

SUPPLY CHAIN RESILIENCE IN FINNISH SME FAMILY FIRMS

Jockum Stolt¹ and David B. Grant^{1,2}

¹Hanken School of Economics, ²Hull University Business School

Emails: jockum.stolt@student.hanken.fi, d.grant@hull.ac.uk

Abstract

Purpose: The challenging economic landscape in Finland has brought about a stronger need among firms to manage risk and uncertainty in order to maintain operational performance and supply chain continuity. Given this turbulent environment, the contribution and commercial activities that small and medium sized family firms provide for the Finnish economy require them to have knowledge of drivers of risk and the tools to mitigate it. The purpose of this paper is to analyze how resilient small- and medium-sized (SME) family firm supply chains are operating during the current economic turbulence in Finland.

Research Approach: The empirical study for this paper took an inductive research approach by devising a framework from the literature on family firm capabilities and supply chain risk and resilience, and then investigating the strength of the framework through qualitative data collection. Multiple-case studies were conducted including pilot and semi-structured interviews with respondents representing six SME family firms active in Finland.

Findings and Originality: Risk drivers and key capabilities connected to SME family firms have been identified. The subject of supply chain resilience was perceived as an abstract subject by several firms, but gained increased interest throughout the research. Several resilience-promoting activities are already being conducted by some firms, nevertheless areas of improvement have also been identified. Despite the growing interest of SMEs in risk and resilience not many studies have been conducted on how SME family firms manage their supply chain resilience; thus this study bridges a gap by combining these two elements.

Research Impact: There are many different studies on SME family firms but research on how capabilities of the family firm influences supply chain resilience has not received a great degree of academic interest. Further, prior empirical research on how SME family firms manage supply chain risk and resilience in practice is scarce. This study thus informs the literature on these aspects.

Practical Impact: The findings of this study contribute valuable insights to managers active in SME family firms when evaluating their level of business risk and uncertainty, particularly relating to their supply chain activities. Further, the findings offer practical guidelines to help improve supply chain continuity and resilience.

Keywords: supply chain management, risk and resilience, family firms, Finland

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Introduction

The economic recession in Finland has had a negative impact on the Finnish business environment, especially affecting SMEs (Soininen et al. 2012). Uncertainty in demand, potential supply errors and disruptions in the supply chain can be seen as a result of the crisis. In order to maintain business continuity and operational performance it is important to have knowledge of the drivers of risk and tools to mitigate it. There is an increasing focus among scholars and practitioners to understand the occurrence of risk and vulnerability in the operations and the supply chains (Colicchia and Strozzi 2012; Vilko et al 2014). This development has generated interest on the subject of resilience, which concern the ability to manage operational error, maintain continuity (Phonomarov and Holcomb 2009). SMEs and family firms share many of the same challenges, although some are specific for family firms alone. Together they represent the main organizational form both in Finland and globally (Siakas et al. 2014). Given the economic impact, contribution and commercial activities SME family firms stand for, the purpose of this study is to investigate how SME family firm led supply chains operate during current economic turbulence in Finland. Despite the growing interest of SMEs in risk and resilience, not many studies have been conducted on how SME family firms manage their supply chain resilience in practice, hence this study bridges the gap by combining these two elements.

Literature Review

Defining the SME family firm

Scholars (see Acquaah et al. 2011, Siakas et al. 2014; Steiger et al. 2015) still debate what a common definition is for a family firm. According to Litz (1995) a family firm is associated with unification of ownership and management within the family. Hiebl (2015) found that the majority of the definitions of what a family firm is constituted of involves, besides family ownership and control, involvement of family members in management and decision making, as well as guiding the business in a sustainable manner through generations in the family or families. Thun et al. (2011) found SMEs in general to operate under more limited financial conditions and less material resources, consequently implies a lesser invested in information and control systems. Vossen (1998) argue that SMEs can instead be advantageous through flexibility, adaptability and learning-oriented practices. Pal et al. (2016) defines the human capital based on knowledge, skills and capabilities of the employees in a firm. It becomes especially important in smaller firms where employees can have several different responsibilities. Danes et al. (2009) found an early involvement of family members to have a positive effect on commitment and development of deeper firm-specific knowledge. According to Kontinen & Ojala (2012), the unique organizational structure of family firms leads to a more concentrated and informal decision making, which enables the company to adapt to changing environments more rapidly. Gunasekaran et al. (2011) also found one of the core strength of SMEs, especially concerning family-owned enterprises, to be the development of long-lasting business relationships. Furthermore, volunteering and flexible assistance from family members can also help the firm to manage uncertainty during high demand or economic fluctuations.

Vulnerability, uncertainty and risk as antecedents for resilience

The terminology of risk and uncertainty is sometimes used interchangeably (Colicchia and Strozzi 2012), which requires beginning by defining these two different terms. A traditional and often referred view of risk is the early work of Knight (1921) who defines risk as a measurable uncertainty. Vilko et al. (2014) divided uncertainty into substantive and procedural uncertainty. Substantive uncertainty derives from lack of information of the surrounding environment, while procedural

uncertainty concerns difficulties to interpret relevant information despite it being available (Vilko et al. 2014).

Tummala and Schoenherr (2011) found that risk can derive from multiple situations and sources. Juttner (2005) recommend viewing the supply chain from a wider network perspective. Peck (2005) created a comprehensive framework based on risk drivers and how they are interconnected in a supply chain. Through a four-tier system, which covers the elements of the supply chain and the environment it operates within, the overview is significantly improved. Firstly, Peck (2005) found that to be able to respond to deviating market conditions, and thus avoiding financial or commercial risk, the availability of information is crucial. Manuj and Mentzer (2008) notes that the availability of information requires in turn trust and collaboration between the firms. Peck (2005) further identified risk to be inherent in the assets owned and managed by the firm, transport and IT-activities, but also in trading relationships and bargaining situations. Tummala and Schoenherr (2011) further identified risk in technological and regulatory changes, political risk strikes and related to weather conditions.

SME family firms and supply chain resilience

According to Christopher and Peck (2004) the four general prerequisites to construct a resilient supply chain are for a firm to undertake supply chain reengineering and collaboration, and has a culture that embraces agility and supply chain risk management (SCRM). One fundamental question to consider when designing the resilient supply chain is the trade-off between flexibility and redundancy. The traditional forms of redundancy are for example safety stock, use of multiple suppliers and backup sites (Sheffi and Rice 2005). Blackhurst et al. (2011) note that focusing on safety stock requires strategic knowledge of where inventory should be placed, in what form and how much, consequently implies it can be challenging to benefit from it for a firm with less resources. Kamalahmadi and Parast (2016) argue that flexibility may be included in production, supply base, capacity and labour arrangements. Sheffi and Rice (2005) argue that flexibility is the most important antecedent to resilience. Research points that flexibility can also be improved upon through collaboration with other members in the supply chain (Scholten and Schindler 2015). Christopher and Peck (2004) found collaboration in supply chains to significantly help to reduce risk, but the challenge is to enable collaboration practices. These practices include for example information and resource sharing, joint relationship efforts and decision synchronization with other supply chain partners (Nyaga et al. 2010; Cao et al. 2010). Regardless of the size of the firm, collaboration within the supply chain is thus beneficial.

Agility can be viewed as a reactive strategy that enhances supply chain resilience (Wieland and Wallenburg 2013). It concerns the ability to quickly react and respond to changing conditions and thus avoiding disruptions (Ponomarov and Holcomb 2009). Studies have found that the agility dimension is interdependent with flexibility (Scholten 2014), and connected to visibility and velocity (Christopher and Peck 2004). In order to adapt to new situations, organizational motivation and positive adjustment among employees is important (Pal et al. 2014). Risk management processes are thought to be guided through leadership and management (Christopher and Peck 2004). The capabilities of family firms, such as a flexible workforce and ability for fast-learning indicate that an implementation of these practices could be a realistic alternative (Danes et al. 2009).

In summary, despite the increasing interest on SMEs and supply chain risk and resilience, information on how organizations, particularly SMEs, enhance resilience is still lacking (Bhamra et al. 2011). But, it is argued that a majority of the resilience promoting activities that are common within large enterprises can be implemented in a SME context as well (Demmer et al. 2011). However, more empirical studies on how SMEs and family firms implement resilience promoting activities are required. Bhamra et al (2011) conclude that through additional case studies, the subject of supply chain resilience could be add to and validate the theoretical constructs. Thus, to address these gaps

we undertook an empirical study in Finland that reported in this paper and which used an exploratory approach with the following three research questions:

RQ1: What is the perception of supply chain resilience in SME family firms in Finland;

RQ2: How do their organizational capabilities influence their supply chain resilience; and

RQ3: What practices do SME family firms apply to manage their supply chain resilience?

Methodology

The objective for the empirical study was to investigate how SME family firms active in Finland view and manage supply chain resilience. Since not many previous studies on this subject have been conducted, an exploratory and qualitative approach was motivated for the purpose. The firms were used through a snowball sampling strategy and the sample consists of six family firms active in different regions in Finland as shown in Table 1. Two pilot interviews were conducted with respondents representing two of the case companies (CC1 & CC2). Then after adjusting the questions from feedback received, six semi-structured interviews were conducted in the six case companies, including the two pilot respondents.

Case company	Core activity	Respondent	Location
1	Confectionery products	Co-founder, former CEO	Turku
2	Hygienic and cleaning products	Sales manager	Turku
3	Fireplaces and saunas	Construction manager	Mariehamn
4	Construction company	CEO	Mariehamn
5	Beverages	Sales manager	Helsinki
6	Retailer plastic solutions	Sales manager	Helsinki

Table 1: Profile of Interviewees

Findings and Discussion

Perceptions of supply chain resilience (RQ1)

All respondents were able to identify risk and vulnerabilities related to their operations and supply chains. Empirically identified risks were mainly related to transportation activities, information exchange, machine dependency, lack of skilled labour and external competition, but one respondent did also mention political risk as a perceived concern. However, the empirical findings regarding errors related to transportation activities were mixed. A number of the case companies experienced limited, or no error and uncertainty related to transport activities, while other raised it as one of their main concerns. This can be explained by the different supply chains of each family firm. Visibility and velocity are likely to decrease through outsourcing and off-shore production, as lead-times and the number of intermediaries increases (Christopher and Peck 2004; Tummala and Schoenherr 2011).

Furthermore, Vilko et al. (2014) note that uncertainty in the decision making process can be a result of lack of information of the surrounding environment as well as difficulties to interpret information despite it being available. Firms can also become increasingly vulnerable to disruptions if the supply chain is characterized by critical paths (Christopher and Peck 2004). Empirical findings support these statements, as several respondents (1, 2, 3 and 5) expressed concerns over long lead-times, no short-term alternatives of supply and poor availability of information.

The empirical study further corroborated that the stability of the operations is dependent upon the level of human capital in the firm. Several firms relied primarily on workforce experience and competence, as important cornerstones of business continuity. The trade-off between flexibility and redundancy is addressed in the literature review and the empirical study. As case company 1 instead

stated, *“being a small company requires you to be flexible and always strive to exceed customers’ expectations”*. The majority of the case companies did not have the financial resources or the business strategy to maintain a redundant warehouse strategy. However, a number of enterprises (3 and 4) did show a good understanding and interest on redundancy practices to bolster their supply chain resilience. This could be explained by external factors and geographical locations of the enterprises which require them to manage less frequent transportation interval.

The influence of organizational capabilities on supply chain resilience (RQ2)

According to the literature review, the early involvements of family members in the daily operation improve the commitment to the firm and also create a good understanding regarding the business (Danes et al. 2009). These statements were empirically confirmed unanimously by the interviewed respondents. Long term strategies and guiding the business in a sustainable manner to younger generations are further seen as characterizing family firms (Acquach et al. 2011; Hatak et al. 2016). The empirical findings confirmed that long term strategies did exist among the SME family firms, and the combination of ownership and control did also influence on the risk assessment process in the operations. Also addressed in the literature review, SMEs can gain advantages through adaptability and fast-learning (Pal et al. 2016). This was emphasized by several respondents (1, 3, 4 and 5) as important factors in order to be competitive.

The empirical study found the informal communication between employees as a distinctive characteristic of the SME family firms interviewed. The relatively small size of the family firms study implied a close proximity between management and production, which helps facilitate rapid decision making and adaption processes of the operations (Litz 1995; Kontinen and Ojala 2012). The literature found correlation suggesting that flexible operations could ultimately lead to positive economic performance (Pal et al. 2014).

Risk associated with imbalance in bargaining power is an on-going concern experienced by SMEs in general, according to the literature review (Peck 2004; Thun et al. 2011). The empirical research demonstrated similar findings, as respondents expressed concern over low margins, increased competition and little room for negotiations with major retailers in particular (. However, SME family firms can be superior in developing long-lasting relationships and engager trust with its main business partners (Gunasekaran et al. 2011; Essen et al. 2015). The empirical study supports these findings, as the SME family firms identified close business relationships as a warrant of stability in time of uncertainty. As the respondent of case company 6 argues, *“representing a family firm certainly opens up possibilities that would have been difficult in other organizational firms”*.

The literature also stresses the importance of collaboration and information exchange with other actors in order to improve reactivity and visibility, which ultimately leads to improved supply chain resilience (Peck 2004; Cao et al. 2010; Scholten and Schilder 2015). The respondents demonstrated a general good understanding of the outcomes of a well-functioning collaboration and communication practices, nevertheless several firms identified areas of improvement in these subjects as well.

What practices do SME family firms apply to manage their supply chain resilience? (RQ3)

The literature review and empirical findings suggest information sharing and collaborative activities as something that could enhance supply chain flexibility and agility (Christopher and Peck 2005). A number of the interviewed SME family firms (1, 3, 4, 5 and 6) demonstrated positive outcomes of collaboration practices. The empirical study found collaborative activities as more frequent in the family firms who are active in construction businesses, which can be explained by the project based nature characterizing the industry. Empirical findings indicated that different collaboration activities improved the capacity and stability of the operations. Exchange of information and improved

communication between different firms proved also helpful when consolidating transportation orders, and thus minimizing transportation costs.

As previously addressed, SME family firms experience weak bargaining positions and small margins, especially with new suppliers. In order to minimize the risk related to these relationships, the literature and empirical findings indicate that improved terms and conditions could be realized through developing and investing in long term-relationships with business partners. The literature addresses this as one of the main advantages among the SME family firms (1, 2, 4, 6) have and the empirical study found that several of the respondents see the long term-relationships as very important as well as a source of stability in economic uncertainties and a successful method to manage risk.

A few respondents (3 and 4) viewed a more redundant warehouse strategy as necessary, due to their geographical location and area of industry. Redundancy in terms of multiple distribution and manufacturing processes were not empirically identified. Given the generally lesser degree of resources managed by SMEs, applying a more flexible approach can be more beneficial. Managing flexibility proved empirically to be fairly common strategy. The SME family firms interviewed did not have any formal risk management strategies. Instead, the firms emphasized experience and competence of the workforce as important pillars of stability. Due to the nature of business, some firms conducted training of employees in order to improve the expertise.

Conclusions

The aim of the study was to analyse how resilient SME family firm supply chains are during the current economic turbulence in Finland. The empirical study confirmed risk, uncertainty and vulnerability as multifaceted concepts deriving from multiple sources within the firm's operations. The theoretical framework facilitated the identification of risk drivers and the case companies were able to demonstrate examples of risks related to their operations. The subject of supply chain resilience was perceived as abstract by several respondents. The improved knowledge can help managers on what areas SME family firms can benefit from investing in based on their strengths and weaknesses.

The empirical findings validated that the subject is of great relevance to SMEs and family firms as well, and that further research is needed on how resilience promoting activities can effectively be implemented. The study showed that several managers at SME family firms are successful at personal networking and manage collaboration activities with other supply chain partners. The findings are in line with previous research, and therefore confirm the notion that SMEs would benefit from continuing with these practices in order empirically manage risk and uncertainty in a successful way. Furthermore, despite the abstract nature of the subject of resilience, several firms showed a good level of interest in the subject throughout the empirical study. This provide with implications for academia and to government practices.

The findings of this paper indicate informal and undeveloped risk management practices used by the majority of the case companies, with a main focus on experience and learning by doing approaches. Instead, scholars and academia could provide with structural and systematic risk management guidelines for business owners and managers, in order to assess the level of supply chain risk and identify vulnerabilities in a more efficient way. When establishing defined risk management processes, the dependability of employee-specific knowledge could therefore be mitigated. Given the economic and financial impact SMEs and family firms contribute to the national economy, the government should increase the awareness of the risks and challenges that particularly SMEs are experiencing during the current economic downturn in Finland. It would further help to acknowledge the challenges of SMEs and family firms, in order to create a dialogue between business owners and policy makers.

As with all research studies there are several limitations that provide opportunities for further research. The study found that additional empirical research is needed on how SME family firms implement risk management processes in practice, since no formal business continuity plans were identified in this sample. Future studies can shed light over the enablers and barriers experienced by SMEs and family firms during the implementation process. Another limitation of this study was the amount of time available to conduct this specific research. Further, the study is geographically limited to SME family firms active in Finland. It would be interesting to extend the period of time and also conduct additional research in another environmental setting or through a cross-country perspective. Additionally, the small sample size limits the generalizability of the result. The respondents included in this study represent different industries, which has provided with a broad level of knowledge and possibility to compare similarities and differences between the industries. Future studies could instead focus on SME family firms active in specific industries to increase the depth of results.

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