SUPPLY RISK MITIGATION OF SMALL AND MEDIUM ENTERPRISES: A SOCIAL CAPITAL APPROACH

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ABSTRACT

Supply risk is an inevitable part of the supply chain of most businesses. This paper provides a conceptual framework along with a set of research propositions that depict how small and medium enterprises (SMEs) can mitigate supply risk by leveraging social capital gained via networking with their suppliers and peers. Through an extensive literature review, this paper reveals the types of network and dimension of social capital that can be used to mitigate the supply risk of SMEs. The conceptual framework and the research propositions put forward in this study are underpinned by social capital theory. The findings suggest that dimensions of social capital in both the buyer–supplier network and the network of peers can play an influential role in mitigating the supply risk of SMEs, thereby assist SME practitioners in improving operational performance of their firms. This study supplements the inadequacy in research on using the social capital approach in mitigating supply risk of SMEs.

Keywords: Social capital, Supply risk mitigation, Small and medium enterprises
Category of the paper: Conceptual Paper

INTRODUCTION

Supply risk, which arises from deviation in the inbound supply, has become a key concern for all the businesses (Blome & Schoenherr 2011). A study by Snell (2010) revealed that 90% of firms are threatened by supply risk, whereas 60% of firms do not have adequate knowledge about supply risk. Supply Risk has a significant impact on the performance of organisations. For instance, Hendricks and Singhal (2005) found that supply side glitches reduce the operating income of firms by 31.28%. In general, the impact of supply risk on performance is more severe for SMEs – firms having maximum 250 employees and less than 50 million Euros in yearly turnover (EU 2003) – than large corporations (Hendricks & Singhal 2003, 2005; Ellegaard 2008). There are many reasons behind this which include limited resources and capital (Thakkar et al. 2008), inadequate negotiating power (Thun et al. 2011), lack of technology (Hendricks & Singhal 2003) and imperfect strategy (Arend & Wisner 2005).

Although, there is much research on the different types of risks, attention to risk or risk management of SMEs is relatively limited (Kim & Vonortas 2014). However, SMEs are the most common business entities found across the globe and the main contributor of the majority of the economies worldwide (Rahman et al. 2015). Furthermore, the majority of the existing studies on supply risk mitigation primarily recommend holding buffer stock, developing supplier, and ensuring formal process, each of which requires either significant resources or strong position power to influence suppliers. Usually, these measures are beyond the capabilities of SMEs (Prasad et al. 2012). As an alternative avenue, leveraging social capital to mitigate supply risk of SMEs have been suggested (Cheng et al. 2012; Falkner & Hiebl 2015). The argument is that social capital, exists within the network of a firm, improves the firms' ability to mitigate supply risks (Johnson et al. 2013). Unlike other capitals, however, it requires less investment (Uphoff 2000)

which overcomes the obstacle of resource deficiency of SMEs. However, two critical questions still remain unclear: (1) how can social capital mitigate supply risk and, (2) what type of social network can help mitigate supply risk of SMEs? This paper addresses these issues through an extensive literature review by applying social capital theory – a long-established concept in management and sociology literature – as a strategic lens.

This paper proposes that social capital in both the buyer–supplier network and the network of peers within geographical cluster can play an influential role in mitigating the supply risk of SMEs. It is contended that both types of social capital could significantly help SMEs to mitigate supply risk in the long run because social capital is long lasting in nature (Adler & Kwon 2002). Following a review of the literature on social capital theory and supply risk, the paper puts forwards a set of research proposition that depict how SMEs can mitigate supply risk by leveraging social capital gained via networking with their suppliers and peers. Finally, implications of the findings and the direction for future research are also discussed.

THEORETICAL BACKGROUND

Social Capital

Social capital has been argued as a valuable resource that is available through social network (Granovetter 1992). There are a number of definitions of social capital with broad similarities as well as differences (Inkpen & Tsang 2005). These definitions can be grouped in three classes based on their focus: external ties or bridging social capital, internal tie or bonding social capital, and mixed (Adler & Kwon 2002). The first view of social capital – bridging social capital – focuses on external linkage and argues that important resources can be acquired through the tie with other people or organisations in the network (Burt 2000). The second view of social capital – bonding social capital – focuses on the internal characteristics such as collective cohesiveness or relationship that facilitate the collective goals of the network (Coleman 1988).

The third view of social capital is neutral on the bonding/bridging focus. Nahapiet and Ghoshal (1998, p. 243) defined "social capital [a]s the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit." This research adopts the definition of social capital given by Nahapiet and Ghoshal (1998) because it focuses on both bridging and bonding, and it accommodates both the individual and organisation resources (Inkpen & Tsang 2005). From the perspective of small business, combining both individual and organisational social capital is necessary. Furthermore, bonding and bridging view is not mutually exclusive because firms are influenced by both internal and external ties (Adler & Kwon 2002). Several of previous researches on social capital in the supply chain context, adopted the mixed view (Johnson et al. 2013), which comprises three dimensions: structural, relational and cognitive social capital (Nahapiet & Ghoshal 1998; Tsai & Ghoshal 1998; Min et al. 2008).

Structural social capital refers to the connections among the different actors of the network (Yim & Leem 2013; Yu et al. 2013), and can be measured from the perspective of social interaction (Bolino et al. 2002; Chang & Chuang 2011). It focuses on the advantages of multiple social ties (i.e., interaction across different levels and functions) among the firms within the network (Prasad et al. 2012). Relational capital refers to the resources created and leveraged through relationships (Nahapiet & Ghoshal 1998; Tsai & Ghoshal 1998). Relational social capital includes trust, commitment, identification, reciprocity, friendship and mutual respect that actors have developed with one another (Villena et al. 2011; Yim & Leem 2013). Finally, the cognitive social capital refers to the resources that provide shared representations, interpretations and systems of meaning among parties (Nahapiet & Ghoshal 1998). Cognitive social capital includes attributes such as shared language and codes (Bolino et al. 2002; Chiu et al. 2006; Chang & Chuang 2011) and shared goals and values (Tsai & Ghoshal 1998; Krause et al. 2007). In sum, structural social capital refers to the existences of social interaction among the

different members of the network. Relational social capital concerns about the strength of connection, and cognitive social capital focuses on shared understanding and goals.

Network Types

Though all previous researches opined that social capital is the value of firms' network, Inkpen and Tsang (2005) are one of the pioneers who identified the common types of networks that possess the social capital. The three common types of networks identified are intra-corporate network, strategic alliance, and industrial cluster. Intra-corporate network – network of a set of organisations running under a unified business identity, where the headquarter controls the subsidiaries – is not considered for this research because SMEs are mainly one unit business. The second type of network is strategic alliance where group of businesses joint to form a voluntary cooperative arrangement that include sharing, exchange or co-development of products or technologies (Gulati 1999). For example, Chen et al. (2013) mentioned strategic alliance between buying firms and their suppliers can reduce supply risks. In this study, the social capital gained via network of buying SMEs and their suppliers is termed as 'buyer–supplier social capital' in line with the studies of Krause et al. (2007) and Carey et al. (2011). The last type of network is industrial cluster which means a group of independent firms operating in the same or related markets and situated within a geographical location (Inkpen & Tsang 2005). Similar SMEs operating within the same geographical location form network and help out each other to mitigate different risks. In this study, the social capital leveraged through network of similar SMEs within the same geographical cluster is termed as 'cluster social capital' in line with (Molina-Morales & Martinez-Fernandez 2010).

Supply Risk

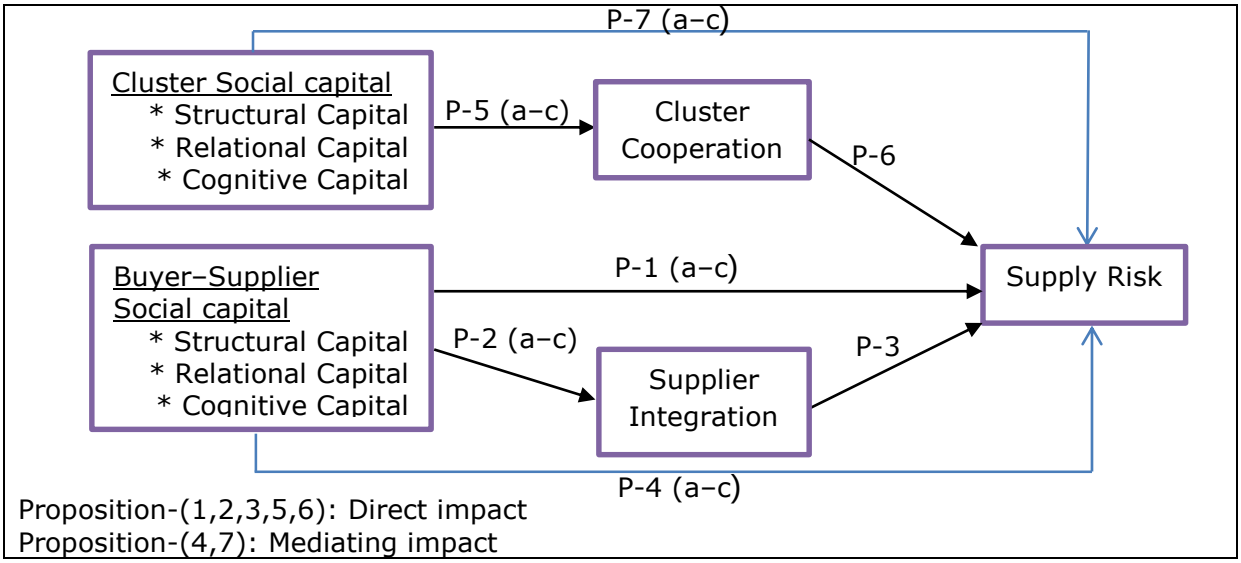
In the supply chain context, risks are generally classified into two groups: operational risk and disruption risk (Kleindorfer & Saad 2005; Tang 2006). Operational risks arises from the managerial problems and inadequate or failed processes (Lockamy & McCormack 2010) while disruption risks arises from the sudden events such as natural disasters, war and terrorism (Chopra & Meindl 2007). Disruption risk is less predictable whereas operational risk is relatively more controllable (Chen et al. 2013). Relatively speaking, operational risk is more critical as firms are often faced with the more controllable risks in their supply chain which degrade their performance (Byrne 2007). Operational risks include supply risk, process risk and demand risk (Ho et al. 2015). In general, supply risk is most common and has the biggest impact on firm performance due to the ripple effect (Hillman & Keltz 2007).

There is little consensus in the meaning and measurement of risk (Miller & Reuer 1996). In the classical decision theory, risk is conceptualised as 'variation in the distribution of possible outcomes' (March & Shapira 1987, p. 1404). Following the variation-based definition of Kumar et al. (2010), this research defines supply risk as the *potential deviations in the inbound supply from the initial overall objective that may result in uncompleted order*. This definition allows inclusion of any kind of inbound supply deviation as supply risk. These deviations can be manifested in the price, quality, and quantity of products ordered, time of delivery, supplier capacity and overall requirements. Each of these aspects has the consequence on other activities of the firm.

A CONCEPTUAL FRAMEWORK AND RESEARCH PROPOSITION

Based on two premises, this research examines the role of buyer–supplier social capital and cluster social capital in mitigating supply risk. First, it is assumed that social capital improves the cooperation/integration among the member in the network (Wiengarten et al. 2013). Second, it is believed that cooperation among the different entities in the network helps mitigate different risks (Chen et al. 2013). Therefore, this research argues that increasing social capital is conducive to mitigating supply risk of SMEs. This paper proposes a conceptual framework that illustrates that social capital improves cooperation which, in turn, helps mitigate supply risk of SMEs.

FIGURE 1: A CONCEPTUAL FRAMEWORK



Direct Effect of Buyer–Supplier Social Capital on Supply Risk Mitigation

Dealing with supply risk is a major challenge for SMEs. Nevertheless, SMEs can leverage the network with their suppliers to manage risks (Gilmore et al. 2004). Structural buyer–supplier capital reduces the probability of supply risk for SMEs, and creates awareness of risks present in the inbound supply network (Ellegaard 2008). Close social interaction with key suppliers helps buying firm detect opportunistic behaviour of the suppliers (Burt 2001). Furthermore, higher level of social interaction between buyers and suppliers enhances the effort to meet the buyer's requirement (Uzzi 1997). This drive to fulfil obligation helps reduce deviation of the outcome and mitigate the risks. Relational capital such as trust, commitment, and reciprocity exists within the network of small buying firms and their suppliers plays a major role in managing supply risk (Ritchie & Brindley 2000; Ellegaard 2008). To gain relational capital, buying firms commit to undertake the same activities in future and put their efforts to enhance trustworthiness and belongingness in the relationship with key suppliers. These efforts put pressure on the suppliers to behave reciprocally to timely meet the requirements of their customers (Giunipero & Eltantawy 2004). Cognitive buyer–supplier capital such as common values, beliefs and language can diminish uncertainty and risks (Cheng et al. 2012). Through a case study, Poba-Nzaou and Raymond (2011) found that working with suppliers whom the firms already knew and had a similar value could mitigate supply risk. In light of the above, a direct relationship between buyer–supplier social capital and supply risk postulated as follows:

P-1: *(a) Structural buyer–supplier social capital, (b) relational buyer–supplier social and (c) cognitive buyer–supplier social capital has a negative direct effect on supply risk of SMEs.*

Effect of Buyer–Supplier Social Capital on Supply Risk Mitigation through Supplier Integration

Integration is the process of amalgamating parts into a whole (Vijayasarathy 2010). Based on the definition of Das et al. (2006), this research defines supplier integration as *"the synchronisation of information, resources and activities of suppliers and buyer in an essence of cooperation to gain mutual benefits."*

Each dimension of buyer–supplier social capital helps enhance supplier integration. Structural capital with the suppliers is essential for successful supplier integration because network ties assist in information sharing and supplier involvement (Prasad et al. 2012). This structural capital, in the form of interaction with both formal and informal social ties, helps in sharing timely and meaningful information between participating

firms (Anderson & Narus 1990). Relational buyer–supplier capital positively affects information sharing, resource sharing and cooperation among members (Mentzer et al. 2001). Trust and commitment between buyer and suppliers facilitates sharing of confidential information and joint problem solving (Dyer & Chu 2003; Johnston et al. 2004). Cognitive buyer–supplier social capital plays a big role in supplier integration (Mentzer et al. 2001; Yim & Leem 2013). Use of common vocabulary and terms facilitate sharing of information and promote collaboration (Masiello et al. 2015). This is particularly true for SMEs because owners of these firms are usually not highly educated and are therefore more comfortable with the use of common language and codes. Shared goals and values further encourage integration and develop a sense of shared responsibility and collective action (Leana & Van Buren 1999). The contribution of buyer–supplier social capital in enhancing supplier integration is addressed through the second research proposition as follows:

P-2: *(a) Structural buyer–supplier social capital, (b) relational buyer–supplier social and (c) cognitive buyer–supplier social capital has a positive effect on supplier integration.*

In an integrative relationship, it is opined that buyer and supplier work together to solve problems and reduce deviations in the performance for mutual benefit (Droge et al. 2012; Tangpong et al. 2015). The buyer–supplier dyad share timely and reliable information which is the soul of risk mitigation (Lee et al. 2004). Moreover, they help out each other through sharing resources and solving problems jointly. This involvement contributes to risk mitigation because mutual dependency is created when buying firms involve their suppliers in the operation (Das et al. 2006). Zsidisin and Smith (2005) contended that supplier involvement reduces supply risk by removing outcome uncertainty, avoiding adverse selection and moral hazard, ensuring goal congruency, and allowing monitoring of suppliers. Suppliers can provide a high level of customer service when they understand the operation of buyer which helps reduce supply risk of the manufacturing firm (Flynn et al. 2010; Zhao et al. 2013). Based on the above, this study proposes the following relationship:

P-3: *Supplier integration has a negative effect on supply risk.*

Impacts of social capital on different types of business performance have been explored in previous studies. However, the linkage between buyer–supplier social capital and supply risk mitigation might not be direct. For example, Wu (2008) found that information sharing mediates the relationship between social capital and competitive improvement. Integration mediates the relationship between communication and organisational performance (Baihaqi & Sohal 2013). Yim and Leem (2013) found a mediating role of supply chain integration in the relationship between social capital and firm performance. In another study, Patnayakuni et al. (2008) found a mediating role of supply chain capabilities, such as integration, in the relationship between social capital and firm performance. Literature suggests that buyer–supplier social capital is the direct antecedent of supplier integration (Vijayasarathy 2010) and supplier integration has negative impact on supply risk (Giunipero & Eltantawy 2004; Chen et al. 2013). Therefore, the following proposition on the relationship between buyer–supplier social capital and supply risk is mediated by supplier integration is put forward:

P-4: *Supplier integration mediates the relationship between (a) structural buyer–supplier social capital and supply risk, (b) relational buyer–supplier social capital and supply risk and (c) cognitive buyer–supplier social capital and supply risk.*

Effect of Cluster Social Capital on Supply Risk Mitigation through Cluster Cooperation

In line with Oprime et al. (2011), this study defines cluster cooperation as the situation whereby homogeneous firms within the cluster share timely and quality information, share resources, and take remedy actions jointly. More than half of the alliances are

formed between competitors (Harbison & Pekar 1998 cited in Gnyawali & He 2006). Cluster Social capital – resources arising from networking with other similar firms within the geographical location – benefits all firms to survive in the market (Schoonjans et al. 2013). Cluster social capital is especially important for SMEs as they do not have sufficient physical resources and knowledge to deal with uncertainty all by themselves individually.

Structural cluster capital – social ties with similar firms within the cluster – assists in knowledge acquisition which, in turn, brings many positive outcomes for the organisation (Yli-Renko et al. 2001). Entrepreneurs of firms within the cluster generally gather in social events. Interactions in social events help enhance cooperation and build trust by breaking boundaries between organisations (Molina-Morales & Martinez-Fernandez 2010). Relational capital with other local similar firms helps SMEs share resources and improve quality of the information shared among themselves (Molina-Morales & Martinez-Fernandez 2010). Firms having high level of relational capital within the cluster usually engage in more cooperation (Chang & Chuang 2011) because they are enjoying the benefit of information and resource from other firms. Cognitive cluster capital helps firms transmit resources more efficiently and effectively (Jansen et al. 2011). Firms working in the same locality generally share a common language, codes, myths and belief. This common cognition enhances quality and quantity of knowledge shared amongst members within the community (Chiu et al. 2006). Common vision and values within the cluster significantly reduces misunderstanding among members and enhances cooperation within the cluster (Molina-Morales & Martinez-Fernandez 2010). The above arguments are summarised through the following proposition:

P-5: *(a) Structural cluster social capital, (b) relational cluster social capital, and (c) cognitive cluster social capital has a positive effect on cluster cooperation.*

Marshall (1961) opined that the cooperation of homogeneous firms that are geographically clustered provides ample advantages, including access to suppliers and improved services from suppliers (cited in Morris & Barnes 2006). This cooperation assists in mitigating the supply risk in many ways. First, SME decision makers are influenced by the diverse pool of knowledge that flows among other SMEs in the connection (Stam & Elfring 2008). SMEs communicate with their competitors to avoid risky transactions when they are doubtful about the creditworthiness of a new party (Gilmore et al. 2004). Cooperation among firms within the cluster facilitates the sharing of authentic information which assists in mitigating supply risks. Second, Gnyawali and Srivastava (2013) has reported that firms working in the same cluster tend to share resources, tangible items and intangible ideas, with one another. These inter-firm exchanges meet the sudden need of firms (Gnyawali & He 2006) and reduce risks. Third, cooperation within the cluster allows firms to participate in joint activities while remaining functionally independent (Best 1990). SMEs operating within a cluster may go for a cooperative purchase (or forming a buying group) to increase bargaining power when dealing with suppliers. As a result, suppliers offer better services which reduce the probability of supply risk. Thus, the following relationship is postulated:

P-6: *Cluster cooperation has a negative effect on supply risk.*

It is opined that the quality of the social capital determines the quality of exchange or cooperation within the network, hence the quality of the risk mitigation (Ferrary 2003). Coleman (1988) argued that social capital facilitates communication which assists in further actions. However, the effect is not always positive (Warren 2008). Sometimes, negative outcomes may occur if there is a cooperation failure (Gabbay & Leenders 2002). For example, when network members are determinative of individual resources, they alter certain relationships to achieve their individual goals. Hard-earned social capital without cooperation among the members may lead to opportunistic behaviour

(Granovetter 1985). In other words, social capital within the network of a cluster can bring positive outcome, e.g., lower supply risk, through successful cluster cooperation. Adler and Kwon (2002) contended that social capital increases ability and opportunity of cooperation which, in turn, provides benefits to participating firms. This argument implies that inter-firm cooperation mediate the relationship between cluster social capital and supply risk. Therefore, it is postulated that the relationship between cluster social capital and supply risk is mediated by cluster cooperation as follows:

P-7: *Cluster cooperation mediates the relationship between (a) structural cluster social capital and supply risk, (b) relational cluster social capital and supply risk and (c) cognitive cluster social capital and supply risk.*

IMPLICATION FOR MANAGERS AND RESEARCHERS

Despite extensive research has been conducted on supply risk and its mitigation, investigation on the use of the social capital in mitigating supply risk is still very limited (Cheng et al. 2012). In an effort to supplement in the inadequate literature, this article draws from the social capital theory and provides a conceptual framework that demonstrates how social capital can mitigate supply risk of SMEs. This paper proposes that SMEs can mitigate their supply risk through interaction, understanding, and relationship maintenance with their suppliers and peers.

Managerial Implications

This article provides several important implications for the SME practitioners. First, by investigating the potential of leveraging social capital to mitigate supply risk, this research can assist SME practitioners in improving operational performance of their firms, because supply risk has a negative impact on the performance of the firm(Hendricks & Singhal 2005). Second, SME practitioners should understand that not only the buyer–supplier social capital, but also cluster social capital can equally help their firms to mitigate the supply risk. Therefore, SME practitioners should emphasise on leveraging both types of social capital. Third, managers of SMEs should realise that focusing on leveraging social capital without having proper strategies to build cooperation among the entities of the network may not bring positive outcome. Fourth, SMEs should formulate the right strategies to enhance all three dimension social capital, because all three dimensions are complementary with each other. For example, having frequent contacts with suppliers or peers without trust, commitment and respect may be valueless. Finally, the findings are expected to guide the owners/managers of SMEs to formulate proper strategies for inbound supply.

Future Research Implications

This paper takes the first attempt to integrate both buyer–supplier social capital and cluster social capital, which allows this research to develop a more complete view of how social capital facilitates in mitigating supply risk of SMEs. The study intends to expand the body of literature of risk mitigation focusing on SMEs which is relatively scarce at present. Next, this study contributes to knowledge by focusing all three dimensions of social capital. Previous studies of social capital limited to relational and structural dimension, and very few have investigated all three dimensions (Villena et al. 2011). This study also enhances the existing literature of social capital by looking at both the direct and mediating effect of social capital, while previous studies on social capital have mostly investigated the direct relationship between social capital and performance.

As this article is among the first to investigate the role of social capital in mitigating supply risk of SMEs, it provides several immediate research opportunities. This research illustrates some links between social capital and supply risk of SMEs. For purpose of comparison, further studies are required to investigate similar links from the perspective of large enterprises. Moreover, these links should be tested empirically in different contexts to enhance the generalizability of findings. As SMEs have the lack of resources, another study can potentially reveal which type and dimension of social capital are

playing more influential role in mitigating supply risk, which will guide the practitioners of SMEs to develop and implement specific policies to leverage a particular type and dimension of social capital. Additionally, future research should address the antecedents of social capital and consequence of supply risk on the firm performance in order to gain the holistic idea on each component. Finally, a rigorous effort is needed to develop the measurements for the constructs of the proposed conceptual model. A focus group discussion or case study can be conducted to offer the items of the constructs of the proposed framework.

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A complete list of references will be provided upon request