthermore, lack of formalized decision-making, weak management skills and lack of readiness, little attention to relationship management with key partners and shareholders along with higher dependence on suppliers, customers, insurers etc. can affect SMEs' financial performances in crises as well (Rice and Sheffi 2005, Ates and Bititci 2011) (cf. section 2.2.2).

(iii) **Leadership analysis –** The knowledge of industry differentiators and perceived performance are essential for building necessary organizational capabilities/competences (Porter 1985, Porter 1998, Barney 2002) in order to understand firms' strategic positioning in the marketplace. Identification of the critical success factors (CSFs) (Rockart 1979) also serve as valuable inputs to environmental analysis, resource analysis and in the strategy development process to ensure successful competitive performance (Rockart and Bullen 1981, Leidecker and Bruno 1984, Grunert and Ellegaard 1993) (cf. section 2.2.3).

(iv) **Capability analysis –** This helps firms to adjudge their capabilities and become resource-focused to effectively allocate and utilize them dynamically for strategically positioning against crisis and turbulence (Barney 1991, Teece *et al.* 1997, Makadok 2001). This is complemented by intangible organizational assets like learning including resilient leadership and top-management decision-making, culture etc. as 'soft' assets (Gibson and Tarrant 2010). A capability analysis helps organizations to capitalize on strengths and improve on weaknesses, however lack of resources pose critical problems for SMEs in coping with crises issues (Ingirige *et al.* 2008, Herbane 2010b, Sullivan-Taylor and Branicki 2011) (cf. section 2.2.4).

Furthermore, capability analysis (carried out in papers 3 and 5) also outlines the relationship process (RP) 2 aimed at understanding the causal relationship existing between *organizational structure* based on 'hard' and 'soft' competences and capabilities and the *event* (resilience outcome). This evidently shows how a unified RBV, dynamic capabilities and learning perspective contribute toward a robust organizational design in order to yield resilience. Keys antecedents like resources and assets, dynamic capabilities and organizational learning are modulated to develop economic resilience during crises.

(v) **Strategy development (formulation/selection, implementation and evaluation) –** The next step in the process is to develop a wide array of strategic possibilities by taking an integrative view towards strategic management, crisis management and business continuity management (Mitroff *et al.* 1992, Preble 1997, Burnett 1998). Firms' growth and continuity strategies are essential paths for utilizing the resilience antecedents. Similar to this framework, is the strategic agility framework as proposed by Ismail *et al.* (2011) to yield strategic 'readiness'. The present framework indicates the need to integrate a multitude of strategies – both planned and adaptive – either developed before, during or after the crisis for organizational sustenance/survival or growth initiatives (cf. Figure 4.7). The next step in the strategy development process is their implementation combining both, long-term objectives like articulation of company policies and guidelines for taking actions, annual long-term goals, formalization of crisis plans etc. and short-term objectives like developing short-term growth prospects and crisis responses (Preble 1997). The level of resource engagement and their utilization for proper strategy development changes in different crisis contexts to provide a dynamic view to the resilience development process (cf. paper 5). Finally the process ends with strategy evaluation involving review and feedback of organizational performance to determine whether the strategic plans and initiatives were achieved as suggested by Preble (1997). Along Preble's integrated strategic management model this is achieved by recording, reviewing and revising plans and taking corrective actions for generating a control (this combines the steps 5 and 6 of the proposed resilience development processual framework) (cf. section 2.2.5).

Moreover, the strategy development process (shown in papers 4 and 5) also underpins the relationship processes (RP) 2 and 3 aimed at understanding the causal relationship existing between *organizational strategies* based on 'planned' and 'adaptive' strategies for survival and/or growth prospects to the *event* (resilience outcome).

Empirical testing of the framework is done along three relationship processes (RPs) proposed earlier (cf. section 3.2.3). They are:

RP2: Between S (organizational structure) and E (ORes for successful financial performance) for particular C (economic crises) (evident in papers 3, 4 and 5) is shown along steps 4 and 5;

RP3: Between P (crisis strategic planning) and E (ORes for successful financial performance) for particular C (economic crises) (evident in papers 4 and 5) is shown along steps 5 and 6; and

RP4: Between P (crisis strategic planning), S (organizational structure) and E (ORes for successful financial performance) for particular C (economic crises) (evident in paper 5) is shown along steps 1-5

The validation of the resilience development processual framework based upon the causation mechanism (cf. Figure 3.1) is demonstrated in Table 5.4.

Table 5.4. Resilience development processual framework through crisis strategic planning (adapted from papers 3, 4, 5)

Resilience development processual framework	Period of resiliency (2007-09) (for case firm in paper 5)/Resilient firms (in papers 3 & 4)	Period of non-resiliency (1990-93) (for case firm in paper 5)/Less resilient firms (in papers 3 & 4)
Step 1 **Identification of environmental context** 1. Examine industry trends and turbulences	**YES** for case firm **YES**, Most of the resilient firms identified the context N.A. to RO of paper 3	**YES** for case firm **YES**, Most of the less resilient firms identified the context N.A. to RO of paper 3
Step 2 **Impact Analysis** 1. Assess the effects of crises-related turbulences	**YES** for case firm N.A. to RO of papers 3 & 4	**YES** for case firm N.A. to RO of papers 3 & 4
Step 3 **Leadership Analysis** 1. Along industry differentiation factors & CSFs 2. Along Porter's 5-force model	**YES**; Moderate level of industry CSFs in case firm N.A. to RO of papers 3 & 4	**YES**; Low level of industry CSFs in case firm N.A. to RO of papers 3 & 4
Step 4 **Capability Analysis: SWOT** in terms of: 1. Assets and resources 2. Dynamic capabilities 3. Learning perspectives	**YES**; Moderate-high level of capabilities demonstrated by case firm **YES**; Significant capabilities (generally in terms of cash flow, investment finance, networking, leadership, employee collectiveness, and strategic and operational flexibilities) N.A. to RO of paper 4	**YES**; Low-moderate level of capabilities demonstrated by case firm **YES**; Lack of capabilities (generally in terms of cash flow, investment finance, leadership and employee collectiveness, strategic and operational flexibilities) N.A. to RO of paper 4

Continued…

Resilience development processual framework	Period of resiliency (2007-09) (for case firm in paper 5)/Resilient firms (in papers 3 & 4)	Period of non-resiliency (1990-93) (for case firm in paper 5)/Less resilient firms (in papers 3 & 4)
Step 5 **Selection/Formulation of Strategic options:** 1. Planned growth strategies 2. Planned survivality strategies 3. Adaptive growth strategies 4. Adaptive survivality strategies	**YES**; Significant strategy selection (innovative diversification, BTD, business consolidation, market development, CM) demonstrated by case firm **YES**; Significant strategy selection (better CM, long-term strategies through BCP and growth strategies through market penetration, diversification and transformational initiatives) N.A. to RO of paper 3	**YES**; Insignificant strategy selection (only market diversification) **YES**; Insignificant strategy selection (lack of strategic readiness and growth plans) N.A. to RO of paper 3
Step 6 **Implementation and review of strategies** 1. Overall evaluation and review of strategies	**YES**; Case firm continued with planned growth strategies after crisis to increase average Z-score & EBIT N.A. to RO of papers 3 & 4	**NO**; Case firm lacked significant survivality and growth strategies thus affecting long-term maintenance of 'healthy' Z-score N.A. to RO of papers 3 & 4
NET RESULT ALONG CRISIS STRATEGIC PLANNING PROCESS	Significant CSP (good repertoire of short- and long- term strategies during and post crisis) demonstrated by case firm Positive causation of structure (capabilities and strategies). Resilient firms demonstrated significant capabilities and strategies	Less significant CSP (lot much evidence of short- and long- term BCP and growth strategies) in case firm Positive causation of structure (capabilities and strategies). Less resilient firms demonstrated insignificant capabilities and strategies
NET RESULT ALONG RESILIENCE DEVELOPMENT FRAMEWORK	Comprehensive CSP, Healthy Z-score and high resilience demonstrated by case firm Healthy Z-scores and high resilience demonstrated by resilient firms	Lack of CSP (particularly along Steps 5 & 6), Mostly unhealthy Z-score and low resilience of case firm Mostly unhealthy Z-scores and low resilience demonstrated by less resilient firms

N.A. – Not Applicable

RQ 2b: How can organizational resilience be monitored?

RQ 2b highlights the need to quantify resilience and meet the demand of making the research outcome-based as it should be in case of CR-GT approach. The last research question (RQ 2a) predominantly highlighted the grounded theory method required for outlining how resilience can be developed by allocating and moderating diverse resources and/or strategies and employing and monitoring them based upon holistic crisis strategic planning thus rendering a processual view to the research. To support or complement this causation structure for creating resilience in firms a quantification technique is required (the potential need is highlighted in section 1.4).

Past researches have mostly highlighted corporate financial distresses, recoveries and turnarounds based upon univariate measures of organizational financial performances notably carried out by Slatter (1984), Bibeault (1982), Pant (1991), Taffler (1983), Taffler (1984) and some others. Going further Sudarsanam and Lai (2001) popularized the use of Altman's Z-score in studying corporate turnaround phenomena. However, as highlighted by Vogus and Sutcliffe (2007) and also in this thesis in section 1.4 there exists a research gap in relating turnaround and recovery studies to organizational resilience literature. Moreover, this has to be supplemented by operationalization of ORes in terms of

resilient organizational behaviours as pointed out by Sundström and Hollnagel (2006) (feed-forward behaviour and effective recovery) (cf. section 2.1.2). Organizational researchers and financial theorists have suggested various ways of understanding such processes, however, this way of defining business 'health' needs clearer interpretation considering the highly qualitative nature of the previous works defining no definite boundary in describing an organization's healthiness. From this perspective of economic viability used as a measure of organizational success, Sundström and Hollnagel (2006) considered profitability, liquidity and solvency as the most significant indicators and these form the basic univariate financial ratios to start the process of quantifying resilience. Paper 2 utilizes the resilience measurement relationship framework prescribed by Allen and Davis (2010) for outlining the relationship between ORes and business 'health'. The adapted process as shown in Table 5.5 embarks the following sequence:

1. Identifying the already existing and utilised financial indicators characterising organizational economic performance (indicated by level 1). These are generally the basic financial aspects of an organization and can be easily calculated from the income statements and balance sheets results.
2. Redefining the existing financial indicators into a new set with the objective of quantifying the necessary attribute (here economic resilience of organization). So the five new financial ratios identified measures five key performance indicators of firms, viz. liquidity, leverage, profitability/operating efficiency, solvency, and activity (indicated by level 2).
3. In level 3, the univariate measures of corporate health were combined into one multivariate measure to bridge the requirement as indicated in section 1.2 (research gap). The Altman's Z-score used here is such a multivariate financial indicator highlighting mainly the bankruptcy potential of organizations in the next 2 years. Hence it is a leading indicator of business 'health'. Furthermore, the score uses five financial ratios calculated on the basis of past records (of the previous years) from the annual report and thus represent the lagging indicators of business 'health' as well. Also the Z-score calculated can be segregated into three zones of discrimination: safe or healthy, gray or unhealthy, and distress or catastrophic, eventually shifting the focus from just quantifying business 'health' to its subsequent categorisation.
4. Next in line with the business 'health' transitions highlighted by Sundström and Hollnagel (2006), the system of scoring potentially evaluates the transition profile of a firm's financial performance based on multivariate Altman's Z-score to outline the relation between business 'health' and ORes (level 4). This is useful in boiling down most of the organizational growth potentials and recovery curves into simpler resilient profiles.
5. Finally in order to characterise resilience, a well-established psychometric scale most widely used in scaling responses (Likert-type scale) is adopted for finalizing the resilience monitoring process. This can be adjudged for any firm over a stipulated time period and can be averaged over any number of transitions to derive a percentage score for quantifying resilience (level 5). The advantage of using such a measurement lies in the openness in devising the quantification process depending upon the need for it and sufficiently adjusting it to the research objective. In this line, Gibson and Tarrant (2010) highlighted that resilience exists over a range of conditions observed differently among organizations facing the same event and within the same organization experiencing different types of events over different time periods, translating into different measures of resilience thus making it an organizationally contingent concept.

Table 5.5. Analytical framework for resilience measurement (adapted from paper 2)

Resilience measurement relationship framework (adapted from Allen and Davis (2010)		**Adapted in research**
Level 1	**Attributes** *(Characteristics of an asset, service or resilience process)*	**Profitability, Liquidity, Leverage, Solvency, Activity**
Level 2	**Base Measures** *(Quantification of an attribute)*	**Working capital/total assets (T1):** as a measure of *liquidity* Indicates the net liquid assets of firm relative to total capitalisation (adapted from Altman (1968), Altman (2000)) **Retained earnings/total assets (T2):** as a measure of *leverage* Indicates the total amount of reinvested earnings and losses of a firm over its entire life (adapted from Altman (1968), Altman (2000)) **Earnings before interest and taxes/total asset (T3):** as a measure of *profitability/operating efficiency* Indicates the productivity of a firm's assets appropriate for dealing with corporate failures (adapted from Altman (1968), Altman (2000)) **Shareholder's equity/total liabilities (T4):** as a measure of *solvency* Indicates how much the firm's assets can decline in value before liabilities exceed the assets and the firm becomes insolvent (adapted from Altman (1968), Altman (2000)) **Sales/total asset (T5):** as a measure of *activity* Indicates the capital-turnover illustrating sales generating ability of the firm's assets (adapted from Altman (1968), Altman (2000))
Level 3	**Derived Measure** *(Algorithm of functions applied to measures)*	***Altman's Z' Score Bankruptcy Model for indicating health of a business system:*** **$Z' = 1.2T_1 + 1.4T_2 + 3.3T_3 + 0.6T_4 + 0.999T_5$ (for public firms)** **$Z' = 0.717T_1 + 0.847T_2 + 3.107T_3 + 0.420T_4 + 0.998T_5$ (for private manufacturing firms)** **$Z'' = 6.56T_1 + 3.26T_2 + 6.72T_3 + 1.05T_4$ (for general use)** ***Zones of Discrimination:*** Z' > 2.9 (for private firms)(2.6 - for general use) – "Safe" Zone 1.23 (for private firms) (1.10 – for general use)< Z' < 2.9 (for private firms) (2.6 – for general use)– "Gray" Zone Z' < 1.23 (for private firms) (1.10 – for general use) – "Distress" Zone
Level 4	**Indicator** *(Decision criteria applied to measures)*	$Z_H \rightarrow Z_{H+}$ (Positive transition in *healthy* zone) $Z_H \rightarrow Z_{H-}$ (Negative transition in *healthy* zone) $Z_{UH} \rightarrow Z_{UH}$ or $Z_{UH} \rightarrow Z_C$ or $Z_C \rightarrow Z_{UH}$ or $Z_C \rightarrow Z_C$ (Transition in *unhealthy* or *catastrophic* zones) $Z_H \rightarrow Z_{UH}$ or $Z_H \rightarrow Z_C$ (Transition to *unhealthy* or *catastrophic* zones) $Z_{UH} \rightarrow Z_H$ (Positive transition into the *healthy* zone as V-shaped recovery or other type of recoveries (viz. U, J, W, L- shaped)
Level 5	**Information Need** *(Combination of indicators and measures)*	**Characterize Resilience:** on the basis of a five-point Likert scale, over the stipulated time period and averaged over the number of transitions to derive a percentage score 0-20% over the period → 'Not at all' resilient 21-40% of transitions over the period → 'Hardly' resilient 41-60% of transitions over the period → 'Partly' resilient 61-80% of transitions over the period → 'Mostly' resilient 81-100% of transitions over the period → 'Completely' resilient

RQ 3: What are the antecedents and the key strategic initiatives of resilient SMEs and how do they differ from less resilient ones?

This research question is answered along two sub-questions by segregating the relationship process (RP) 2 into two: (i) how the antecedents (or capabilities) engaged in the organizational structure favour resilience development (RQ 3a), and (ii) how the strategies in the organizational structure favour resilience development (RQ 3b); and then after understand how these factors contribute differently in the resilient and the less resilient firms.

RQ 3a: What are the antecedents of resilient SMEs and how do they differ from less resilient ones?

RQ 3a answers the causation highlighted as relationship process (RP) 2 in the organizational resilience developmental process (cf. Figure 3.1). This provides a comprehensive answer to the relationship proposed between organizational structure based on holistic combination of its capabilities and the event (i.e. organizational resilience) through cross-case data analysis, in order to identify and establish the evident pattern between these variables in case of a group of firms categorised as resilient from those classified as non-resilient.

One of the most important enablers of resilience as highlighted under its structure is organizational capability (cf. Figure 2.1). The capability-based analytical framework highlights the following resilience antecedents: (i) 'assets and resourcefulness' as finances, networks, materials, social and intangible (derived from Sheffi (2007), Freeman (2004), Gittell *et al.* (2006), Starr *et al.* (2003), Leiblein (2011), Fassoulsa (2006) and others, also cf. section 2.2.4.1), (ii) 'dynamic competitiveness' through flexibility, redundancy, networking robustness (derived from Vossen (1998), Sheffi (2007), Thun *et al.* (2011) and others, also cf. 2.2.4.1) and (iii) 'learning and culture' through leadership and role of top management, shared vision and collectiveness among employees and their well-being (derived from Bourgeois and Eisenhardt (1988), Vossen (1998), Penrose (2000), Seville *et al.* (2006), Weick and Sutcliffe (2007) and others, also cf. 2.2.4.2). Table 5.6 in this regard provides a holistic approach towards developing an analytical framework by unifying various organizational capabilities based upon resource-based view, dynamic capabilities and organizational learning and outlining the differential effects of these aspects towards resilience development in crisis situations.

Moreover, in connection to the context of the present research topic (investigating the resilience development process for Swedish textile-related SMEs in economic crises, cf. section 1.5), the Table 5.6 further highlights the patterns identified along these resilience antecedents. Cash flow, investment finance and relational networks along with strategic and operational flexibilities emerged as key antecedents for bolstering resilience to generate favourable financial performances mostly through higher profitability, cash flow/liquidity and sales turnover among the studied firms. Responses also highlighted the indirect influence of the 'soft' learning and cultural aspects like attentive leadership and collectiveness on economic resilience, those considered to be tacit and ingrained in small or medium-sized family businesses.

Furthermore, the research also conceptualizes the role of capability analysis as a strategic technique in the crisis strategic planning roadmap (evident in paper 5). In answering RQ 3a, paper 5 investigates the *antecedents' influence on outcomes* as highlighted by Hutzschenreuter and Kleindientst (2006) in case of any developmental process (economic resilience, here). It is evident from Table 6 in paper 5 that capability analysis (step 4) plays an integral role in the crisis strategic planning process. Unless considered an organization cannot execute the CSP framework for resilience development, as key the for developing strategic options lie in generating and allocating resources, as also suggested by Preble (1997) in the ISM model. Going back to the case study of paper 5, it is clearly observable how the company showed a transition from having a lower degree of financial assets along with moderate innovation potential and lack of decision-making skills (in 1990-93 crisis) to a higher degree of

innovation, operational flexibility and financial reserve (amidst the credit crunch of 2007-09) thus reflecting upon betterment of its economic resilience.

This discussion overall establishes an analytical framework based on significance or lack of antecedents, and how they favour or inhibit resilience development respectively.

Table 5.6. Analytical framework and support for the potential antecedents of resilient SMEs (adapted from papers 3 and 5)

Antecedents of SME resilience	Resilient SMEs	Less resilient SMEs
Assets and Resourcefulness		
Material	**Analytical:** Stock of raw materials, work in progress or finished goods inventory, used strategically can help to overcome immediate problems of disruption. Safety stocks can help in planning higher internal efficiency (Sheffi 2007).	
	Empirical: Not highlighted distinctly.	**Empirical:** Paper 3 showed that asset problems aggravated by price hikes, huge stock lots etc. resulted in decrease in orders. This was evident in terms of excess raw material stocks or sometimes shortage of supply etc., compelling firms to depreciate stock values and think of consolidated internal restructuring for higher efficiency planning. **Empirical:** Paper 5 showed similar evidences.
Financial	**Analytical:** Mobility and deposits of the financial assets can create a critical stock or buffer (Gittell *et al.* 2006) along with adequate insurance coverage	
	Empirical: Paper 3 demonstrated cash flow and investment finance as crucial facilitators of resilience. Also good bank support may lead to better liquidity and leverage ratios. **Empirical:** Paper 5 highlighted the role of financial reserve in generating economic resilience.	**Empirical:** Papers 3 and 5 showed that cash flow constraints due to a variety of reasons like currency devaluation, rising costs of production and overheads, volume and margin ramp-downs, etc. affected economic resilience. Further, investment finance constraints due to wrong business ventures etc. also affected ORes.
Social	**Analytical:** Freeman (2004) emphasized human resources as critical contributor to superior organizational performance enhanced through teamwork and trust among the employees. This builds an internal risk management culture (Sheffi 2007).	
	Empirical: Not highlighted distinctly.	**Empirical:** Paper 5 highlighted the role of major lay-off/retrenchment leading to bankruptcy of business subsidiary during crisis.
Network	**Analytical & Empirical:** Collaborative IORs through M&As, strategic alliances or outsourcing help to exchange complementary knowledge resources and relationships (Leiblein 2011). Networked firms possess greater agility and adaptability through secured relationships with stakeholders (Starr *et al.* 2003, Freeman 2004, Leiblein 2011) resulting in getting more orders as seen in paper 3, contributing to capital-turnover ratio.	**Analytical & Empirical:** In line with Fassoulsa (2006), lack of external support increases supply chain vulnerability during crisis (paper 3). Also, factors like 'lack of consolidation of suppliers', 'lack of high-quality suppliers', 'restricted customer base due to low-price competition' etc. shrunk the supply and customer relational networks.
	Empirical: Paper 5 showed how a large number of business subsidiaries help to share business risks.	
Intangible	**Analytical:** Goodwill, inter-personal relationships and brand are crucial to develop contextual resilience (Lengnick-Hall and Beck 2005).	
	Empirical: Not highlighted distinctly.	**Empirical:** Paper 3 highlighted factors like lack of 'cross-functional training for developing working teams', 'silo organizational structure', and lack of 'formal education' to be inhibiting resilience development.

Continued…

Antecedents of SME resilience	Resilient SMEs	Less resilient SMEs
Dynamic Capabilities		
Flexibility	**Analytical:** Strategic flexibility as rapid decision-making, effective internal communications, fast learning and the ability to quickly adapt strategies are essential for SMEs (Vossen 1998, Sullivan-Taylor and Branicki 2011, Vargo and Seville 2011).	**Analytical & Empirical:** Lack of a proper CSP mainly due to slack resource constraints inhibit SME resilience (cf. papers 3 and 5, and Vargo and Seville (2011)).
	Empirical: Paper 3 demonstrates similar flexible strategic planning in resilient firms through rolling long-term plans supported by oligarchic decision-making. It also suggests that changes in organizational design/business model by delocalizing production or shifting product core leads to strategic flexibilities to enhance resilience.	
	Analytical: Resilience can be built through operational flexibility, like by inter-operable standardized materials and processes etc. (Peck 2006, Sheffi 2007) however less observable in case of SMEs (Thun *et al.* 2011).	
	Empirical: On the contrary, paper 3 demonstrated the role of structural flexibility in determining make-buy decisions contributing towards economic resilience by increasing profitability and cash flow. Paper 5 similarly demonstrated role of operational flexibility through efficient logistics etc. for leading economic resilience.	**Empirical:** Lower flexibility in inventory management, lower flexibility in manufacturing or make-buy decisions affects profitability and liquidity (paper 3).
Redundancy	**Analytical:** Redundancy of resources, such as unused capacity, multiple sourcing etc. emphasize resilience (Sheffi and Rice 2005) mostly in large firms, though Thun *et al.* (2011) showed how small firms can also develop redundancy-based reactive instruments for dealing with crises. There exists a trade-off in balancing cost of redundancy and generating long-term economic benefits as an antecedent of resilience (Linnenluecke and Griffiths 2010).	
	Empirical: Not highlighted distinctly.	**Empirical:** Not highlighted distinctly.
Robustness	**Analytical:** Robustness through quality awareness and 'lean thinking' leads to resilience (Christopher and Rutherford 2004, Mangan *et al.* 2008). Resilient firms effectively deploy contingency plans and resources when facing disruptions to enhance quality control (Tang 2006). Robustness can be enhanced through quality managed lean processes and continuous improvements (CI) mostly in large firms (Dean 2010), however, also in SMEs (Ismail *et al.* 2011, Kumar *et al.* 2011).	
	Empirical: Paper 3 points out quality issues maintained through CI as a key antecedent to resilience by harnessing batch manufacturing, lean processes etc.	**Empirical:** Not highlighted distinctly.
Networking	**Analytical:** Networking and connectivity leads to knowledge integration for conceptual slackness to assert the development of long-term resilience (Schulman 1993).	**Analytical & Empirical:** In line with Fassoulsa (2006), lack of external support increases supply chain vulnerability during crisis (paper 3). Also, factors like 'lack of consolidation of suppliers', 'lack of high-quality suppliers', 'restricted customer base due to low-price competition' etc. shrunk the supply and customer relational networks.
Learning and Culture		
Leadership & top-management decision-making	**Analytical:** Rapid decision-making, capacity for fast learning and rapid internal communications supported by powerful CEO and top-management leadership make SMEs learning-oriented for enabling resilience (Bourgeois and Eisenhardt 1988, Vossen 1998, Penrose 2000, Seville *et al.* 2006, McManus *et al.* 2008).	
	Empirical: Paper 3 highlighted strong relationship between the 'soft' antecedent and economic resilience, though not justified significantly. It did not show any direct causal explanation. However, leadership and management decision-making were influential factors in facilitating resilience by becoming more entrepreneurial and open, as highlighted in paper 5 as well.	**Empirical:** Paper 3 claims that there is a lack of significant direct causal explanation.
Collectiveness and sense-making	**Analytical:** Collectiveness promotes cognitive resilience during crises in many ways (like employee optimism, sense of vision and sense-making) (Weick *et al.* 1999, Lengnick-Hall and Beck 2005, Weick and Sutcliffe 2007, Lengnick-Hall and Beck 2009).	
	Empirical: Paper 3 suggested role of employee collectiveness, know-how and well-being to steer resilience irrespective of crises, rather ingrained in SMEs.	**Empirical:** Paper 3 highlighted factors like lack of 'cross-functional training for developing working teams', 'silo organizational structure', and lack of 'formal education' to be inhibiting resilience development.
Employee wellbeing	**Analytical:** Working together effectively leads to cognitive wellbeing through alignment of the organizational values, corporate culture, shared vision and responsibilities (Chakravarthy 1982, Boisot and Child 1999) essential for organizations to build resilience and, hence, long-term performance (Keller and Price 2011).	
	Empirical: Not highlighted distinctly.	**Empirical:** Paper 3 claims that there is a lack of significant direct causal explanation.

RQ 3b: What are the key strategic initiatives of resilient SMEs and how do they differ from less resilient ones?

The need to develop and answer RQ 3b arises from both, extant literature on crisis strategic planning and the results of empirical investigation of paper 3. Firstly, most of the frameworks and models related or similar to crisis strategic planning, like the integrated strategic management (ISM) model by Preble (1997) or the strategic agility framework by Ismail *et al.* (2011) (cf. Table 2.3) highlights the role of strategic options/initiatives required to build up strategic 'readiness' or crisis strategic planning. The ISM highlights the need to formulate, implement and evaluate a multitude of strategies (planned and crisis-related) in order to meet the firm's annual objectives. Secondly, from the empirical study conducted in paper 3 it is also evident that there is a requirement of developing additional process initiatives in organizations in order to engender resilience development. These factors or processes are indicated to be strategic and operational initiatives of a firm (Ismail *et al.* 2011) and are effective in deploying the organizational resources as also prescribed by Penrose (1959) and Davidsson *et al.* (2007), thus answering more towards 'how' resilience is developed within the organizational structure (through 'strategic and operational' process initiatives) rather than 'what' is essential for it (antecedents) (cf. paper 3). The complementariness of the 'strategic options' and 'antecedents' for developing a holistic organizational structure for enhancing resilience ensures the relationship process (RP) 2 as shown in Figure 3.1.

From the strategic perspective papers 4 and 5 answers the research question, first by proposing an analytical framework highlighting the strategic dimensions of both organizational structure and crisis strategic planning. This broad repertoire of strategic choices is categorised along two aspects, viz. (i) either growth or sustenance/survival strategies, and (ii) a time frame of development: either long-term (developed in the pre-crisis phase) or short-term (developed in the trans-crisis or post-crisis phases).

Growth strategies (cf. section 2.2.5.1) are expected to promote business growth by favouring resilience development and are effective in inducing shift towards structured strategic behaviour in SMEs (Ismail *et al.* 2011). The analytical framework on strategies for fostering resilience, categorizes both long- and short- term growth options into three major choices, viz. (i) breadth-on-top-of-depth (BTD), (ii) diversification, and (iii) transformational strategies, as highlighted in Li and Tan (2004), Li *et al.* (2011). Table 5.7 demonstrates how these strategies are viewed to enhance organizational resilience. In the growth model context, these strategies are viewed to be essential for full utilisation of firms' resources for the incremental process of generic expansion (either through market penetration or through process capability extension), or for gaining access to complementary assets, inter-partner cooperation and resource dependence (through market development), or through expansion of the boundary of the firm for full employment of under-utilised resources in the organization and gaining excess capacity (through acquisitions or transformation of existing business model) (Ansoff 1957, Kale *et al.* 2000, Li *et al.* 2011).

Survival or sustenance strategies, on the other hand, complements these growth options either being long-term (business continuity planning or crisis planning) or short-term (crisis adaptation or disaster recovery) (cf. section 2.2.5.2) (Herbane *et al.* 2004). The analytical framework of how these strategies favour the development of resilience is also presented in Table 5.7.

Moreover, in connection to the context of the present research topic of investigating the resilience development process for Swedish textile-related SMEs in economic crises (cf. section 1.5), the Table 5.7 further highlights the patterns identified among these strategic options through cross-case data analysis. This identifies and establishes the evident pattern between two set of variables: strategic choices and economic resilience, in case of a group of firms categorised as resilient from those classified as less resilient.

The resilient firms showed better short-term crisis management options through higher/better operational flexibility and effective cost-cutting measures like retrenchment, reduced fixed overhead

costs and by decreasing customer and supplier base etc., along with the ability to ramp down production volume during the crisis. However, the less resilient firms were constrained by resource scarcity, hence lacked strategic readiness. Furthermore, the resilient firms showed more/better long-term business continuity planning (BCP) utilizing unique initiatives to improve cost-effectiveness (like delocalization of manufacturing, continuous improvement (CI) and lean management) along with generic growth strategies through: (i) market penetration by increasing sales and product ranges, (ii) long-term diversification strategies through market expansion, and (iii) long-term transformational initiatives by focusing more on acquisitions and production outsourcing. However, none of the firms could develop a crisis-based growth strategy. Such multi-strategic initiatives help to develop the CSP model by categorizing firms along different resilience types, characterized by low and high degrees of efficient planning and adaptation. Resilient Swedish SMEs mostly showed *planned* resilience in economic crises.

Furthermore, the research also conceptualized the role of strategy development in the crisis strategic planning roadmap (evident in paper 5). In answering RQ 3b, paper 5 investigates the *strategy processes' influence on outcomes* as highlighted by Hutzschenreuter and Kleindientst (2006) in case of any developmental process (economic resilience, here). Clearly it is evident from Table 5 of paper 5 that such strategy development process in case of the studied firm was more pronounced from 2007 onwards. The firm showed a varied strategic response repertoire in order to combat the crises effects and this invariably reflected onto the financial performance of the organization. For example, in the post credit crunch period (2009-11) the firm undertook more investments on modern print-shop technologies (categorised as long-term BTD strategy) and developed new business portfolio (classified as long-term BTD and diversification strategies) etc., and these reflected onto better financial outcome (healthy Z-score in 2011 contributed by higher sales and ROI). On the other hand, it can be observed that during the economic crisis of 1990-93 the company lacked significant crisis strategic planning approach due to lack of business continuity planning and survival strategies, subsequently reflecting upon its poor/unhealthy Z-score profile (1990-93) = 2.13-2.67. Table 6 in paper 5 highlighted this interesting difference in level of strategy development in the firm as follows:

a. during the credit crunch – the firm continued with planned growth strategies during and after the crisis to increase the average Z-score and EBIT, by maintaining a good repertoire of short- and long- term strategies (cf. steps 5 and 6 in Table 6 of paper 5), while
b. during the economic crisis of 1990-93: the firm lacked significant survival and growth strategies (both in terms of short- and long- term BCP and growth) thus slipping into 'unhealthy' state (cf. steps 5 and 6 in Table 6 of paper 5).

Overall this establishes the analytical framework of organizational resilience based on the strategy development process by outlining significance or lack of strategic choices, and how they favour or inhibit resilience development, respectively.

Table 5.7. Analytical framework and support for the potential strategies of resilient SMEs (adapted from papers 4 and 5)

Strategic initiatives for SME resilience	Resilient SMEs	Less Resilient SMEs
	SHORT-TERM SUSTENANCE/SURVIVAL STRATEGIES	
Crisis management or Disaster recovery	**Analytical:** Short-term crisis management (CM) strategies are adaptive and consist of incremental actions or 'fire-fighting' responses (Smart and Vertinsky 1984). CM in case of small firms has mostly been crisis-based turnarounds, through top-management change, external management expertise or organizational retrenchment (Cater and Schwab 2008) while Smart and Vertinsky (1984) highlighted similar short-term strategic responses to a crisis, along with cost effectiveness. Few authors like Whitman and Mattord (2003), McCartney *et al.* (1999) and others have defined CM as actions taken during and after a disaster, considering it to be a sub-function of contingency planning but more adaptive in nature. Along with that, disaster recovery planning (DRP) approaches are dedicated to more reactive planning, emphasising recovery over prevention (Fink 1986, Quarantelli 1988, Herbane *et al.* 2004).	
	Empirical: Paper 4 demonstrated retrenchment and other cost-cutting measures aimed at fixed cost reduction as the strategies for resilient firms during crisis. The resilient manufacturing firms had flexible production system (along with control over outsourced production) to respond fast to the decrease in order-volume. The case firm demonstrated few short-term CM strategies through lay-off and selling of subsidiaries (in 2007-09). This helped it to build higher asset liquidity, improve solvency and also to counter reduced sales in the period (cf. paper 5).	**Empirical:** Even the less resilient firms demonstrated retrenchment and other cost-cutting measures aimed at fixed cost reduction to be their strategies during crisis (cf. paper 4). However, the less resilient manufacturers lacked flexible production to respond fast to the decrease in order-volume. Paper 5 did not demonstrate such strategy developments in the case firm.
	SHORT-TERM GROWTH STRATEGIES	
Crisis-based growth	**Analytical:** Breadth-on-top-of-depth (BTD) relates to 'generic' expansion by balancing technical depth with product breadth for increasing knowledge or for developing additional areas of expertise by full utilization of firms' resources (Li and Tan 2004, Li *et al.* 2011). BTD strategies can be assessed with respect to possible tactics for market penetration and process capability extension (Ansoff 1957). Such process capability enhancements generate potential market penetration through cost effectiveness along the strategic growth options (Ansoff 1957). These growth options are essential to foster resilience in firms (Li *et al.* 2011). However, no separate literature base related to short-term growth strategies and their development.	
	Empirical: Crisis-based growth strategies were hardly developed in the firms (cf. paper 4). Few resilient firms however focussed on product group segmentation and strengthening of brand (as BTD strategies). The case firm demonstrated few short-term CM growth options, e.g. expanding into new business (in 2007-09). This helped to increase sales in the period (cf. paper 5).	**Empirical:** Non-resilient firms did not show crisis-based growth strategies (cf. paper 4) nor it was observable in the case firm in the periods of lack of resilience.
	LONG-TERM SUSTENANCE/SURVIVAL STRATEGIES	
Business continuity or CM planning	**Analytical:** Business continuity management (BCM) incorporates strategies for organizational survival. It is about coping with crises or building options/plans involving long-term development of competitive advantages and value creation (Herbane *et al.* 2004, Vargo and Seville 2011). This leads to the development of continuity processes to improve resilience.	
	Empirical: Paper 4 highlighted how the manufacturing firms generated economic resilience by delocalizing production for reducing fixed costs. Also firm(s) with in-house production leveraged on cost-cutting through various quality control measures (TQM, CI, lean etc.). This provided better control on long-term business continuity measures. Paper 5 highlighted the positive transition in economic resilience of the firm over two decades, with a shift from a lack of planned sustenance strategies to its significance through business consolidation by selling subsidiaries and by outsourcing to reduce costs.	**Empirical:** Paper 4 showed how lack of long-term business continuity strategy (inability to control rising fixed costs through stock management or to maintain production efficiency) affected economic resilience. Paper 5 showed how the case firm lacked proper BCP (lack of consolidated strategic initiatives in the newly acquired businesses) in 1990's crisis.

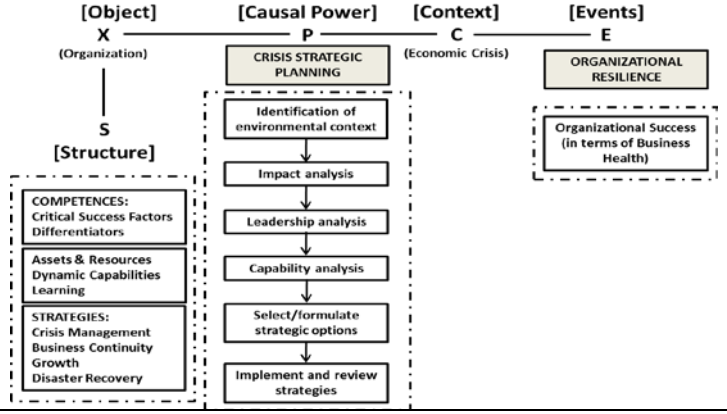
Continued…

Strategic initiatives for SME resilience	Resilient SMEs	Less Resilient SMEs
	GROWTH STRATEGIES	
BTD	**Analytical:** Breadth-on-top-of-depth (BTD) relates to 'generic' expansion by balancing technical depth with product breadth for increasing knowledge or for developing additional areas of expertise by full utilization of firms' resources (Li and Tan 2004, Li *et al.* 2011). BTD strategies can be assessed with respect to possible tactics for market penetration and process capability extension (Ansoff 1957). Such process capability enhancements generate potential market penetration through cost effectiveness along the strategic growth options (Ansoff 1957).	
	Empirical: Paper 4 demonstrated economic resilience of the clothing manufacturers executing long-term brand promotion and development as market penetration strategies. The textile manufacturers focused on increasing sales by extending product ranges through cross selling and add-on products and services. Product range adjustment as BTD strategy also rendered resilient financial performance. Paper 5 highlighted BTD strategies like cost-effective technology implementation, investments in modern print-shop technology etc. necessary for market penetration and for contributing favourably to economic resilience by increasing the company's capital turnover and profitability.	**Empirical:** Paper 4 demonstrated lack of market penetration strategies as a long-term potential (either due to falling turnover or order volume and losing customer base) in case of less-resilient firms. No evidence of lack of process capabilities and their effect on overall financial performance of the less resilient firms. No potential BTD strategy in the less resilience period of the case study firm in paper 5.
Diversification	**Analytical:** Diversification by expanding into new markets through various IORs like strategic alliances and joint ventures, to achieve growth by gaining access to complementary assets for reducing environmental impacts (Kale *et al.* 2000, Sarkar *et al.* 2001, Li *et al.* 2011). Such development of networks of firms leads to market development through expansion of product ranges or other core competences, either by attracting new customers in the existing sector, by attracting competitors' customers, by expanding into overseas markets and by moving into new market niches or through joint ventures and collaborations.	
	Empirical: Most of the resilient firms focused on expansion into overseas market as a potential market development strategy mainly by selling through sales agents and subsidiaries. This created higher sales in diverse markets and also reduced market-related risks considerably (cf. paper 4). Paper 5 highlighted both long-term and short-term diversification strategies contributing towards resilience. Long-term diversification was based upon market development with new products and/or into new markets	**Empirical:** Only few non-resilient firms showed considerable overseas market expansion initiatives while majority of them lacked long-term market development strategies like overseas market expansion or strategies to attract more customers (cf. paper 4). Similar evidences of lack of proper market development strategies, both short-term and long-term, were evident in periods of lack of resilience of the case firm in paper 5.
Transformational	**Analytical:** Transformational strategies are achieved through expansion of the boundary of the firm to fully employ under-utilized resources in the organization and gain excess capacity. This is done through mergers and acquisitions of various business subsidiaries or by transforming existing business model (Penrose 1995, Li *et al.* 2011).	
	Empirical: Most of the resilient firms focused on joint venture (JV) or acquisition of production facilities at low-cost bases. They also focused on opening or acquisition of different business subsidiaries (to increase group turnover, product range and to spread risk). This highlighted a change in business model by shifting from in-house processes to outsourcing (cf. paper 4). Paper 5 outlined long-term transformational growth strategy developed by the firm, in the post credit crunch by undertaking in-house processes. This ensures change in business model to reduce transactional costs.	**Empirical:** Half of the less resilient firms showed trends similar to resilient firms along transformational strategies. Rest of the firms, did not show potential transformation in business model either through delocalization of production or diversifying into different business subsidiaries (cf. paper 4). Paper 5 highlighted low level of strategy development from the transformational strategy perspective (in post economic crisis of 1990-93).

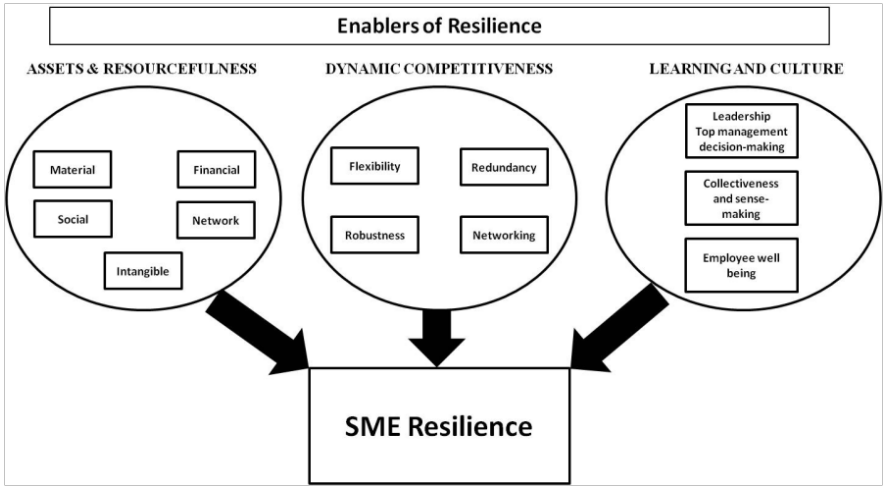
5.3. Synthesis of the findings

The result of this thesis is a structured way to address the resilience development process through crisis strategic planning in SMEs during economic crises. The results of the three broad research questions (5 in total) have been outlined in this chapter and this section will provide a brief summary of the contributions to each of the questions, before the synthesis of the findings is outlined in addressing the cumulative research objective. A brief summary is provided in Table 5.8.

Table 5.8. Main findings from the research questions

RQs	Main Findings	Developed frameworks
RQ 1: Is organizational resilience development a precursor for successful financial performance in crises?	• An extended 3-DCE framework generally fitting the need to 'design for resilience' is proposed for organizational success in dynamic environments • There is a need to shift from 3-DCE based component view to a holistic business system's view for organizational success. This systemic view is upheld by organizational resilience development processual framework (showing causation for organizational success based upon resilient structure and competences and directed through the causal power of crisis strategic planning).	
RQ 2: How can organizational resilience be developed and monitored?		
RQ 2a: How can organizational resilience be developed?	• Crisis strategic planning is an underexplored research area in business and management studies. • ORes can be developed through CSP based on a six-step process: (i) identification of environmental context, (ii) impact analysis, (iii) leadership analysis, (iv) capability analysis, (v) formulation/selection and implementation of strategies, and (vi) evaluation and review of strategic options.	
RQ 2b: How can organizational resilience be monitored?	• An adapted framework based upon resilience measurement can be used to quantify economic resilience. This includes: (i) identification of existing and utilised financial indicators characterising economic performance (attributes), (ii) redefining existing financial indicators into a new set, viz. liquidity, leverage, profitability/operating efficiency, solvency, and activity (finding base measures), (iii) using a multivariate measure - Altman's Z-score for indicating business 'health' (highlighting derived measures), (iv) highlight business 'health' transitions to underpin resiliency profiles (indicator), and (v) characterise resilience (secure the needed information). • Transition profile of a firm's financial performance based on multivariate Altman's Z-score outlines the relation between ORes to business 'health'.	***Altman's Z' Score Bankruptcy Model:*** $Z' = 1.2T_1 + 1.4T_2 + 3.3T_3 + 0.6T_4 + 0.999T_5$ (for public firms) **$Z' = 0.717T_1 + 0.847T_2 + 3.107T_3 + 0.420T_4 + 0.998T_5$ (for private manufacturing firms)** **$Z'' = 6.56T_1 + 3.26T_2 + 6.72T_3 + 1.05T_4$ (for general use)** T_1 = (Current Assets-Current Liabilities) / Total Assets T_2 = Retained Earnings/ Total Assets T_3 = Earnings before Interest and Tax (EBIT) / Total Assets T_4 = Net Worth (Total Share holder's Equity) / Total Liabilities T_5 = Sales / Total Assets ***Zones of Discrimination:*** $Z' > 2.9$ (for private firms)(2.6 - for general use) – "Safe" Zone 1.23 (for private firms) (1.10 – for general use)< $Z' < 2.9$ (for private firms) (2.6 – for general use)– "Gray" Zone $Z' < 1.23$ (for private firms) (1.10 – for general use) – "Distress" Zone

Continued…

Research Questions	Main Findings	Developed frameworks
RQ 3: What are the antecedents and the key strategic initiatives of resilient SMEs and how do they differ from less resilient ones?		
RQ 3a: What are the antecedents of resilient SMEs and how do they differ from less resilient ones?	• Holistic analytical framework of organizational structure for resilience development is proposed. Two main areas outlined were: (i) keys antecedents like resources and assets, dynamic capabilities and organizational learning, (ii) firms' growth and continuity strategies, both planned and adaptive in nature. • Amidst economic crises, resilient SMEs possess better financial resources, relational networks, operational & strategic flexibilities. Competences can be effectively allocated for devising short-term crisis management through higher operational flexibility, more long-term strategies through business continuity planning and growth strategies through market penetration, diversification and transformational initiatives.	
RQ 3b: What are the key strategic initiatives of resilient SMEs and how do they differ from less resilient ones?	• Multi-strategic initiatives help to develop CSP model by categorizing firms along different resilience types, characterized by low and high degrees of planning and adaptation, respectively.	

5.4. Analysis of research objective

Overall RO: To investigate the inevitable requirements and pathways to develop resilience for business 'healthiness', in crisis times, through crisis strategic planning

To synthesize the findings of the appended papers answering the research questions 1 to 3 an overarching purpose of the research has already been identified and stated (cf. section 1.4). This aims at investigating what are the necessary requirements to develop resilience in organizations for better business 'health' (in terms of economic viability) during crises, and how to achieve it through the proposed path of crisis strategic planning. This overall research objective (RO) is answered by the resilience development processual framework (cf. Figure 3.1) along 4 relationship processes (1-4) stated already in section 3.2.3.

Table 5.9 shows how these relationship processes (RPs) 1-4 are addressed by the research questions (RQs) 1-3.

Table 5.9. Relationship processes outlining the research objective

Research Questions	**RQ 1**	**RQs 1, 2a, 2b, 3a, 3b**	**RQs 1, 2a, 2b, 3b**	**RQs 1, 2a, 2b**
Research Objective	**Research Objective (RO)**			
Relationship processes	RP1: Between C and E	RP2: Between S and E for a particular C	RP3: Between P and E for a particular C	RP4: Between P, S and E for a particular C

Relationship process 1: The RP 1 in the thesis is addressed by the causal mechanism between the context of crises (in this case economic crises) and the event (resilience outcome based upon successful financial performance). This means that the relationship process answers how resilience is an inevitable precursor for yielding organizational success amidst crises and RQ 1 answers it in various ways. Main findings of RQs 1 along the RP 1 demonstrated the need for resilience in organizations during crises, how are resilient firms with higher/better resilience enablers (competences and strategies) economically more viable and how crisis strategic planning explains this process of resilience development. Firstly, paper 1 highlights that resilience designing is a requirement for synthesizing major CSFs including those which are not fostered through 3-DCE designing aspects and sustaining them in dynamic environments like economic crisis situations. This process of yielding organizational resilience provides a complete business system's view to generate a holistic portfolio of CSFs in firms. Similar to HPOs, these resilient firms show better financial performances and are the healthiest (Epstein 2004). The study conducted highlighted this relationship between ORes and business 'health' for Swedish textile-related firms as well. The resilient firms enjoyed *healthy* business states in the crisis situation while firms consistently showing lack of resilience stayed mostly in the *unhealthy* state. Along the causation mechanism, the favourable financial performances of the resilient firms were due to possession and effective deployment of some of key resilience enablers like financial wealth, systems: internal coordination, processes etc., human resources: people with requisite skills, and good relationships with stakeholders (Freeman 2004). In this line, the present research asserts the strong role of organizational 'resourcefulness', moderate-high role of organizational capabilities (especially flexibility) and significant role of intangible organizational values and learning on 'Z-score transition profile' thus influencing economic resilience. This resilience development process to foster better financial performance is also upheld by strategy development in the organization by integrating a multitude of strategies into one single repertoire (Vargo and Seville 2011). Paper 4 demonstrates that the resilient firms possess higher/better long-term strategic planning activities and thus differ from the less resilient ones in terms of successful Z-score based financial performance. Overall, these two causations explain the role of better crisis strategic planning in favouring financial performance of SMEs. Evidently, firms with better CSP or at least better monitoring of the CSP process are able to make a transition from low to high level of resilience, in terms of their

financial performance. Paper 5 outlines such business health transition based upon proper selection/formulation, implementation and review of a multitude of growth and sustenance strategies (both planned and adaptive) supported by identification of the vulnerabilities and their impacts, along with allocation of requisite competences.

Relationship process 2: Along RP 2, the thesis addresses the causal mechanism between effective and efficient organizational structure based upon significant competences (resources, capabilities, learning and strategies) and organizational economic resilience, amidst crisis. All the RQs (1, 2a, 2b, 3a and 3b) address this process in various ways. Firstly, answer to RQ 1 justifies that competence-based organizational designing (combining product-process-supply chain-value designing parameters) is useful in synthesizing and sustaining success drivers for organizations to focus on operational performances and subsequently yield success for fitting into the need for 'designing resilience'. This outlines the significant role of resources and assets (mostly material foundation) in organizations for generating several CSFs like productivity, innovation, along with the synthesis of dynamic capabilities for generating better process and supply chain characteristics (cf. Table XI in paper 1). Also proper development of 'soft' assets in the organization sufficiently engineers competences through higher brand value, innovation, better culture and mindset, in line with researches by Marr (2007), Bobbitt and Ford (1980), Repenning and Sterman (2002) and others. This supports the need for designing resilience for success. Findings of RQs 2a and 3a furthermore establish this process by highlighting the role of organizational structure and effective capability analysis in CSP towards resilience development. Capability analysis serves as a strategic tool to investigate the SWOT of firms and benchmark against competitors and also have a clearer idea of resource engagement in the organization, as stated by Preble (1997) as well. Resilience framework is proposed by highlighting the antecedents, viz. (i) 'resourcefulness' as finances, networks, materials, employees, (ii) 'dynamic competitiveness' through flexibility, redundancy, robustness etc., and (iii) 'learning and culture' through leadership and role of top management, shared vision and collectiveness among employees and their well-being. Findings of RQs 2a and 3b also highlighted that firms' growth and continuity strategies are essential paths for utilizing the resilience antecedents to shape out resilience financial outcome. In this context, an important finding of this thesis towards addressing RP 2 was across proposing an analytical framework for strategies for favouring organizational resilience (cf. papers 4 and 5). Such a repertoire is devised by both long-term and short-term strategies that are both growth-oriented and also leads to organizational survival. An important finding of this thesis towards addressing RP 2 (along the findings of RQ 2b – of devising a Z-score based resiliency profile) was found in papers 3, 4 and 5 showing that firms categorized as resilient on the basis of this resiliency quantification method (for Swedish textile-related SMEs, here) possessed higher/better cash flow, investment finance and relational networks along with strategic and operational flexibilities as compared to the rest. They were also better in developing their multi-strategic initiatives for underpinning responses along planned and adaptive approaches essential for contributing towards better financial performance. They showed more long-term strategies through business continuity planning (BCP) and growth plans through market penetration, diversification and transformations.

Relationship process 3: Along RP 3, the thesis addresses the causal mechanism between strategy development process and organizational economic resilience, amidst crisis. RQs 1, 2a, 2b and 3b address this process in various ways. Findings of RQ 1 highlight the role of strategy development (formulation, implementation and review) in an organization during crisis for generating financial success through resilience. It can be outlined that the economically viable firms are more resilient during crises due to their *healthy* business state and can synthesize a multitude of strategic options to foster favourable response repertoire. Analyses in papers 4 and 5 suggested that the resilient firms could devise higher or better strategic options during crises. This relates to the findings of RQ 2b as Z-score based transition profile of organizations are used effectively as a multi-variate indicator of business health to characterize resilience. Further the role of crisis strategic planning in developing resilience is outlined along the four strategic dimensions of CSP, viz. short-term crisis management strategies, long-term business continuity strategies and long-term and crisis-based growth strategies.

Based upon the broad repertoire of strategic choices (crisis management, business continuity planning, growth strategies like BTD, diversification, transformation) firms can model their crisis strategic planning built around planning and adaptation to find the 'silver lining'. Such a framework essentially categorizes organizations along different types of resilience achieved, depending upon the approach to crisis strategic planning, viz. latent resilience, planned resilience, adaptive resilience, or dynamic resilience for effective benchmarking as also outlined by Vargo and Seville (2011). Papers 4 and 5 mainly showed that firms categorized as resilient on the basis of the resiliency quantification method (for Swedish textile-related SMEs, here) possessed planned resilience characteristics based upon better short-term CM, long-term strategies through BCP and growth strategies.

Relationship process 4: Along RP 4, the thesis addresses the causal mechanism between effective and efficient organizational structure based upon significant competences and strategy development and organizational economic resilience by following the crisis strategic planning pathway, amidst crisis. RQs 1, 2a and 2b address this process in various ways. Main findings of RQs 2a and 2b along the RP 4 were synthesized to propose an analytically developed six-step process for resilience development through CSP. These steps are, viz.: (i) identification of environmental context, (ii) impact analysis (in terms of financial performances), (iii) leadership analysis, (iv) capability analysis, (v) formulation/selection and implementation of strategies, and (vi) evaluation and review of strategic options (in terms of Z-score). This results in implementation and practice of several strategic tools and techniques to transform resilience, considered as an organizationally contingent concept as highlighted by many authors like Madni and Jackson (2009), Sullivan-Taylor and Branicki (2011) and others and hence difficult to investigate, to a quantifiable 'one-type-fits-all' perspective, thus making it easier for application and implementation in an SME setting. Moreover, the thesis also highlights the under-explored stream of 'crisis strategic planning' research in the field of business and management thus propagating the resilience development phenomenon from processual perspective. Finally along the findings of RQ 1, the RP 4 is addressed particularly in paper 5 where the implementation of a successful CSP framework reflects on organizational success via favourable Z-score based financial performance.

Finally, an overview of the entire research process along the hermeneutic spirals by adopting a mixed method data analysis framework is provided in Table 5.10 to address and segregate the contribution towards the RO.

Table 5.10. Contribution to the research objective along the hermeneutic spiral, using mixed methods

Stages of mixed method data analysis (Onwuegbuzie and Teddlie 2003)	Towards Research Objective
Data reduction Reducing the dimensionality of the qualitative data (e.g. via exploratory thematic analysis etc.) and quantitative data (e.g. via descriptive statistics, exploratory factor analysis, multiple dimensional scaling, cluster analysis)	Spiral 1: Using Likert scales and dummy variables to reduce qualitative survey questions to a definite scaling system Spiral 2: Adapting Allen and Davis (2010) for characterising resilience Spirals 3 and 4: Setting up themes for categorizing data in papers 3, 4 and 5
Data display Describing visually the qualitative data (e.g. matrices, charts, graphs etc.) and quantitative data (e.g. Tables, graphs)	Spiral 1: Tables IX and X (cf. paper 1) Spiral 2: Z-score transition profiles of companies under study in Figure 7 (cf. paper 2) Spiral 3: Figure 3 (cf. paper 3); Tables 1 & 2 (cf. paper 4) Spiral 4: Z-score transition profile of the case (Figure 1) in paper 5
Data transformation Qualitative data are converted into numerical codes that can be analysed statistically and/or quantitative data are transformed into narrative data that can be represented qualitatively	Spiral 1: Using Likert scales and dummy variables to reduce qualitative survey questions to a definite scaling system Spiral 2: Operationalizing ORes (using Figure 6 in paper 2) Spiral 3: Interpretation of survey 2; Table 4: for relative prioritization of strategies for CSP (cf. paper 4) Spiral 4: Interpretation of Figure 1 in paper 5
Data correlation Qualitative data are being correlated with quantized data and/or quantitative data being correlated with qualitized data	Spiral 1: Tables IV-VI & PCA in Table XI (cf. paper 1) Spiral 2: Developing aggregate scoring system; Table 4 (paper 2) Spiral 3: Table 2 (cf. paper 3) Spiral 4: CSP procedure is related to ORes of two periods (cf. Table 6 in paper 5)
Data consolidation Both qualitative and quantitative data are combined to create new or consolidated variables	Spiral 1: New variables created as Components 0-4 in Table XI Spiral 2: Developing aggregate scoring system; Table 4 (paper 2) Spiral 3: Table 3 (cf. paper 3); Table 3 and Figure 5 (cf. paper 4) Spiral 4: No
Data comparison Comparing and contrasting data from the qualitative and quantitative data sources	Spiral 1: No Spiral 2: No Spiral 3: Table 4 (cf. paper 3); drawing inference on type of ORes in Figure 5 (cf. paper 4) Spiral 4: No
Data integration Quantitative and qualitative data are being integrated into either a coherent whole or two separate sets of coherent wholes	Spiral 1: No Spiral 2: Drawing inference about the relation between business 'health' and ORes Spiral 3: Figure 5 for drawing inference on overall ORes (cf. paper 4) Spiral 4: Weaving a case narrative

6. Conclusions: Summary and contributions

The chapter outlines the conclusions of this thesis and gives implications to industry and academia.

6.1. Summary

SMEs face with low survival rates amidst major economic crises which pose threats to their financial performance hence resilience. This led to the development of the purpose of the thesis. Resilience, in an organizational sense meaning the ability to withstand crises and disturbances, has become a subject to investigate upon in firms as a key organizational requirement for developing sustainable competitive advantage hence success, though still under-explored to a large extent. It is associated with established activities like risk and crisis management and business continuity planning etc., but it also calls for newer perspectives and insights into the conditions for doing business, in an integrated and holistic way. The thesis highlights resilience as a discriminating factor between successful and surviving firms and those that fail and outlines the potential of it by understanding what creates organizational resilience, its attributes, its formative elements and framework and how to quantify it.

The purpose of this thesis was fulfilled by answering five research questions using the results of five appended papers. The five papers were based on four major data collection methods by combining surveys, interviews, case study, and secondary data. The data analysis through mixed-method approach was performed using statistical analysis and thematic coding principle.

Major findings of the thesis are arranged under the following headings:

6.1.1. Need to design for resilience

The findings from the research on organizational designing aspects using 3-DCE approach to synthesize and sustain critical success factors highlighted the need to incorporate more aspects like that of ‘soft’ intangible factors of learning and culture into the organization. Such extended 3-DCE framework generally needs to be developed in facing dynamic environments thus pinpointing the need to shift from 3-DCE based component view to a holistic business system’s view for organizational success. This systemic view is upheld by organizational resilience development along an integrated crisis strategic planning approach.

6.1.2. Resilience development through crisis strategic planning

The findings from the research on organizational resilience development processual framework suggest exploring the crisis strategic planning approach. This process is quite integrated and holistic by taking a view from all angles, viz. organizational structure (capabilities and strategies), processual approach etc. Such a resilience development process through CSP is based on a six-step process: (i) identification of environmental context, (ii) impact analysis, (iii) leadership analysis, (iv) capability analysis, (v) formulation/selection and implementation of strategies, and (vi) evaluation and review of the strategic options by utilizing a suite of strategic tools and techniques and is particularly simple for application in an SME setting.

6.1.3. Resilience measurement index

The research develops an adapted framework based upon resilience measurement relationship proposed by Allen and Davis (2010) in order to quantify economic resilience. This includes identification of the existing financial indicators used for indicating economic performance, redefining the existing financial indicators into a new set, viz. liquidity, leverage, profitability/operating efficiency, solvency and activity, using a relevant multivariate measure called Altman’s Z-score for indicating business ‘health’, highlighting Z-score based business ‘health’ transitions to develop resilience profiles, and finally characterise resilience. Such a transition profile of a firm’s financial performance

based on multivariate Altman's Z-score outlines the relation between ORes to business 'health', thus quantifying it.

6.1.4. Resilient organizational structure

In order to develop a resilient organizational structure it is important to engage and utilize effectively the key resources and assets (financial, material, social, networks) of the organization by developing dynamic capabilities (strategic and operational flexibilities, redundancy, robustness, IORs) and organizational learning (culture, employee wellbeing, attentive leadership and decision-making). These competences must be employed for the appropriate strategy development (selection, implementation, and evaluation) framed on both growth and continuity strategies, both planned and adaptive in nature. The research firstly, develops a holistic analytical framework of organizational structure for resilience development based on these two criteria. Next it tests this framework for Swedish textile-related SMEs amidst economic crises. The findings from the research in this contextual delimitation suggest that the resilient SMEs possess better financial resources, relational networks, operational & strategic flexibilities. These competences can be effectively allocated for devising short-term crisis management through higher operational flexibility, more long-term strategies through business continuity planning and growth strategies through market penetration, diversification and transformational initiatives.

6.2. Theoretical/conceptual contributions

The theoretical or conceptual contributions of this thesis relate to the two frames of reference addressed, viz. (i) organizational resilience, and (ii) crisis strategic planning (cf. Chapter 2). As demonstrated in section 1.2, there is a research gap in the topic of organizational resilience from a developmental process-based perspective. Such a study of resilience developmental process calls for various facets of resilience in pre-, trans-, and post- crises phases either through planning or adaptiveness for organizational success or survival in terms of its performance. This asserts the assessment of firms' crisis strategic planning as an inherent choice for studying economic crisis resilience as also highlighted by Ismail *et al.* (2011) and Vargo and Seville (2011) in their frameworks respectively. It is evident that such CSP researches are of increasing importance for firms to develop responses to crises and turbulences but are still under-explored (cf. sections 1.2 and 2.2). Thus how can CSP be developed potentially becomes the most practical question in this regard. This has been the reason behind developing the appended papers in order to formulate, implement and evaluate the crisis strategic planning framework for achieving resilience. Each of the paper relates to this overall contribution of the thesis towards research and academia, part by part.

Paper 1 starts by underpinning the proposition of how a 3-DCE framework when practiced through simultaneous and concurrent designing of product-process-supply chain is an inevitable concept in synthesizing and sustaining success drivers for organizations to focus on their operational and financial performances for yielding success. However, the paper also highlights that the 3-DCE model falls short to represent certain intangible elements of culture, leadership and governance, knowledge, image and relationship into core considerations for devising success (highlighting the research gap mentioned in section 1.2), thus emphasizing the scope for plausible conceptual contribution. Hence forth a design framework of an organization is proposed based upon product-process-supply chain-value designing on different hierarchical levels into an 'extended 3-DCE' model having a positive mediating effect on the performance and organizational success. Along the 'resilience development' processual framework (cf. Figure 3.1), this work contributes in developing a robust design of an organizational structure based upon the competency building blocks – 3-DCE architecture, skills and culture for applicability in a dynamic environmental context.

Paper 2 conceptualizes the relationship between business 'health' and organizational resilience and subsequently operationalizes it to quantify resilience. Firstly, this augments the applicability of the causal mechanism proposed in the resilience development process by providing a clearer picture of

the ORes attributes and how and what differentiates the successful firm from the failing ones along the ORes domain. Secondly, the process of resilience is interpreted as a complex organizational behaviour from the system's theory perspective. Thus various business system behaviours like feed-forward nature (readiness or responsiveness) or recovery as highlighted by Sundström and Hollnagel (2006) are operationalized in terms of achievement of organizational business goals, in terms of economic viabilities for contributing towards better system 'health'. This is vital in outlining the deficiencies of existing univariate ratios to assess firms' true financial 'health' (as the evident research gap is highlighted in sections 1.2 and 2.1.2). Overall, this is imperative considering the company's strategic positioning to optimise its cash flow, assets and liabilities, profit margin, sales, etc. to attune the five standard ratio categories, viz. liquidity, profitability, leverage, solvency and activity ratios over which the company's 'health' is dependent.

Paper 3 in this regard demonstrates the lack of empirical research in investigating the differential effects of various organizational capabilities unifying resource-based view, dynamic capabilities and organizational learning to explore their support towards resilience development in crisis situations. This research conceptualizes such an integrated framework for validation by highlighting the role of capability analysis in the crisis strategic planning roadmap for better resource allocation and also its necessity to yield better organizational structure. This establishes the analytical framework based on significance or lack of antecedents, and how they favour or inhibit resilience development respectively. The framework highlights the antecedents as follows: (i) 'resourcefulness' as finances, networks, materials, social and intangible assets, and (ii) 'dynamic competitiveness' through flexibility, redundancy, robustness and networking and learning and culture through leadership and role of top management, shared vision and collectiveness among employees and their well-being. The paper also showed distinctly how antecedents influence on the outcome (resilience) of a system along a causal relationship.

Next, the role of strategic initiatives in defining the organizational structure and also in the crisis strategic planning process is significant (as demonstrated by papers 4 and 5). In this regard, paper 4 contributes towards prescription of a multitude of strategic options to synthesize organizational resilience by highlighting the influence of strategic processes on outcomes. Firstly, the paper proposes an analytical framework encompassing a multitude of strategies that firms can undertake in order to devise a resilient response repertoire. The four strategic dimensions of crisis strategic planning are prescribed as follows:

A: Growth strategies: (i) through long-term planning, (ii) through short-term adaption (cf. Figure 4.5);

B: Sustenance strategies: (iii) for long-term business continuity or CM planning, and (iv) for short-term CM or DRP (cf. Figure 4.5).

This analytical framework in turn considers a multitude of growth strategies like that of BTD strategies, diversification or transformational strategies (Li and Tan 2004, Li *et al.* 2011), and market penetration, market development, process capability extension or diversification in line with Ansoff (1957), and unifies them holistically under one strategic option framework needed to synthesize resilience. Furthermore, based upon this framework a model for crisis strategic planning to yield resilience is prescribed to categorize organizations along different types of resilience achieved, predominantly planned or adaptive or a combination of the two (in line with Vargo and Seville (2011)), as shown in Figure 6.1. Such a model can serve as a reliable benchmarking tool for organizations to measure resilience and subsequently enhance it to alter placement along the four-quadrant chart.

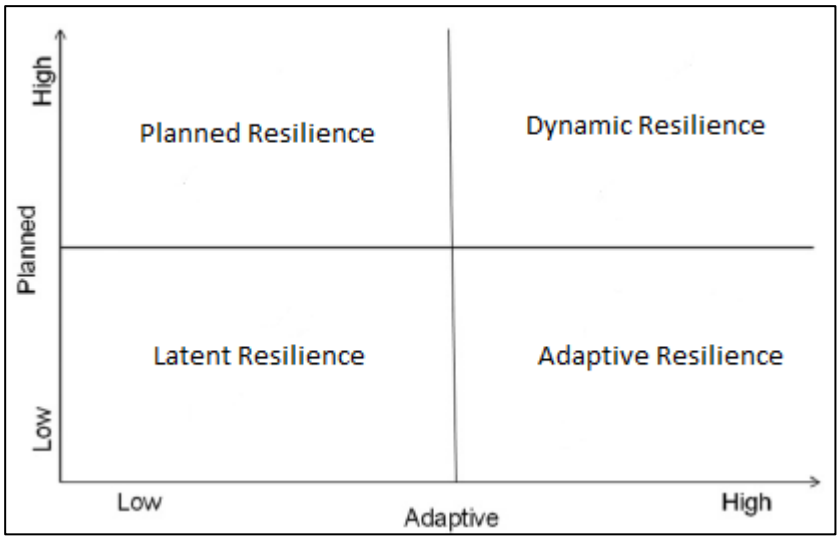


Figure 6.1. Type of resilience achieved depending on approach to crisis strategic planning

This is essential to relatively prioritize the strategic initiatives – both short- and long-terms – for building the crisis strategic planning. Such a model unifies the pro-active, long-term strategies necessary to make the organization more prepared through certain level of planning together with the reactive short-term strategies involving certain level of adaptation (Sheaffer and Mano-Negrin 2003). The paper thus showed distinctly how strategies influence on outcome (resilience) of a system along a causal relationship.

Finally, the main contribution of the paper 5 to the body of knowledge is the conceptualization and underpinning of the resilience development process through crisis strategic planning (CSP) and the empirical demonstration of how to attain and assess resilience. Bhamra *et al.* (2011) highlighted the lack of resilience literature and research dealing with organizational capabilities and strategies (cf. section 1.2). In this context, the paper extends the works of Preble (1997), Ismail *et al.* (2011) and others, highlighted in Table 2.3 to generate a broader strategic perspective. The contribution by the 'resilience development processual framework' bridges the referenced models under one integrated framework, firstly, by integrating both adaptive and planned initiatives either developed before, during or after the crisis for sustenance and growth. This relates the strategies over a timeframe of development (cf. Figure 4.7). Secondly, the framework proposes the level of resource engagement and its implementation characteristics those are required in an organization in different crises contexts to provide a dynamic view to this development process. Finally, even though researchers have argued that resilience is an organizationally contingent concept which makes it difficult to understand, investigate and implement (Sullivan-Taylor and Branicki 2011); there is a wide range of strategic tools and techniques which when identified can be essential from both academic and practitioner's point of view for providing a 'big' holistic picture of the process/phenomenon. The widely accepted generic tools that can be adopted into this crisis strategic planning framework for resilience development are very much main stream in the research and business worlds, viz. impact analysis, leadership analysis, capability analysis, SWOT, assessment of strategic options etc. Application of such generic tools in an SME setting in certain operating environment makes the resilience development process very much one-size-fits-all type necessary for theorizing the concept and its framework.

Overall, from the critical realist view of causation of ORes framework (cf. Figure 3.1), the thesis renders a processual view to the concept of resilience, quite under-explored in academia (cf. section 1.2). It establishes clearly the relationship processes between object (organization), structure (competencies and strategies), causal power (crisis strategic planning) and event (organizational resilience) and hence extends the boundary of knowledge related to organizational resilience through crisis strategic planning for concept/theory generation and validation.

6.3. Methodological contributions

Methodologically, this thesis contributes in two ways; viz. (i) by proposing a processual framework based upon a causation mechanism for observing and investigating the resilience development process, and (ii) by contributing to the development of CR-GT approach in business management studies.

Resilience in business and management studies has mostly been studied qualitatively (cf. section 1.4) and Bhamra *et al.* (2011) highlights, '*within a specific resilience-based context, although several authors attempt to broadly cover all of these general areas within a study, individually each area has received little systematic attention and empirical-based study'*. These works have mostly been attempting to emphasize resilience studies related to organizational behaviour and dynamics and lacks, to some extent, a process-based view towards its development and implementation. Also very few research relates resilience to organizational performance (cf. section 1.4). The thesis, in this regard, proposes the resilience development phenomenon from the point of view of process research in an organizational setting. This issue was widely stated by social theorists like Pettigrew (1992), Pettigrew (1997) and others, but was so far under-explored in organizational resilience studies. Also in such studies the need for case studies and model development (so far under-explored, cf. section 1.4) for providing a holistic explanation to the causation is very crucial (Pettigrew 1997, Bhamra *et al.* 2011). In this context, the present thesis provides an investigation on resilience development using a processual approach and utilizing case study and model development as significant methods to support data triangulation for gathering empirics.

Furthermore, the thesis also adopts a fairly new methodological approach based upon the integration of critical realism and grounded theory approach. Critical realism, on one hand, provides the concepts of structures and causal mechanism that form the outline of the theory generation (cf. Figure 3.1) while the method of grounded theory, on the other hand, provides a suitable explanation to the causation (in the appended papers). Thus the thesis adopts a mixed research method through statistical analysis and thematic coding. This proposes the utilization of critical realist-grounded theory (CR-GT) approach in the lines of Lee (2012).

6.4. Managerial contributions

The contribution of the thesis for practitioners, particularly SME owners and managers is significant and they are discussed in this section paper-wise.

Paper 1 helps the organizations, firstly, to understand the key areas in which to invest and how to invest their resources and time, as CSF identification is largely qualitative and can result in differing opinions in pinpointing them. By identifying what CSFs these firms need to synthesize, they can rightly design their organizational structure amidst dynamic environments. This also makes the managers aware of the lacuna of just 3-DCE (product-process-supply chain designing) aspects in organizations rather extend it further to create 'soft' intangible aspects like learning and culture as well, as suggested by Repenning and Sterman (2002), Marr (2007) and others, and how to attune them to match the requirement of market turbulences and crises. This makes the organization owners and managers: (i) create a resilient organizational structure based upon its competences; (ii) dynamic and holistic in their approach to generate CSFs, and (iii) shift from a traditional component view to a dynamic system's view towards organizational success drivers.

Next, author believes that the resilience measurement framework developed in paper 2 contributes significantly to SME managers and owners. Firstly, they are able to relate their firm's univariate financial indicators, like profitability, turnover, equity, assets etc., to each other and into a single multivariate financial measure of the firm's business health (Altman's Z-score essentially used to apprehend organization's true business 'health' amidst emerging conditions). Secondly, a longitudinal analysis of the Z-score transition profile reveals to the managers about the firm's comparative financial

success, hence, economic resilience thus indicating when the company has performed well and when not. This is essential to identify the tuning factors in terms of the key financial ratios and the strategies to be followed. This is a helpful tool for companies to benchmark themselves as compared to their competitors in terms of economic viabilities.

Practical implications of the research findings of paper 3 to the business practitioners are manifold. Firstly, SMEs managers can have an understanding of the underlying factors/antecedents and their differential effects for bolstering resilience considered as a precursor for driving successful financial performance of organizations amidst crises. Particularly this unfolds great possibility for firms to devise resilient solutions based on their financial and material asset availability enhanced by higher flexibility, continuous improvement (CI) in efficiency and networking by developing IORs for dealing with future economic crises, like the double-dip recession or Euro-zone crisis. Secondly, SME managers can have a clearer understanding of 'where' and 'how' to invest for resource engagement in order to develop their unique response repertoire in crisis periods, essential for building strategic readiness and utilize the allocated slack resources for resilience development, as also prescribed by Ismail *et al.* (2011), Preble (1997) and a few others. This can have a strong impact on a firm's resilience by addressing a range of crisis-related turbulences. This was evident in the recent study conducted in paper 3 when cash flow, investment finance and relational networks along with strategic and operational flexibilities emerged as key antecedents for bolstering resilience among the SMEs.

In connection to this, firms' growth and continuity strategies need to be developed as essential paths for utilizing the antecedents and develop resilience (as evident in the studies of paper 3, 4 and 5). Paper 4 in this regard prioritises the role of developing a multi-strategic option for crisis strategic planning. SME managers along these facets (cf. Figure 4.5) should exactly know how to locate their strategy portfolio – combination of multitude of planned and adaptive strategies for growth and/or sustenance – in order to develop resilient financial performance during crises. This will help managers to adjudge the type of resilience their firms should possess amidst crisis, strategically benchmark them against competitors, and most necessarily have a clearer understanding on how to escalate them to a different or higher resilience level (along the categories shown in Figure 6.1). For example, it was evident in the study of paper 4 that almost all the SMEs (particularly the resilient ones) prioritized *planned* resilience development as an organizational response to economic crises with low or insignificant level of adaptiveness. This is mostly because SMEs are affected by financial constraints and hence lack of capability development, thus hindering the adoption of an agile approach (Herbane 2010b, Ismail *et al.* 2011) in a restrictive credit market condition. This prevents them to transcend to the *dynamic* resilience zone. It is evident that SMEs with a focus on more day-to-day operations with informal routines tend to neglect their growth initiatives during crises (Gray 2002). In this context, SME managers are recommended to concentrate on the possibility of incorporating crisis-based growth strategies – into their strategic response repertoire – through sensible proliferation of product and market variants to stimulate growth even in financial market crises.

Furthermore, author believes that the overall contribution of the thesis for the SME managers is from the point of view of the resilience development processual framework. It offers a simple and practical suite of tools appropriate for application in an SME setting for resilience development through a hands-on crisis strategic planning approach. This is crucial considering the low SME survival rate as suggested by Storey (1994), and in particular to the Swedish textile-related SMEs (reporting higher bankruptcy rates during economic crises). In such contexts it becomes increasingly important for SME managers to know how to develop an appropriate response repertoire by utilizing the available resources and capabilities for necessary strategy development. In this respect, the crisis strategic planning (CSP) framework provides an in-depth analysis of the firm's problems and their impacts, the competitive positioning against competitors in the marketplace, a fundamental strength-weakness-opportunity-threat (SWOT) analysis, followed by the strategic initiatives adopted by the firm and what modifications or renewal in this repertoire could serve with better economic results. Secondly, it reviews an integrated strategy portfolio to provide a holistic picture to SMEs so that they can articulate

and formalize their action plans, policies and goals and avoid just ‘muddling through’ the crisis. This links the element of planning to adaptive measures taken by SMEs.

7. Future research directions

In this chapter the future research directions are suggested by using the delimitations and the limitations stated in this thesis as the starting points.

The delimitations as stated in this thesis are regarding the context, in terms of the nature of crisis/turbulence and the country– and industry– specificities of the study. The thesis investigates only Swedish textile and clothing SMEs during multiple economic crises (e.g. 1990-93, global credit crunch etc.) over a timeline. Along with it, delimitation has also been made in terms of the resilience measurement index used which is built on the basis of the financial aspects or indicators of any firm.

According to Lengnick-Hall and Beck (2005), (2009), resilience capacity is an outcome of a firm's response to dynamic environmental conditions by modulating organizational capabilities. Author believes that diverse operating conditions (turbulences) will trigger different set of strategic responses in resilient firms by utilizing the allocated resources and assets in various ways, however, following the same or similar sequence of processual framework for resilience development. So investigating resilience capacity in diverse market turbulences would help not only researchers but also SME practitioners to devise strategies and response repertoire according to the crisis strategic planning (CSP) model using a set of generic tools and techniques and benchmark the resilience development process under the unified effect of a multitude of events (turbulences).

Thus in terms of the environmental context, the thesis further opens up research initiatives for application of the crisis strategic planning (CSP) model in different market turbulences and evaluation of the economic impact on resilience. Preble (1997) has mentioned how the integrated strategic management (ISM) process (incorporating crisis management as well) works in facing different market turbulences for large organizations like DuPont or Shell. Even though the presently stated CSP-based resilience development framework is fairly similar to Preble's model, its testing with large companies holds sufficient potential as future research initiative. A recent study on DuPont in Aneja and Pal (2012) in collaboration with Noeton Policy of Innovation (www.noeton.eu) opens up future prospect of European Union (EU)-level projects for benefiting not only the academic arena for establishing new resilience models but also for its application in different country-specific dynamics. In this regard, a comparison of the industrial and bankruptcy statistics of the textile and clothing sectors in the four Scandinavian economies, followed by ranking them in terms of the effects of economic crises, and subsequently developing a cross-country comparative analysis in terms of their inherent economic resilience to the present crisis will be noteworthy. This will reveal the properties of the T&C sectors in Scandinavia for judging future industry and company performances.

In the academic arena, such perspectives and application of the integrated CSP model for resilience development lacks proper research in SME context. No doubt, such research in the recent years holds immense potential as SMEs suffer from low survival rate in many countries e.g. United Kingdom (Bolton 1971, Storey 1994). The thesis uses similar survival or bankruptcy rate statistics of Swedish textile-related SMEs amidst economic crises as the starting point of this research (objective) (cf. section 1.5). However at the EU-level, resilience research is at a burgeoning state though there has been a surge in the attractiveness towards SME research for their benefits under the Seventh Framework Programme (FP7)[18].

Work presented by Vargo and Seville (2011) although stated similar CSP framework for resilience development in SMEs in New Zealand but the study employed qualitative methodology with no regard to quantitative resilience measurement potential. From this aspect, the thesis proposes future research directed towards application of the conceived model for resilience development in SMEs for

[18] http://ec.europa.eu/research/participants/portal/page/capacities?callIdentifier=FP7-SME-2013 (accessed 05.02.2013)

evaluating the financial performances. Few existing researches, e.g. Stephenson *et al.* (2010b), McManus (2008) etc. have developed similar resilience measurement models but so far they have mostly been based upon converting survey or interview responses to quantitative scaling thus incorporating to some extent respondents' biasness. From this perspective, this research has proposed a different view into resilience studies using organizational financial performance as a measure of the health of organizations and subsequently resilience in firms. This sufficiently highlights future research directions in investigating other potential measures of organizational economic resilience and using such indicators as resilience benchmarking tools. For example, the Altman's Zeta model (Altman 2000) is an alternative multivariate financial indicator and can be utilized for evaluating resilience transition profile of organizations. This could further inflict requirement for new resilience measurement indexes and modelling. Such resilience modelling can be done by statistically selecting sample sizes for data gathering and then using appropriate schema for the purpose. A large set of statistically significant data can be utilized for developing resilience assessment tools like that of the supply chain resilience assessment and management (SCRAM™) by Pettit (2008) but for correlating a set of measurable outcome-based financial performances to organization's strategic and operational repertoire. This can explain the impact of resilient response repertoire on financial performance for reflecting upon organizational health.

Moreover, as highlighted by Sundström and Hollnagel (2006), health of business systems can be characterized by three principal indicators, viz. shareholder value, profitability and customer equity. The presently used Altman's Z-score incorporates economic ratios falling under the first two categories however neglects any direct measure of customer equity like customer equity index or customer satisfaction index etc. Future research prospects highlight the formulation of a more comprehensive measure incorporating such univariate ratios as well. However, the Z-score is an all-inclusive indicator which has aspects of being both lagging (to establish whether goals have been achieved) like profitability or liquidity etc. and leading (to track the progress towards future goals) like measurement of the overall bankruptcy potential. Similar lagging and leading indicators, like percentage of revenue from new businesses (lagging indicator) or percentage of employees routinely engaged in external scanning (leading indicator) or percentage of revenues allocated to fund new ventures (leading indicators) (Demmer *et al.* 2011) can be specified distinctly to investigate their differential effects towards resilience and vice versa.

Considering the diversity and inherent complexity of the topic of organizational resilience, only the internal factors along with the strategies and pathways enabling resilience are considered in this thesis. The effects of external factors, e.g. legislation, globalization or industrial changes, and their influence on SME resilience and competitiveness are not considered here as it was specified in the survey by Gunasekaran *et al.* (2011). Previous researches have shown strong influence of external factors like globalisation and internationalization on financial resources and foreign direct investments (FDIs) of SMEs associated closely with their financial performance (Lu and Beamish 2001). Such external factors have led the SMEs adopt multi-faceted strategies thus reflecting a flexible nature of strategy development to sustain competitiveness (Singh *et al.* 2005) while on the other hand, Etemad (2005) highlighted the disadvantages of fierce competition and need to rapidly readjust to cope with large order brought by globalization. This opens up future research scope for investigating such effects of globalization or industrial changes and policies on organizational resilience and how they instigate strategy development.

The present research also draws its boundary in terms of certain methodological and theoretical aspects that could perhaps make the thesis even more concrete. These are either related to the theoretical concepts and assumptions of the research and/or to the adopted methodological approach. For the theoretical conceptualization, this thesis closely investigates and is influenced by literature base particularly related to resilience and its application from business management perspective, and also digs into a limited literature base on crisis strategic planning. This has led to the conceptual/theoretical saturation of the CSP or related models used for investigating resilience

development process. However, this resilience research has not been extended in bridging two separate research streams highlighting organizational success, viz. (i) concepts of sustainable competitive advantages (SCA) for winning solutions in turbulent times as proposed and researched by eminent authors like Hamel and Prahalad (1994), Prahalad and Hamel (1990) etc., and (ii) high reliability theory (HRT) for succeeding in avoiding catastrophes in risky and complex environments (Roberts 1990, Schulman 1993, Weick and Roberts 1993). Thus the plausibility of unifying these two perspectives in proposing ORes as the core for success in the changing environment and as a new source for SCA is immense. Along similar lines, study conducted by 2004) on organizational DNA showed that resilient organizations have the best performance (in terms of speed, transparency and accountability) and are the healthiest in organizational DNA among all firms, similar in nature to HPOs (de Waal 2007). Keller and Price (2011), on the other hand, focussed on how organizations showing resilient characteristics have increasingly developed superior performance levels by harnessing both physical and psychological potentials to reflect on better organizational 'health' or performance. This sufficiently calls for further research and relating this research to the vase field of organizational dynamics.

Moreover, as suggested in paper 3 the study does not capture the interactive (or moderated) effects of each antecedent on economic resilience of the firms in orchestration with other antecedents as control variables. Thus certain future research directions are left open like investigating the combined effects of the antecedents in enabling resilience or a comparative evaluation of resilience antecedents and their different effects for large corporations and SMEs.

From the methodological perspective, there is a lack of research conducted through surveys and case studies for contributing towards the field of organizational resilience (Bhamra *et al.* 2011). Such surveys can be conducted through rigorous sampling of a large number of organizations for statistical significance of the developed propositions related to organizational resilience. This is essential in future studies for model development, say CSP-based resilience model as highlighted in this thesis. Furthermore, case study-based action researches are essential to highlight the interactive behaviour of a multitude of factors determining resilience. Such methodological perspective is vital for drawing analytical generalization of the model. Moreover, the application of the presently used CR-GT approach in future resilience studies would also synthesize new outcome-based exploratory researches for explaining the causal mechanism more explicitly.

In a nutshell, the author believes that the future scope of this thesis is futuristic.

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Additional publications by the author related to the research area

1. Aneja, A.P. & Pal, R., 2012. The quest for continual growth in textiles - innovation diversity and organizational resiliency. *Advance Textile Materials and Processing, Beijing.* Beijing, China: School of Materials Science and Engineering, Beijing Institute of Fashion Technology (BIFT).

2. Pal, R., 2012. Organizational Resilience through Situational Adaptation: Analysis of Multiple Cases**,** *12th AUTEX Conference 2012*. Zadar: Croatia.

3. Pal, R. & Torstensson, H., 2012. Antecedents of organizational resilience in economic crises – an empirical study of Swedish textile and clothing SMEs, *88th Textile Institute World Conference 2012*. Shah Alam: Malaysia.

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6. Pal, R. & Torstensson, H., 2010. Achieving Success/Survival in the Global Textile Complex through Organizational Resilience, *87th Textile Institute World Conference 2010*, Manchester: UK.

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Appendix 1

Table A. Bankruptcy Statistics of Swedish Textile and Clothing firms (1993-2010)

	1993	1994	1995	1996	1997	1998	1999	2000	2001
SMEs	2415	2705	2748	2951	3476	3639	3692	3797	3850
Large firms	12	11	11	11	9	10	10	9	9
Total	2427	2716	2759	2962	3485	3649	3702	3806	3859
Bankrupt	102	314	356	242	151	178	82	167	169
% Bankrupt	4,20%	11,56%	12,90%	8,17%	4,33%	4,88%	2,22%	4,39%	4,38%
Bankrupt (>50 employees)	0	0	2	0	0	0	0	1	1
	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
SMEs	3932	3976	4095	4169	4297	4272	4533	4556	4303
Large firms	10	10	10	7	7	6	6	6	5
Bankrupt	155	132	171	47	68	34	449	199	240
% Bankrupt	3,93%	3,31%	4,17%	1,13%	1,58%	0,79%	9,89%	4,36%	5,57%
Bankrupt (>50 employees)	0	0	0	0	0	0	2	0	0

Appendix 2

Survey 1 template

A. General Information

1. Name of the company
2. Name(s) and designation(s) of the respondent(s)
3. How has your company's profit ratio (profit/turnover) built up over the last 5 years?

B. Critical success factors

1. How do you relate your enterprise's present position to achievement in the following aspects?
High product quality; Low lead time (High speed); Cost minimization; Low price level; High Productivity; High flexibility (Product Volume & mix, Supply Chain); High Supply Chain Coordination & Trust; High Brand value; High Service Level; Effective Information Sharing; High Innovation; High Sustainability concerns; Rich Organizational history. (Likert scale 1-5)

2. How do you rate yourself in the above aspects compared to your main competitors?
Product quality; Low lead time (High speed); Dependablity & Trust; Cost minimization; Price level; Productivity; Flexibility (Product volume & mix, Supply Chain); Supply Chain Coordination; As a brand; Service Level; Information Sharing; Innovation; Sustainability concern.(Likert scale 1-5)

C. Main Products

1. How much does 'the main product or product group represent of total sales (%)?
2. The average life cycle of the main product or product group.
3. What is the production volume for the main product or product group? (Multiple choice possible)
Unique product; One-of-a-kind; Low Volume; High Volume; Mass production
4. How many product variants or Stock Keeping Units (SKUs) are there for the main product or product group?
1-10; 10-100; 100-500; 500-1000; > 1000
5. How long is the production lead-time of the main product or product group?
Less than 2 days; 2 days-1 week; 1 weeks-4 weeks; 1 month-6 months; > 6 months
6. How long is the delivery time for the main product or product group?
Less than 2 days; 2 days-1 week; 1 weeks-4 weeks; 1 month-6 months; > 6 months
7. What is the degree/intensity of new product development, in general, in the company?
New design in the existing product range (style, color, fabric etc.); New model in the existing product range; New product outside the existing product range but in the same field of technology; Completely new product development. (Likert scale 1-5)
8. What is the average rate of development or evolution of a new product (in months)?
For a new design (in the existing product range); For a new model (in the existing product range); For a new product (outside existing product range but same tech); Complete New product development
9. Why do you think your product/s is/are innovative compared to your competitor?
Brand value; New design; New model; New material; Better functionality; New product technology. (Likert scale 1-5)
10. To what extent is your product (in general) characterized by:
Brand; Functionality/Use; Technology; Fashion Content; Customization; Mass Production. (Likert scale 1-5)

D. Supply Chain

1. Where do you position the company in the Global Textile Complex?
2. To what extent do you design/determine your supply chain architecture?
Choose firms in own established value chain; Decide type of relationships among all supply chain members in your own supply chain; Determine whether to manufacture by own or purchase (whether to make or buy/outsource in your supply chain). (Likert scale 1-5)

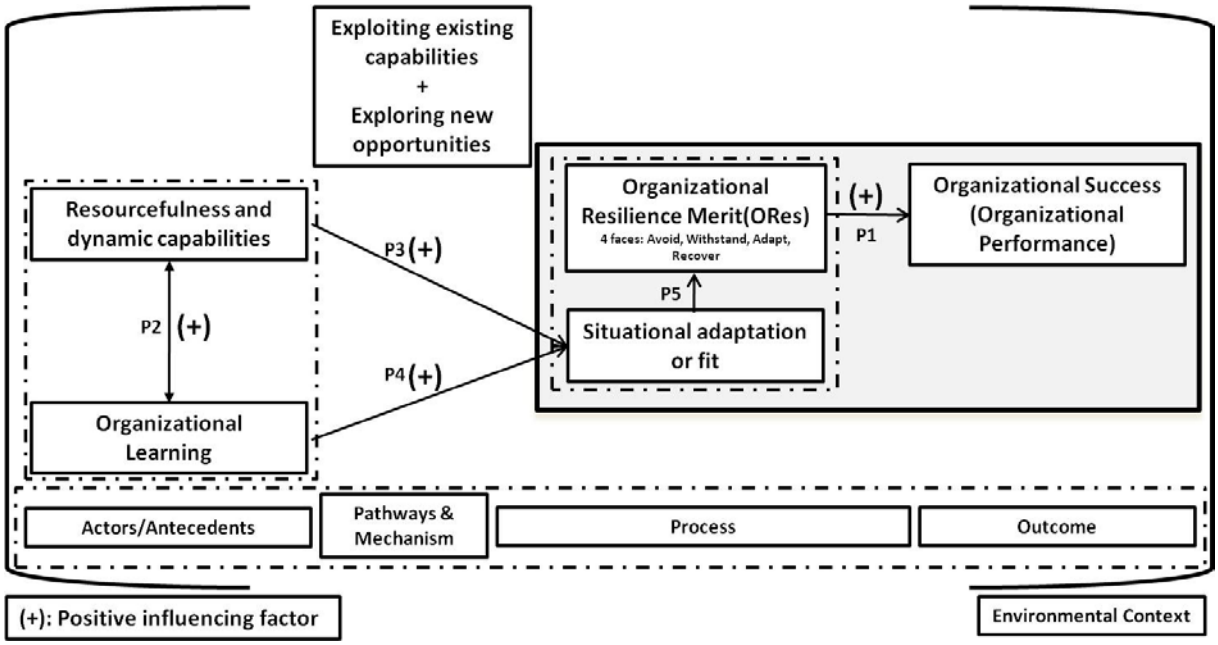
3. If you are fairly involved in designing your supply chain architecture, then, to what extent are the following aspects important to your company in designing its supply chain?
Collaborative product development; Cost minimization; Quick Response; Quality of service; Flexibility & Coordination; Social & Environmental concerns. (Likert scale 1-5)
4. To what extent do you determine coordination decisions in your supply chain for the following?
Workflow & sourcing; Manufacturing; Inventory management; Delivery system/Logistics; Marketing; Information service. (Likert scale 1-5)
5. Which actor in your supply chain is the most dominant?
6. What do consider the reason for the supply chain dominator's position?
Innovation & Technology; Closeness to customer; High Return on Investment (ROI); Price competitive; Manufacturing specialization; Branding & Marketing; Information Systems. (Likert scale 1-5)
7. Partners for your enterprise, in the supply chain, are selected for:
Production Capacity; Raw Material Supply; Knowledge/Technology; Marketing & sales; Branding & designing; Logistics & distribution; Inventory management; Information systems. (Likert scale 1-5)
8. How do you assess the rate of development or change adopted in your company in the following categories?
Supply chain design & structure; Supply chain capability; Product technology; Processes; Organizational structure & mindset. (Likert scale 1-5)
9. How integrated is your supply chain?
Geographically; Organizationally; Culturally; Virtually. (Likert scale 1-5)
10. To what extent do you think that your value chain is demand-driven?
Made to Stock; Deliver to Order; Label to Order; Package to Order; Assemble to Order; Make to Order; Source to Order; Engineer to Order

E. Processes

1. To what extent does the company innovate processes?
Modification of existing process; Redesigning an existing process; Completely new process: in Process Management; Process Technology; Equipment; Operation
2. To what extent are you engaged in these processes?
Product Development; Manufacturing; Logistics; Marketing. (Likert scale 1-5)
3. How does your company differentiate itself from its competitors in terms of processes undertaken? (multiple choice per row)
More value addition; More responsiveness; Higher quality; More cost efficient; More Innovative: in Product Development; Manufacturing; Delivery systems/Logistics; Inventory Management; Marketing
4. What is the rate of development or evolution of a new process (modification of process, redesigning a process, or completely new process, please mention) in the company?
Process Management; Process Technology; Equipment; Operation

Appendix 3

Resilience model 1



The following relationships are proposed:

P1: ORes is a dynamic developmental process yielding sustainable organizational performance, hence, success as the ultimate competitive advantage (in terms of organizational 'health', measured using either financial or non-financial indicators) in market turbulences, by generating unique recipes, created through complex interplay of various attributes along different paths and mechanisms, having some underlying commonality

P2: Dynamic resources and capability development strengthened through organizational learning, build adaptive and coherent organizational resilience leading to sustainable organizational success under the conditions of uncertainty.

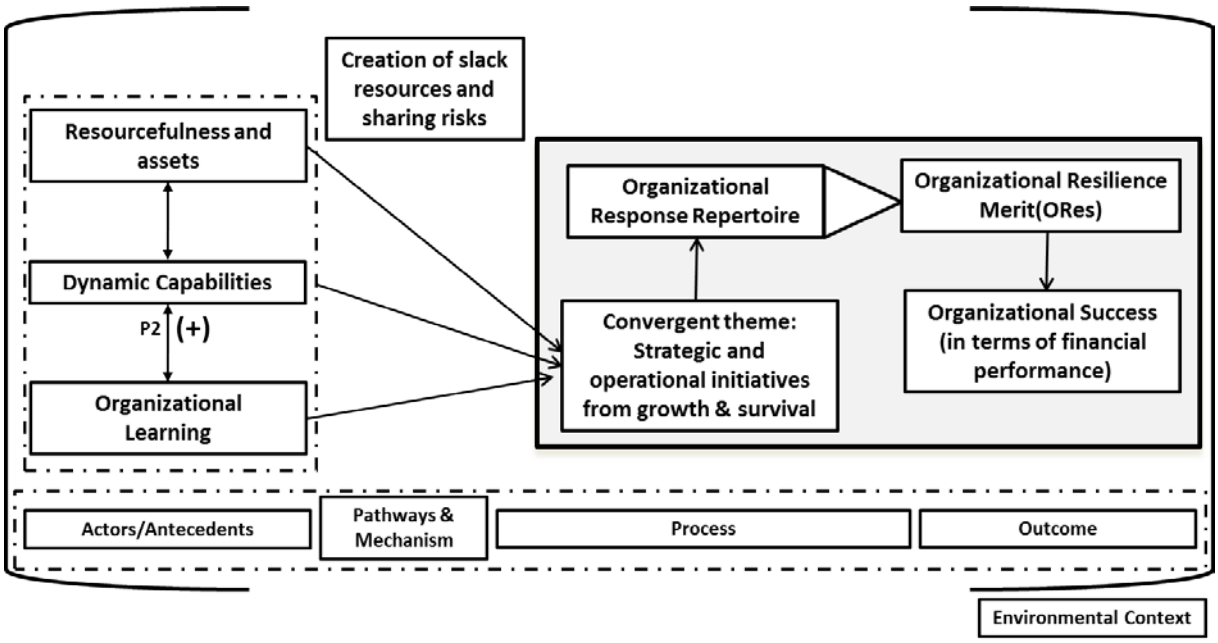
P3: Higher resource deployment and dynamic capability development essentially underpin enhanced organizational capabilities, hence, higher level of organizational resilience amid uncertain environmental situations.

P4: Organizational learning capabilities classified into (i) collective awareness and learning, and (ii) change of organizational structure in response to change in environment (adaptation and exploration), are positive contributing factors fostering the development of resilience in uncertain environments.

P5: The four faces of resilience strategy depend on *situational adaptation* or *fit* of the firm's response to environmental conditions to determine the correct resilience management and ERM modes to be adopted by the organization by orchestrating its available/accessible capabilities and mechanisms.

Appendix 4

Resilience model 2



Appendix 5

List of organizations involved during the research process

Swedish textile-related companies

Väveriet i Uddebo AB
Teko Tryck AB
AB Anders Westerlind
Abeko Konfections AB
AB Svenkt Konstsilke
Oscar Jacobsson AB
Cross Sportswear AB
Swegmark of Sweden
Pret a Porter AB
Wackes AB
Stenströms AB
Ludvig Svensson AB
Deltab Profilplagg AB
Berghems Väveri AB
Albany International AB
Woolpower AB
Casall Sports AB
PG Elfström AB
Engtex AB
ACG Group AB
Helly Hansen
Korallen AB
Acne Studios
Cavaliere of Sweden
Arbesko AB
Artex AB
Gina Tricot AB
Five Seasons
Forankra International
Ekelund Linneväveriet I Horred AB
Syverket i Borås AB
Klättermusen AB
Bogesunds Väveri AB
Tailor Store AB
Björnkläder AB
Limmareds GardinFabrik
HEAB/HESTRA AB
Vävaren i Båstad AB
FOV Fabrics
Scandress AB
Flagg Fabriken Tellus AB

For data

Bolagsverket
Tillväxtverket
Statistiska Centralbyrån

Appended Papers

PAPER 1

Pal, R. & Torstensson, H., 2011, Aligning critical success factors to organizational design: A study of Swedish textile and clothing firms, *Business Process Management Journal,* 17 (3), pp. 403 - 436

PAPER 2

Pal, R., Torstensson, H. & Mattila, H., 2011, Organisational resilience and health of business systems, *International Journal of Business Continuity and Risk Management,* 2 (4), pp. 372 - 398

PAPER 3

Pal, R., Torstensson, H. & Mattila, H., 2013, Antecedents of organizational resilience in economic crises – an empirical study of Swedish textile and clothing SMEs, *International Journal of Production Economics,* XX (XX), pp. XXX-XXX

(Accepted for Publication)

http://dx.doi.org/10.1016/j.ijpe.2013.02.031

PAPER 4

Pal, R., Andersson, R. & Torstensson, H., 2012, Organizational resilience through crisis strategic planning: A study of Swedish textile SMEs in financial crises of 2007-11, *International Journal of Decision Sciences, Risk and Management,* 4 (3/4), pp. 314-341

PAPER 5

Pal, R., Westerlind, R. & Torstensson, H., 2013, Exploring the resilience development process by implementing the crisis strategic planning framework: A Swedish textile SME perspective, *International Journal of Decision Sciences, Risk and Management,* XX (XX), pp. XXX-XXX

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