



Title: Investigating key factors influence supply chain collaborative relationship and risk management in chinese SMEs

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***Investigating key factors influence Supply Chain Collaborative Relationship and Risk***

***Management in Chinese SMEs***

***By***

***Jun Ma***

***A thesis submitted to the University of Bedfordshire, in fulfilment of the***

***requirements for the degree of Doctor of Philosophy***

***October 2017***

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"I, Jun Ma, declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

### ***Investigating key factors influence Supply Chain Collaborative Relationship and Risk***

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## ***Abstract***

The sustainability of small and medium-sized enterprises (SMEs) makes a significant contribution to job position and economic growth in China. However, SMEs face various challenges and uncertainties in the Chinese business environment. This study proposes a practical approach for Supply Chain Collaborative Relationship (SCCR) building to mediate adverse impacts from supply chain risks through leveraging partners' critical resources. The Resource-based View (RBV) and Transaction Cost Economics (TCE) are employed in line with theoretical structure building in this study. Theories of Guanxi, collaborative advantage, and risk management have also been used.

A combination of qualitative and quantitative research (Mixed-Method Research) approaches are employed in the study. The investigation starts with a sample of 5 research participants from executives of Chinese SMEs using qualitative research; its results are further elaborated using a subsequent survey of 216 SMEs. Data is analyzed via thematic approach (qualitative results) and the combination of SEM and CFA modeling (quantitative results).

Results show the building of SCCR contributes to highly functional and stable alliances in Chinese SMEs, which has significant influences in motivating partners' willingness to share risks and resources to support supply chain risk management. This study furthermore manifests that building of SCCR should depend on either

interpersonal and inter-organizational level interactions, while interpersonal relationships between executives has significant influence to SCCR development.

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## List of Abbreviations

CFA	Confirmatory Factor Analysis
EFA	Exploratory Factor Analysis
MMR	Mixed-Method Research
PCA	Principal Component Analysis
RBV	Resource- based View
SCCR	Supply Chain Collaborative Relationship
SCR	Supply Chain Risk
SCRM	Supply Chain Risk Management
SOE	State-owned Enterprise
TCE	Transaction Cost Economics

# Chapter 1 – Introduction

## 1.1 Chapter overview

This chapter introduces this thesis, highlights the motivation, research gap, and research aim and objectives of this study. It starts with a description of the main motivation of the research and research gap. The research aim and objectives are mentioned accordingly. At the end, a short description of the structure of this thesis is provided.

## 1.2 Motivation for and interest of the study

Many previous scholars demonstrate that well-designed inter-organizational relationships are effective in managing, avoiding, or reducing supply chain risks (SCR) (Hoffmann et al., 2013; Zhao et al., 2013; Harland et al., 2003), because well-managed inter-organizational relationships encourage supply chain partners to pool complementary or competitive resources together in order to mediate the adverse impacts from potential or ongoing SCRs (Gerybadze, 1995; Sambasivan et al., 2013). In the meanwhile, inter-organizational trust building has also been demonstrated as the key to inter-organizational relationship building (Sambasivan et al., 2013; Ahlstrom et al., 2014). Therefore, inter-organizational trust development in terms of the building of supply chain collaborative relationships (SCCR) for SCR is the core for researchers in this field (Sambasivan et al., 2013; Ahlstrom et al., 2014).

Moreover, by following this idea, this research specifically targets its research interest on Chinese SMEs, as the building of effective partnerships for risk management is crucial for Chinese SMEs. First, SMEs in China have faced a disadvantaged position in terms of access to critical resources due to the domination of Chinese state-owned enterprises (SOEs) (Chen, 2006; Zha & Chen, 2009). Due to their significant contribution to economic growth, SOEs more easily receive critical resources compared to Chinese SMEs, such as critical information, governmental funding, policy support. Second, SMEs provide the majority of job positions and opportunities in China (Singh et al., 2009; Chen 2006), but its supply chain system is vulnerable in many aspects. Typically, breaks in cash flow is a kind of financial risk that happens quite commonly among SMEs. It is normally caused by conflicts in production quality due to dysfunctional communications, and downstream consumers would therefore refuse to process the payments. Hence, the building, implementation, and long term development of effective partnerships for risk management in Chinese SMEs is a topic worth investigating. However, this topic is challenged by two main problems that need to be clarified in this research. On the one hand, numerous previous scholars already demonstrate the significant impact of interpersonal relationships (Guanxi) in the Chinese business environment (Guthrie,1998; Wong & Leung,2001; Wang, 2007). Guanxi has been viewed as a kind of organizational resource in China, which significantly relates to company strategic performance, and this phenomenon is more significant in Chinese SMEs than large enterprises (Wiegel & Bamford, 2015).

However, studies are lacking about how interpersonal relationship (Guanxi) is able to influence supply chain practice in partnership development, specifically towards risk management. The relation between the interpersonal and inter-organizational relationship regarding Chinese SME supply chain partnership building is also unclear. On the other hand, despite SCR having been widely classified by previous scholars (Ghadge et al.,2012; Manuj & Mentzer,2008; Markman et al., 2013), specific identification of SME SCR in Chinese business environment is lacking. The unclear identification of real SCR leads to ineffective risk management method design. Thus, the research motivations arise from two aspects. First, the researcher has the interest to investigate the rationale for Chinese SMEs supply chain collaborative relationship (SCCR) development. Second, the researcher investigates the real SCR classification and influences, as well as the effectiveness and advantage of SCCR for Chinese SME risk management in supply chain system.

### **1.3 Overview of existing academic findings and the research gap**

Existing approaches regarding inter-organizational trust development vary. For example, information sharing (Wakolbinger, 2011; Manuj & Mentzer, 2008), effective inter-firm communication (Racela & Thourrunroje, 2014; Zheng et al., 2017), building of strategic alliance among supply chain partners (Das & Teng, 1998a; Das & Teng, 2000; Jüttner et al., 2003), and supply chain partners' joint activities include decision making and strategic planning (Wu et al., 2014; Scholten & Schilder, 2015; Blondel & Müller-Rommel, 2016), etc. Additionally, the building of

inter-organizational trust is also a complicated issue that requires the combined effects of the above approaches. For instance, effective information sharing supports partners' joint decision-making (Blonska et al., 2013; Narasimhan & Nair, 2005; Rai et al., 2006). And the activity of inter-firm communication can be less efficient when non-useful information is being exchanged (Peltokorpi, 2006). Therefore, multiple organizational theories have been launched by modern organizations to produce general structures regarding inter-organizational relationship building. The theory of Strategic Alliance (SA) is one of the typical organizational theories that has been widely implemented in the field of supply chain management to optimize supply chain performance (Mohr & Spekman, 1994; Cao & Zhang, 2010; Cao & Zhang, 2011). The SA is the strategic agreement that shapes the cooperative outline for two or more firms, which includes the sharing of tangible or intangible resources, technique, costs, and risks (Kale et al., 2000). Obviously, the application of SA might have certain positive influences on Chinese SMEs on the issue of lack of resources as well as the building of SCCR.

However, as mentioned in the previous section, the consideration of Chinese culture (Guanxi) in inter-personal relationship development, and the relation between interpersonal and inter-organizational relationship is involved in this research. The assumption of SCCR building is divided into two levels of effort, accordingly: the SME executives' interpersonal relationship building and the SMEs' inter-organizational relationship construction. Assumptions about the interpersonal relationship building

among SME executives is developed according to Guanxi and theories of personal trust building (Peng & Luo, 2000; Luo, 2001; Langenberg, 2007; Chou et al., 2006; Xiaoxin, 2013), to uncover the rationale of cultural influences on business practices. The development of inter-organizational relationship is hypothesized as depending on supply chain risk management studies and theories from the SA (Hillman et al., 2009; Crook & Combs, 2007; Melo et al., 2006; Wikner et al., 1991; Jüttner & Maklan, 2011; Cao & Zhang, 2012; Knoll, 2008), to explore partners' practice in the Chinese supply chain system. On the other hand, in terms of the exploration of the effectiveness of SCCR for Chinese SMEs, this research has also investigated the realistic SCR occurring in Chinese SMEs and the performance of SCCR in relevant risk management, avoidance, and reduction. Previous scholars identify multiple types of organizational risks, such as supply chain internal, external, and environmental uncertainties (Cachon, 2004; Tang & Tomlin, 2008; Wagner & Bode, 2006). This research highlights five uncertainties that will occur in the majority of Chinese SMEs, which involves Political, Logistical, Financial, Operational, and Production risks (Zhu et al., 2012; Fernie & Sparks, 2014; Chen, 2011; Borghesi & Gaudenzi, 2013; Tse & Tan, 2011). Additionally, this research defines several SCCR advantages, such as partners' predictable behavior, transaction cost reduction, and partners' cooperative willingness (Bshary & Grutter, 2002; Suematsu, 2014; Wu, 2007). These advantages are proved to influence partners' supportive behavior towards SCRM, such as quick response, joint relational behavior, and risk sharing (Bruce et al., 2004; Liao, 2008;



Coyle et al., 2010).

In general, this study is able to fill several research gaps in the field: first, this research provides a practical approach to indicate Chinese SMEs in supply chain collaborative relationship (SCCR) construction with their supply chain partners; Second, this research provides insight into how to reduce SMEs' risks and uncertainties via relationship building; third, the importance and effectiveness of interpersonal relationship (Guanxi) for partnership building in the Chinese business environment is discussed; fourth, this research investigates and interprets the realistic challenges and requirements of Chinese SMEs' risk management.

## 1.4 Research aim and objectives

By following the research of existing academic findings, this research proposes several objectives in line with further investigation. They are presented below :

### **Research Aim**

To investigate how to develop Supply Chain Collaborative Relationship (SCCR) in Chinese SMEs to support supply chain risk management.

### **Research objectives:**

- 1. To identify major supply chain risks of SMEs in Chinese business environment*
- 2. To identify key factors of inter-organizational relationship building between Chinese SMEs*

*3. To identify key factors of interpersonal relationship building between SMEs executives*

*4. To investigate the relation between interpersonal relationship and inter-organizational relationship in SCCR building*

*5. To explore the collaborative advantages of SCCR for Chinese SMEs*

*6. To investigate the influences of SCCR on supply chain partners' behavior.*

In general, this research places its interest in the building and implementation of supply chain collaborative relationships as external support in the field of Chinese SMEs' supply chain risk management. Most importantly, this research provides a practical approach to partnership building in Chinese business environment. The considerations of either of Chinese culture (Guanxi) and business interest are both involved in this approach. The research outcome will be valuable for those SMEs who are not familiar with the Chinese environment, such as domestic inexperienced new entrant SMEs, joint ventures, and foreign enterprises.

## **1.5 Structure of the thesis**

This section introduces how this thesis is structured and briefly describes the content of each chapter. This thesis contains six chapters in total, as follows:

### **Chapter 1 Introduction**

This is the introductory chapter of the thesis that describes the motivation, research

gap, aim and objectives of this study.

## Chapter 2 Literature Review

This chapter provides the detailed description and critical analysis of academic findings from the literature relevant to this thesis. The rationale of theoretical structure building is also given in this chapter. It discusses the outcome of the literature research, and includes the development of the research hypotheses and the conceptual framework.

## Chapter 3 Research Methodology

This chapter introduces the rationale of research methodology building, includes the selections of research philosophy, approach, methods, the instrument, and process of data collection.

## Chapter 4 Data Analysis

This chapter highlights the detailed information of data collection and the results of data analysis.

## Chapter 5 Findings and Discussion

This chapter provides the outcome of this research, based on the analysis of both literature findings and research data.

## Chapter 6 Conclusion

This is the concluding chapter of this thesis, which provides the review of the research. Recommendations and limitations of this research are also given.

### 1.6 Summary

In conclusion, this chapter has highlighted the research motivation and interest to interpret the purpose of this study. The research gap is introduced by following the overview of literature findings, while the research aim and objectives are mentioned accordingly. The next chapter provides the analysis of the literature findings in order to carry out more detailed discussion about the research gap and interest identified in this chapter.

## Chapter 2 – Literature Review

### 2.1 Introduction

This chapter introduces all of the academic findings from the literature research, including the researchers' individual critical comments. By critically reviewing previous research contributions, the researcher has developed the theoretical lens of study, that was used as the foundation for further exploration. Meanwhile, research hypotheses are given in each section with related discussion. A conceptual framework is provided at the end of chapter as the summary of the theoretical research.

This chapter is structured as follows – the theoretical background is firstly mentioned, followed by critical identification of common organizational risks of SMEs. Afterwards, the two crucial components of SCCR building, the Inter-organizational Resource Combination and Interpersonal Temporary Trust, are discussed in sequence. This section is followed by discussion about SCCR advantages in optimizing organizational performance. Lastly, the influence of SCCR on Chinese SMEs risk management is provided.

### 2.2 Rationale for the theoretical structure and basic theory

#### 2.2.1 Effectiveness of Strategic Alliance on firm performance

The idea of SCCR comes from the theory of strategic alliance (SA), and studies about

its influences on firm performance. Mohr and Spekman (1994) state that the strategic alliance forms dependent on the strategic partnership between independent organizations, which enable partners to acknowledge the higher level of competitive advantage. Gulati (1995) argues strategic alliance as the collaborative partnership that is able to motivate resource and information exchanging between two or more independent organizations, which encourages in-depth inter-firm cooperation. Within more recent academic findings, the strategic alliance is defined as the alliance that improves firm performance through leveraging partners' resources, information, and knowledge. Such activities also create the inter-firm synergy and interdependence to optimize mutual capacity in response to the dynamic change of market trends (Cao & Zhang, 2011; Serrat, 2017). Meanwhile, supply chain partners can reinforce organizational capacity in process efficiency, flexibility, business synergy, and innovation through building the strategic alliance with appropriate partners (Cao & Zhang, 2010). Moreover, the establishment of strategic alliance evolves resource bundling among firms, includes government ties, customers ties and suppliers ties, which strengthen the managerial capacity for long-term development (Yi et al., 2016).

Besides optimizing firm capacity, the effectiveness of strategic alliance towards supply chain risk management is also significant. Sambasivan et al. (2013) suggested firms will join into a particular alliance, or build up a strategic alliance when the environment becomes complex or unpredictable due to significant environment or

industrial change happening, because strategic alliance enables partners to achieve integrated competitive advantage through pooling competitive resources. Indeed, the researcher partly agrees with this assumption.

Reducing uncertainties within an unpredictable environment is indeed one of the significant advantages of strategic alliance. However, its contribution to reinforcing institutional relations among partners in order to avoid potential uncertainties is also crucial to firms (Ahlstrom et al., 2014). For example, strategic alliance motivates inter-firm interactions and communications that encourage mutual trust and commitment building among partners. It can effectively minimize the likelihood of opportunistic behavior happening among partners (Lin & Darnall, 2015; Tjemkes et al., 2017). Similarly, Ahlstrom et al. (2014) argue that within the business environment of Asia (including China, Japan, and Taiwan), the construction of strategic alliances enables partners to create institutional culture and environment, which are beneficial for inter-firm communication regarding partners' preferences and further strategic decision-making. Meanwhile, strategic alliance supports the practice of inter-firm collaboration through agreement design, and includes process management, production control, and partner selection (Anderson et al., 2013), which specifically benefits supply chain risk avoidance. Additionally, such practices can be applied to outsourcing partners who are employed to improve production performance (Bahli & Rivard, 2017). Hence, the construction of strategic alliance is essential towards firms' long-term development, which would be required with or

without adverse influences from the unpredictable environment. Its contribution to risk avoidance is supposed to be a crucial outcome in supporting SMEs' long-term survival in market competition.

## 2.2.2 Effectiveness and application of Resource-based View and Transaction Cost Economics for basic theory

The researcher captures two crucial organizational theories through the exploration of the strategic alliance, namely RBV (Resource-based view) and TCE (Transaction Cost Economics). Both of them have been widely used to argue the rationale of the strategic alliance.

The RBV defines four features of organizational competitive resources, namely Valued, Rare, Inimitability, and Non-substitutability, and is also known as 'VRIN' theory (Wernerfelt, 1984; Lin & Wu, 2014). The TCE suggests organizations are able to reduce transactions costs in business trade through building the particular investment to partners. The transaction costs include information, bargaining, and enforcement cost (Williamson, 1989; Weber & Mayer, 2014). The effectiveness of both RBV and TCE in strategic alliance or collaborative partnership building is crucial.

Grant (1991) suggests an advanced and long-term partnership is built depending on the influences of competitive resources exchanged with partners, for instance, the influences of resources on organizational innovation and production, and the value of information on profits. Eisenhardt and Schoonhoven (1996) assume firms are the



integration of resources, for which building strategic alliances is to span the boundary of firms through valued resource sharing, in order to survive market competition and improve market position. Eisenhardt and Schoonhoven (1996) also state that the strategic alliance will be required when firms remain in vulnerable and disadvantage positions.

Within more recent findings, the RBV tends to be adopted by firms to either optimize performances or to improve firm ability in value-creation (Hoskisson et al., 2017). Specifically, Lin and Wu (2014) pointed out that the effectiveness of VRIN resource can be enlarged when firms have great dynamic abilities.

This researcher agrees with recent findings of RBV in strategic alliance building. The VRIN defines the key motivations in partnership building, while non-VRIN resource exchanging has insignificant effect for partnership (Lin & Wu, 2014). It would be extremely challenging to improve firm performance with strategic alliance building when firms remain in disadvantaged positions without VRIN resources, because to identify an appropriate partner is a hard objective to achieve in the situation.

On the other hand, as suggested by Williamson (1981), the business transaction costs between two or more parties are critically influenced by two dimensions, namely the Uncertainties and Asset Specificity. Importantly, Asset Specificity is normally defined as the extent of investment to support a particular transaction, which has impact on either the trading or organizational behavior in certain business transactions

(Williamson, 1981). Asset Specificity divided into Site, Physical asset, Human asset, and Dedicated asset specificity (Williamson, 1981). Obviously, the construction of strategic alliance lets partners achieve commitment and trust within close collaborative relationships, while the firms' interdependence produced by strategic alliance is able to optimize firms' performance in cooperation (Shahzad et al., 2017). Therefore, the transaction cost can be reduced through the establishment of strategic alliance.

The exploration of strategic alliance provides the initial assumption of this study, for the construction of SCCR will develop a general governance structure for supply chain partners in order to achieve advanced performance. Such governance structure is able to motivate competitive resource exchanging and inter-firm strategic relationship development. Meanwhile, both the TCE and RBV provide the insight into the rationale of partnership development which will benefit further development of the basic principle and rationale of SCCR. Specific discussion about the implementation of TCE and RBV is given in section 2.4, the rationale of SCCR building.

### **2.2.3 Comparison of basic theory selected with existing theories**

In fact, previous studies have widely argued multiple organizational theories in terms of optimizing organizational performance through inter-firm relationship development. To identify and select the most appropriate theory for theoretical lens building is key to this literature research.

Sarkis et al. (2011) summarize the most typical organizational theories from journals they have reviewed, which includes Complexity Theory, Information Theory, Institutional Theory, Resource-based View, Resource Dependence Theory, Social Network Theory, Stakeholder Theory, and Transaction Cost Theory.

Each theory outlined by Sarkis et al. (2011) is beneficial to inter-firm relationship building studies, but they have different focus in practice. Specifically, Complexity Theory (CT) suggests supply chain partners should be sensitive to responding to environmental change due to increasing of industrial complexity. Information Theory (IT) suggests partners should increase systematical coordination to encourage information sharing activities within the supply chain. The encouragement of information sharing within a close relationship enables partners to reduce the impact of information asymmetry effectively. Institutional theory (InT) describes how external issues affect supply chain management and the importance of relationship development with alternative institutions in managing external issues. Resource dependent theory (RDT) suggests firms should develop a long-term relationship to build resource dependency with the partner, which supports firms in accessing critical resources of the partner. Social network theory (SNT) suggests that sustainable organizational performance depends on the relation between organizations or individuals in the organization. Stakeholder theory (ST) suggests companies should maintain the cooperative relationship with parties relevant to their business transactions.

As mentioned before, this research emphasizes the implementation of partnership building within Chinese SMEs in the supply chain system, which is in need of theories that are able to appropriately provide insight into the rationale of SCCR building. However, the implementation of Complexity Theory (CT) involves multiple parties in the supply chain, which differs from the SCCR as a dyad partnership development approach (Sarkis et al., 2011). The activity of information sharing of Information Theory (IT) is part of the efforts of SCCR building but cannot fully define the entire structure. Institutional theory (InT) focuses on external issues, while InT is unable to define the combined influences of external issues and internal resource in affecting supply chain practice (Glover et al., 2014). The Resource dependent theory (RDT) is similar to RBV, for they are all approaches that help firms in acquiring critical external resources for survival; however, RBV is more advanced, providing specific insight into defining critical resources exchanged in building the long-term partnership. Social network theory (SNT) is more advanced and is applied to examine the effectiveness of SCCR rather than the process of construction (Grabher & König,, 2017). Moreover, studies of Stakeholder theory (ST) emphasize the identification and influence of potential stakeholders, which does not relate to partnership building (Sarkis et al., 2011). Hence, the RBV and TCE have been identified as the basic theories in the literature lens building of this research.

## 2.3 Identification of Supply Chain Risk

### 2.3.1 An Overview of Supply Chain Risk (SCR)

Many scholars state the identification of the nature of risks is the key factor towards effective risk reduction and mediation for the supply chain (Ho et al., 2015; Markman et al., 2013; Heckmann et al., 2015; Brindley, 2017; Sreedevi & Saranga, 2017). Indeed, the rapid and accurate recognition of SCR leads to efficient and specific planning for effective management approaches.

The nature of SCR is typically divided into three dimensions (table 2.1).

**Table 2.1 Classification of Supply Chain Risks**

<b><i>Organizational Risks</i></b>	<b><i>Network Risks</i></b>	<b><i>Environmental Risks</i></b>
Inventory Risk (Cachon, 2004)	Supply Risk (Zsidisin & Ritchie, 2008)	Natural Disaster (Wagner & Bode, 2006)
Operational Risk (Christopher & Peck, 2004)	Demand Risk (Tang & Tomlin, 2008)	Political (Wagner & Bode, 2006)
Quality Risk (Zsidisin et al. 2004)		Market collapse (Jüttner et al., 2003)

As table 2.1 presents, traditional findings view the nature of SCR separated into three dimensions: the internal company uncertainties lead by mistakes or ineffective

management (Organizational Risks); the issues from dysfunctional cooperation in chain-level related with partners (Network Risk); the uncontrollable issues sourced from the general environment (Environmental Risks) (Ghadge et al., 2012).

However, more recent academic findings provide different viewpoints on SCR classification. Hoffmann et al. (2013) define the objective of SCRM (Supply Chain Risk Management) in the aspects of Environmental and Behavioral, which separate the source of SCR by controllable behavior issues (e.g., company internal operation and partners' cooperative interaction) and uncontrollable environmental factors (e.g., Natural disasters). Meanwhile, Hoffmann et al. (2013) emphasize the behavioral issues are the prior factors leading supply chain disruptions. Zhao et al. (2013) subdivide the behavioral issues according to the structure of the supply chain, involving three dimensions of Suppliers, Customers, and focal companies' performance uncertainty. Similarly, Heckmann et al. (2015) classify SCR into Process and Network uncertainties, which also remove the environmental factors. The process uncertainties are similar to organizational risks, which are caused by companies vulnerable internal issues, like the failure of production quality and cost control, as well as strategic planning. The Network uncertainties are chain-level issues lead by problems emerging from partners' cooperation, such as demand and delivery control in both supply and demand sides. Therefore, despite traditional academic findings classifying SCR into internal company operation, chain-level and environmental aspects, recent contributions have shifted the focus onto company

and chain-levels, while tending to remove the concern about environmental uncertainties. This research has adopted this viewpoint for theoretical lens building.

Because the research objective is to develop a practical approach to optimize overall SME supply chain capacity in risk management through pooling partners' competitive advantages, Environmental risk is out of consideration because of its significant destructive effect that might exceed the SME supply chain's general ability. On the other hand, appropriate risk analysis regarding the real situation is also required in line with correct and effective risk identification (Heckmann et al., 2015; Schaltegger & Burritt, 2014). Most importantly, the accurate risk identification is the antecedent step to an effective risk management approach (Zhao et al., 2013; Soni et al., 2014). Thus, following sections discuss the approach to risk identification for Chinese SMEs according to the business environment in China.

### 2.3.2 Supply Chain Risks in Chinese SMEs

Previous studies have addressed multiple kinds of SCR faced by Chinese SMEs. On the one hand, SMEs suffer common uncertainties in maintaining cash flow, production qualification, material transportation, and increasing costs (Verbano & Venturini, 2013; Chen et al., 2011; Kim et al., 2015; Wu et al., 2012). Hong et al. (2014) argue such uncertainties are caused by dysfunctional managerial operations or interactions with partners. For instance, non-effective partner selection or market investigation leads to low performance in partner communication, contract

attainment performance, investment efficiency, and investment return. On the other hand, impacts from change of policy or government invasion to SME operations are other types of uncertainties in the Chinese business environment (Chen et al., 2011; Tu et al., 2013; He et al., 2014; Zhang et al., 2016). Such a phenomenon negatively impacts SMEs in accessing social capital and industrial resources in terms of long-term development, maintaining supply chain performance, and the chance of survivability within market competition (Zhang et al., 2012; Esfahbodi et al., 2016; Verbano & Venturini, 2013). However, these phenomena are controllable, as a well-managed relational network, especially the relation with local government, has significant helpful influences on SMEs' risk management (He et al., 2014). Therefore, this section highlights five typical SCRs for SMEs that would commonly occur as major uncertainties causing supply chain disruptions in the Chinese business environment. The following subsections provide detailed discussions for all SCRs identified.

#### *2.3.2.1 Political Risk*

Literally, political risk belongs to environmental uncertainties along with social, natural, cultural, and economic risks, which potentially affect organizational performance depending on changes in the general environment (Tang & Musa, 2011; He et al., 2014). In the previous discussion, environmental risk is removed because of its controllability beyond SMEs and the supply chains' overall capacity (Ghadge et al., 2012). However, political risk is still a special factor involved in consideration. Along



and Herbert (2009) argue political risk should be separated into Macro and Micro types. Macro political risks are economic-, society-, and government-related issues, and Micro political risks are industrial-, firms' internal-, and project-related issues. The Macro and Micro political risks are categorized by their level of controllability. The Macro political risk is significant and cannot be reduced by firm capacity (Deng & Low, 2013). But the negative impact from Micro political risk can be limited via managerial approach. Darendeli and Hill (2016) argue social resources can be applied against Micro political risks. Specifically, Deng and Low (2014) highlight the relationship with government, sufficient knowledge and expertise, and relationship with powerful partners are kinds of company competitive advantage against Micro political risks. However, in spite of these viewpoints being persuasive, still, there is a small discrepancy with realistic practice within the Chinese business environment.

In China, the issue of State-Owned Enterprises (SOEs) is always an important factor when discussing Micro political risks in the Chinese business environment. The SOEs are large and policy-oriented enterprises that are supported by law and governmental regulations (Dobson, 2014). They belong to the current governance structure that is naturally responsible for China's economic growth (Brødsgaard & Li, 2014). However, the policy-oriented SOE would also be able to lead change of regional market circumstances, which might provide negative effects on SMEs. The development of an SOE also increases SMEs' Micro political risk in China. Chen et al.(2011) indicated an SOE owns the advantage in accessing financing resources by

government intervention. Other crucial resources, like legal tax reduction, efficient information sharing, financing, and gaining vital and physical resource are also involved (Li et al.,2008; Tu et al.,2013; Wu et al., 2012; Zhu et al., 2017). Additionally, SOEs own a higher level of capacity in preparation for Macro political risks because of their timely information receiving (Zha & Chen, 2009). The development of SOEs has provided a significant contribution towards China's economic growth in past decades. However, such a phenomenon also leads to the suppression of SMEs' rights to survival and development. For example, high competition from SOEs negatively impacts SMEs in accessing resources to innovation, cash flow protection and governmental policy support (Zhu et al.,2012). It matters to the operational cost for SMEs in further development (Zhang et al.,2012). Hence, this study identified the Micro political risk as part of major uncertainties:

***H1a: Political risk is significant component of Supply Chain Risks for Chinese SMEs***

***2.3.2.2 Logistical Risk***

Logistical risk has been identified as uncertainties in physical material transportation within a supply chain system, including unreliable behavior performed by members in material handling, warehouse management, security, and protection (Heckmann et al., 2015). However, dysfunctional demand and supply control is an outstanding factor causing logistical risk. In previous research, Christopher (2005) suggests that logistical risk can be caused by the failure of functional and dynamic cooperation, as supply chain disruptions can damage sustainable working processes in the system,

and can lead to misunderstanding about downstream demand by both customer and suppliers. Such an assumption is consistent with the typical theory named the 'Bullwhip Effect', for transformable disruptions in a supply chain system will happen when partners are being wrongly informed by distorted messages about requirements and criteria downstream (Lee et al., 1997).

Misunderstandings which result from the 'Bullwhip Effect' are caused by ineffective partners' communication and information transfer, and is followed by low performance of integrated supply chain management in demand control while increasing production cost (Verbano & Venturini, 2013). The negative impact can be hierarchically transformed among supply chain partners, so the logistical risk is transformable inside the supply chain system.

In order to avoid the potential transformable uncertainties in demand control, an integrated management system, in particular, is required (Ivanov & Sokolov, 2013). Fernie and Sparks (2014) addressed each partner being responsible for understanding the needs from the downstream customer as well as the market, except effective planning in physical and raw material supply and transportation. Stadtler and Kilger (2013) state the timely and agility communication and critical information exchange about demand volume, and customer expectation are key for systematic demand planning in managing logistical risk. Therefore, effective information transfer to each partner is the essential factor in achieving supply chain integrated demand control and avoiding logistical risk. Current scholars tend to agree

that accessing external technical support for information exchange is an effective method for demand control. As Ritchie and Brindley (2005) discuss, the effectiveness of building the public information system for supply chain partners in managing supply control. More recent scholars agree with this finding, and state the construction of an external IT system is an effective and efficient method in logistical risk management among enterprises (Kherbach & Mocan, 2016). As inter-firm communication can be reinforced through the implementation of integrated IT system, the bias of understanding downstream needs can be reduced (Harland et al., 2012; Chan et al., 2012).

However, this method is hard to realize by SMEs due to the limitation of these firms' capacity. As an IT system is non-profitable but costly and time-consuming in supply chain management, SMEs would have little willingness to adopt a technical system (Zakeri & Syri, 2015).

On the other hand, similar to the consideration of cost reduction, outsourcing logistic services to a third party has been used by SMEs instead of building their own transportation service (Evangelista, 2014; Zhou et al., 2011). The application of an outsourcing service can increase the difficulty of logistical risk management (Solakivi et al., 2011; Hilletofth & Hilmola, 2010), for there is extra consideration needed in the firms' strategy for designing and operation arrangements in transportation (Lahiri, 2016). Moreover, the cost of maintaining customer relationships will increase, for unstable supply control might happen due to unpredictable outsourcing partner

performance (Tsai et al., 2012). Hence, the logistical risk should be part of common certainties for Chinese SMEs:

***H1b: Logistical risk is significant component of Supply Chain Risks for Chinese SMEs***

***2.3.2.3 Financial Risk***

Financial risk in SCRM has normally been mentioned as part of the operational risk in the field of supply chain management (Christopher,2016; Venkatesh et al.,2015; Ferrando et al., 2017), because enterprises can experience declining profit rates due to change of currency rate, organizational credits, debt, and market trends (Heckmann et al., 2015). However, there is a different definition by other scholars. For example, Ding et al. (2017) argue financial risk could be caused by environmental factors, a firm's credit crisis, and operation risks in the supply chain. Meanwhile, the failure of effective cooperation can also be the consequences of financial risks (Heckmann et al., 2015; Christiansen, 2015). Therefore, financial risk can be either the cause or result of supply chain breakdown.

This study has narrowed financial risk to the disruption of cash flow in discussing Chinese SMEs' common risks. The disruption of cash flow is a special uncertainty as it matters to each supply chain partner rather than the focal firm itself (Sala, 2009), because business transactions in the supply chain are associated with assured financial agreement in stipulating the payment process, including deposit and account receivables. The payment of account receivables is the matter related to

company cash flow management. When receivable payments are delayed, the company cash flow performance will be impacted accordingly, and such a factor will become a bias in operational performance (Sala, 2009). Therefore, the factor 'Timings' in receivable payments is the key to managing healthy organizational cash flow (Tsai, 2008). However, the effective management of receivable payments 'Timings' is a challenge for companies, because multiple factors can lead to payment delay. Chen (2011) mentions payment can be delayed by the inappropriate setting of terms and rules within the financial agreement. Tsai (2011) provides a more structured assumption, as production flow and cash flow are two crucial components of the supply chain, for which there are reciprocal influences. Cash flow disruption can be caused by the failure of production flow due to mismatching of product criteria, delay and damage in logistic service and material supply, etc. Disruption of cash flow will also affect further import of materials and production. Meanwhile, cash flow disruption is also transformable, similar to logistic risk, like the 'Bullwhip effect,' for shortage of cash flow caused by delayed receivable payment in one partner will lead to payment delay to their upstream partners (Tangsucheeva & Prabhu, 2013). Therefore, disruption of cash flow could be an integrated negative effect throughout the entire supply chain system. Moreover, in spite of previous studies addressing multiple solutions in solving cash flow disruptions, like effective managerial arrangements or replenish funding by loan or extra investments (Kroes & Manikas, 2014; Kim et al., 2015), financial risk is still a significant challenge for Chinese SMEs'

operation. Firstly, SMEs would have few resources to get funding from other financial institutions in China (Wu et al., 2012). Meanwhile, pressure on cash flow will still exist, as the operational cost will be increased by the loan. Secondly, the managerial arrangement is hard to perform, depending on the particular situation and factors (Kim et al., 2015). Hence, this study has identified financial risk as part of the common organizational risk for Chinese SMEs:

***H1c: Financial risk is significant component of Supply Chain Risks for Chinese SMEs***

#### ***2.3.2.4 Operational Risk***

Chen et al. (2013) define operational risk as company internal uncertainties in own working process enabling results of demand and supply disruptions inside the supply chain, which provide negative effects on supply chain resilience against advanced performance. Heckmann et al. (2015) carry out a similar discussion in that operational risk is normally located in firms' unsatisfactory performance in procurement, receivable payments, inventory, and industrial forecast, while partners' performance could be negatively impacted. Therefore, previous studies tend to identify the operational risks as firms' internal uncertainties which can influence their partners' performance. Such uncertainties may happen to be isolated depending on unsatisfactory performance in some aspect of company operation. Also, the supply chain overall performance might be delayed by operational risks when a particular influence is transformed among partners (Chen & Wu, 2013; Tazelaar & Snijders, 2013).

However, recent trends in academic findings have provided different views about operational risk. Wu and Blackhurst (2009) argue operational risk as a kind of supply chain inner uncertainty due to risks arising across firms. Such uncertainties are different from risks caused by environmental factors, such as economic crisis and market share decline. It is a kind of managerial failure caused by operational mistakes. Borghesi and Gaudenzi (2013) address operational risks which involve any uncertainties in business processes and transactions throughout the supply chain, which will potentially delay the effectiveness and efficiency of supply chain performance. Additionally, Lettice and Durowoju (2012) indicate operational risk reduction depends on partners' integrated efforts, such as collaborative planning, monitoring, and working process improvement on risk assessment, identification of risk source, and potential damage. Thus, recent scholars tend to classify operational risk as a kind of systematic uncertainty in the supply chain. Meanwhile, every partner is responsible for such chain-level influence, and approaches to mediate operational risks require supply chain partners' combined contributions.

The significant development of business society in past decades might be the reason for the shifts in views about operational risk. For industrial growth leads to deeper cooperation among companies while also enhancing responsibilities to each other. However, this research adopts two kinds of definitions because operational risk is a broad concept that involves many types of uncertainties (Manuj & Mentzer, 2008). The nature of operational risk (firm internal or systematic) should depends on



practical situations in particular cases. Only one factor can be ensured, the reduction of operational risk should depend on partners' integrated efforts. Unlike other supply chain risks, such as financial, political, and logistical risks, uncertainties trigger operational risks that are hidden behind ongoing working procedures. It requires feedback information from partners for corrections (Blunden & Thirlwell, 2012). The operational risk is highlighted as part of common Chinese SME risks because of the concern about their managerial capacity (Henschel, 2008). All solutions mentioned before can be fulfilled depending on sufficient firm management capacity, for example, cooperative planning or feedback information sharing (Lettice & Durowoju, 2012; Blunden & Thirlwell, 2012). However, firms without sufficient capacity might not be able to reduce operational risks until they happen. Bourlakis et al. (2014) address firm size as having direct influence on company and supply chain performance, and SMEs will more likely have the unsatisfactory performance to affect their supply chain's sustainable performance. Meanwhile, operational risks in SMEs involve a wide range of sources, including lack of governance from executives in working process; the ability of strategy and firm's structure design; the level of project and plan execution, and employees training and practice (Ndubisi, 2013). Moreover, lack of effective information transfer, inter-firm communication, and technology support in SMEs tend to be the reasons behind such phenomena (Colin et al., 2015). Hence, operational risk is assumed as a supply chain risk in this study:

***H1d: Operational risk is significant component of Supply Chain Risks for Chinese SMEs***

***2.3.2.5 Production Risk***

Similar to operational risk, the classifications of production risk are multiple. On one hand, Tse and Tan (2011) address production risk as majorly performed as failure of product quality that mismatches downstream partners' criteria. Such a phenomenon is determined by raw material quality, production execution process, delivery, and packing steps in the production line. Inman et al. (2013) follow this approach and argued the failure of production quality is lead by organizational production system design or firms' internal operational performance. On the other hand, Liu and Xie (2013) addressed the lack of effective supervision in the production process as the factor leading to production quality collapse. Also, inappropriate management in the logistic process and strategic planning can result in uncertain production performance (Ullah & Kang, 2015; Ting et al., 2014). Thus, production risk can result from mistakes by the focal company and upstream partners' unsatisfactory performance. More importantly, the employment of an outsourcing production service by SMEs will increase the degree of risk (Meixell et al., 2014; Sivakuma et a.,2015). Reuvid (2010) indicates that outsourcing production without appropriate supervision will potentially lead to manufacturing going out of control. Raw material management, standard of production, and product quality will be affected. Olson (2011) provides the classification of the potential and risky aspects of outsourcing

manufacture: First, the product quality: it can be uncertain by outsourcing manufacturers' misunderstanding about downstream customers' expectation. Such a phenomenon can result from failure of timely communication, information sharing, production, and lack of coordinated working; Second, the using of material: the manufacturer might use unqualified raw material in production for cost reduction. Third, the manufacturers' unqualified production capacities: this always happens from lack of partner evaluation. Hence, production risk is therefore identified as part of Chinese SMEs' common risks:

***H1e: Production risks is significant component of Supply Chain Risks for Chinese SMEs***

## 2.4 Rationale for SCCR building

This section introduces the theoretical structure for the methodology of SCCR building. It is the main assumption of this study, which addresses the basic rationale, as well as its crucial factors, of relationship development of SMEs in the Chinese business environment.

Roe et al. (2008) suggest the theory of 'Conditional/Unconditional Trust' in the field of trust management. They assume that unconditional interpersonal trust is the status of maximum trustworthiness with the allowance of full resources access. Unconditional trust building should depend on two different efforts: conditional trust and satisfied interactions. Parties having conditional trust with each other will

continually interact until unconditional trust is achieved. Unconditional trust leads to high openness in resource sharing, consistency in behavior, and quality of communications (Isik, 2016), because 'unconditional trust of each party's trustworthiness is ensured, based on the confidence in the others values that is backed up by empirical evidence derived from repeated behavioral interactions' (Jones and George, 1998, p.536). Thus, both conditional trust and satisfied interactions are necessary when individuals intend to achieve combined advantage depending on mutual resource replenishment.

This research develops the rationale of SCCR building based on the theory of 'Conditional/Unconditional Trust,' and assumes the effectiveness of SCCR depends on both interpersonal and inter-organizational level efforts. The interpersonal level efforts refer to attempting to relationship build between executives of SMEs. Moreover, inter-organizational level efforts refer to formal interactive activities attempted by organizations. Sufficient executive interpersonal relationship (Conditional Trust) is the antecedent step of SCCR (Unconditional Trust) that builds the foundation for further strategic collaboration. The inter-organizational level relationship (Satisfied Interaction) is continually required in line with SCCR establishment. More specific discussion about the building of both interpersonal and inter-organizational relationship, as well as the implementation of basic theories identified in section 2.2.2, is given in the following sections 2.4.1 and 2.4.2.

### 2.4.1 Resource Combination

The inter-organizational level interaction is named Resource Combination in this study. The development of the theoretical structure for resource combination depends on the Resource-based View (RBV). According to discussions in section 2.2.2, organizational long-term partnership can be built depending on Valued, Rare, Inimitable, and Non-substitutable (VRIN) resource exchanging.

The exchanging of VRIN resources, like critical information and knowledge, improves firms' dynamic capacity in medicating resources, which increases their competitive advantage as well as the firms' performances (Lin & Wu, 2014). Moreover, the increased firm performance benefits their visibility in the supply chain, which also increases their resilience for incoming uncertainties, such as process and demand risks (Brandon-Jones, 2014; Chen et al., 2013). Such activities motivate firms' interdependent connection, then improves their chance of survival in market competition (Capaldo & Giannoccaro, 2015). Also, inter-firm resource combination improves business synergy which would enlarge their capacity in risk and uncertainties management (Drees & Heugens, 2013; Gunasekaran et al., 2015).

Most importantly, numerous previous studies prove that effective resource exchanging activities are able to support partnership building. Within managerial aspects, the term relational-specific investment has been widely discussed in terms of supply chain partnership improvement (Dyer et al., 1997; Fawcett et al., 2015; Lu

et al., 2015).

Min et al. (2005) state improvement of supply chain efficiency, effectiveness and market position should be the outcome of well-managed supply chain collaborative relationships by relational-specific investment. Because firms' performance in relational-specific investment reflects their recognition of and confidence in certain collaboration, continual investment will reinforce the closeness between partners (Morgan & Hunt, 1994). Within more recent findings, Sambasivan et al. (2013) argue relational-specific investment increases partners' willingness to communicate, resource sharing, level of trust, and commitment. Their task, reward, and objective interdependence could be increased as well. Hence, the activities of inter-organizational relational-specific investment are essential for SCCR building, and the following hypotheses are developed:

***H2a: Supply Chain Risks have significant impact on to Resource Combination building in Chinese SMEs***

***H2b: The development of Resource Combination has significant influence for Chinese SMEs SCCR building***

On the other hand, previous studies have suggested multiple types of resources that could be exchanged for partnership building, which include tangible and intangible assets, like information, physical assets, techniques, or beneficial behavior, etc (Handfield & Bechtel, 2002; Sirmon & Hitt, 2009; Alkhatib et al., 2015; Lusch &

Nambisan, 2015). Specific identification of VRIN resources for partnership building is hard to make, because it should involve consideration of the specific circumstances and situation of companies. Additionally, any beneficial activities should also be included as part of relational-specific investment. Therefore, this section provides five crucial factors that are able to support Chinese SMEs' inter-organizational level interactions:

#### *2.4.1.1 Timely Information sharing*

The behavior of timely information sharing is significantly desired by supply chain partners in the modern business environment, while multiple previous researchers have proved its importance for the supply chain system (Lee, 1997; Wu et al., 2014; Christopher, 2000; Özer & Zheng, 2017). Wu et al. (2014) argue timely information sharing activities will have a direct relation with partners' collaborative relationship as well as supply chain performance. On the one hand, the successful partnerships can be used to encourage information sharing to improve supply chain capacity (Sambasivan et al., 2013). Typically, Lee (1997) in his research on the Bullwhip Effect stated the negative impact of distorted information, and its transformable damage which is able to cause supply chain disruption. The Bullwhip Effect happens when downstream partners deliver incorrect demand information or distorted information to upstream partners and results in significant influence in end-supply and cost increases for partners. Lee et al. (2000) follow this finding: to improve demand correlation and effective information sharing is the key to reducing the Bullwhip

Effect. Manufacturers or suppliers gain more benefits than retailers in the supply chain through effective information sharing, including cost, investment, and uncertainty reduction. On the other hand, timely information sharing activity is the essential enabler of constructing collaborative partnership in terms of increasing supply chain performance. Nyaga et al. (2010) argue timely exchange of information is the collaborative activity which supports partners' trust and commitment development. Moreover, it is the enabler to bridge the communication and relationship between downstream and upstream. Mutual satisfaction can also be achieved by partners' timely information sharing behaviors (Wu et al.,2014). Specifically, many previous studies suggest timely information sharing is a crucial factor that matters in Chinese supply chain performance. Typically, conducting timely information sharing increases partners' responsiveness, which has positive influences on firms' innovation and strategic development (Kim & Chai, 2017). The responsiveness can also support supply chain operations such as demand control (Eng, 2016). Thus, the activity of timely information sharing is the supportive factor enabling partners to access sufficient time in reacting to disruptions, serving market needs, and reducing potential demand uncertainties (Cai et al., 2016).

It will have significant influence on supply chain integrated cooperation, resilience management as well as overall system performance. Therefore, since timely information sharing is the crucial and beneficial factor for supply chain management, this study proposes that timely information sharing behavior can also be the factor in



earning partners' satisfaction and goodwill in terms of the resource combination building of SCCR:

***H3a: Activity of Timely Information Sharing is significant component of Resource Combination building for Chinese SMEs***

***2.4.1.2 Frequent information sharing***

Frequent information sharing is the behavior committed to informing partners about the detail of strategic change and planning by focal firms in the supply chain. It is a regular communication able to enhance partnership. Yawar (2015) argues that collaborations can be created by frequent and continuous information sharing, for it has positive influence in enhancing the sense of trust with the partner. Frequent information exchanging between buyer and suppliers is the reciprocal activity that matters towards mutual development (Blonska et al., 2013; Fawcett et al. 2012). Information transactions, therefore, become one of the most important activities for partnership building.

However, frequent information sharing might not be sufficient to trust building; the quality of information shared is another crucial issue. Wu et al.(2014) in their study of trust and commitment building emphasize the relation of information quality with supply chain dynamic performance. For substantial information sharing might not directly encourage trust and commitment building, as there will be useless or distorted shared information involved, which might lead to negative effects for

partners' performance while supply chain performance and partnership would be impacted (Kwak & Gavirneni, 2015). Such arguments confirm with RBV theory, for valued organizational asset sharing will have positive influences on partnership building, while non-VRIN assets have insignificant impact (Lin & Wu, 2014).

The valued information shared throughout the supply chain can be divided into operational, tactical, and strategic information (Rai, 2006; Wu et al., 2014). Operational information involves the material, instrument, and product design, that is shared to optimize production-related activities. Tactical information covers partners' decision-making related messages, which are shared to improve the quality of mutual decision-making for further development. Strategic information refers to the core competitive advantage of a company that is shared for sustaining a long-term partnership.

Thus, based on the discussion given above, the effectiveness of frequent information sharing has mutual influences on supply chain partners' trust and commitment in terms of their collaborative relationship building (Wu et al., 2014). The activity of frequently and effective sharing information should be a supportive factor in SCCR building for Chinese SMEs:

***H3b: Activity of Frequently Valued Information Sharing is significant component of Resource Combination building for Chinese SMEs***

### *2.4.1.3 Business Synergy*

Business synergy in supply chain collaboration is defined as ‘the extent which supply chain partners combine complementary and related resources to achieve spill-over benefits’ (Cao and Zhang, 2012, p.80). Lu (2011) also suggests that business synergy is able to enhance partner’s resource sharing, risk sharing, and innovation capacity. Cao and Zhang (2010) provide a similar view on business synergy, the advantage of which is significant in building an inter-firm collaborative relationship, which has positive influence on the aspect of firm efficiency, production quality, innovation capacity, and risk management improvement. Therefore, business synergy is the current feature, valued assets, and competitive advantage of two or more firms indicating their potential of cooperation (Rezaee, 2018). Firms with positive business synergy will have better achievements in value creation (Parody et al., 2017).

However, business synergy covers variable kinds that could commonly separated into capital, technical, and productivity (El Namaki, 2016). Within the Chinese business environment, firms owning the great relationship with a government department or financial institution can be helpful in attracting valued partners (Crane & Matten, 2016). As mentioned before, the development of SOEs is considered as part of the political risk for SMEs in China (Tang et al., 2015; Zhang et al., 2016). Advanced relationships with governmental and financial institutions can locate firms in a great position to access valued information and resource funding while decreasing the adverse influences of political risk. For instance, companies will receive external

support, like critical information, tax reduction, cash flow flexibility (funding), from relationship building with firms who have great relationship with government departments (Lin et al., 2014). Hence, business synergy tends to be crucial to encourage inter-organizational level interaction for Chinese SMEs:

***H3c: Business Synergy is significant component of Resource Combination building for Chinese SMEs***

***2.4.1.4 Long-term Business Value***

Perceived long-term business value leads to long-term collaboration among supply chain partners. For SMEs are facing a higher level of challenge in competition due to the development of global industries and markets (Stonkutė & Vveinhardt, 2016). Success collaboration with long-term business value leads to partners' long-term collaboration and the increase of mutually survivability (Ramanathan & Gunasekaran, 2014; Camarinha-Matos & Afsarmanesh, 2006). Long-term business value also contains multiple factors, such as SMEs' capacity in planning, productivity, execution, and the cost performance in collaborations (Ramanathan & Gunasekaran, 2014; Yeung et al., 2013). These factors are the competitive business value of collaboration that lead to long-term partnership (Camarinha-Matos et al., 2009).

On the other hand, the factor of long-term business value will also affect firms in outsourcing partner selection. Camarinha-Matos (2009) observes that due to the concern of market demand and industrial competition, outsourcing cooperation has

become a common choice by SMEs in raw material transport, manufacturing, storage, and distribution. The application of outsourcing cooperation will effectively reduce SMEs' inventory and cost in operation, but also increase the potential uncertainties, including disruptions in transportation, progress, and quality of production. The interdependence between firms and their outsourcing partners will be enhanced, when outsourcing partners are identified as qualified, worthwhile, and beneficial for their long-term development (Rossignoli & Ricciardi, 2014):

***H3d: Prediction of Long-term Business Value is a significant component of Resource Combination building for Chinese SMEs***

***2.4.1.5 Production quality***

The improvement of organizational production capacity has been widely viewed as the consequence of collaborative relationship building (Fawcett et al, 2015; Ross, 2015; Christopher, 2016). Meanwhile, the firm's own production quality is also the factor that supports partnership building (Camarinha-Matos & Afsarmanesh, 2014; Eltantawy et al., 2015). Fundamentally, advanced production capacity reflects that the firm has outstanding and stable ability in operational planning, internal management, and quality control. And such features are beneficial for partner satisfaction building in terms of partnership building (Camarinha-Matos & Afsarmanesh, 2014). In the meanwhile, the organizations' mutual innovation capacity will benefit from others' improved, balanced, or reliable production capacity in the collaboration that is able to increase organizational competitive advantage and

market share (Camarinha-Matos & Afsarmanesh, 2014). Thus, reliable production performance would be one of the key factors that construct inter-firm relationships, as well as motivate inter-firm interdependence building of the collaborative relationship. Therefore, the valuable production capacity needed by partners should be a supportive factor for Chinese SMEs' SCCR building:

***H3e: Production quality is significant component of Resource Combination building for Chinese SMEs***

Hence, this section suggests inter-organizational level resource combination consists of five crucial factors: Timely information sharing, Frequent information sharing, Business synergy, Long-term business value, and Production capacity. Based on the discussion above, this section assumes that both Timely and Frequent information sharing matters for inter-organizational trust and commitment development, while effective Frequent information sharing depends on the quality and effectiveness of the shared information. Business synergy, Long-term business value and Production capacity relate to organizational interdependence building in terms of SCCR building. The next section discusses the rationale for interpersonal level relationship building (Conditional Trust) according to Transaction Cost Economics.

## **2.4.2 Temporary Trust**

The interpersonal level efforts (Conditional Trust) for relationship building are called Temporary Trust in this study. The development of a theoretical structure for

Temporary Trust depends on the theory of Transaction Cost Economics (TCE). As discussed in section 2.2.2, Asset Specificity is the critical dimension affecting transactions, which refers to the specific investment made to support particular trading and organizational behavior (Williamson, 1981). Such investment is able to lock in the partnership to achieve long-term collaboration (Liu et al., 2018; De Vita & Tekaya, 2015). This study assumes the attempt of interpersonal relationship development between SMEs' decision-makers is also a kind of investment that is beneficial to partnership building. This kind of attempt supports the reduction of cost in operation, transaction, and production (Weber & Mayer, 2014).

By following this assumption, the attempt of advanced executives' interpersonal relationship development is involved as a significant component of SCCR building in Chinese SMEs. Interestingly, multiple previous studies have already mentioned the importance of interpersonal relationship to organizational behavior and development in China (Chan & Tong., 2014). Outstanding personal relationship provides advantages in uncertainty avoidance. Luo et al. (2015) suggest cost reduction and preventing opportunism are the advantages from a great personal relationship between decision-makers. The reduction of operational and managerial risks is also the major contribution of personal relationship development (Mitrega & Pfajfar, 2015; Liu & Almor, 2016). Thus, this study argues the development of interpersonal relationship is a major component for SCCR building in terms of supply chain risk management:

***H2c: The Supply Chain Risks have significant impact on Temporary Trust building in Chinese SMEs***

***H2d: The development of Temporary Trust has significant influence for Chinese SMEs' SCCR building***

On the other hand, previous studies have also highlighted several effective factors for interpersonal relationship building. Typically, the building of Guanxi (interpersonal relationship or connection) has been viewed as the core of personal relationship building based on the Chinese culture context (Lewis et al., 2017; Qian et al., 2016; Niedermeier et al., 2016). Cai et al. (2017) argue the development of Ganqing (emotional attachment), information favor, and business support are the boundary spanner of Guanxi development. Yen et al. (2017) separated Guanxi into GRX (Ganqing, Renqing, and Xinren), which refers to emotional attachment, favor exchange, and interpersonal trust. Guanxi is the factor that includes both benefits and emotional contact, and the way of Guanxi building is includes multiple factors. Therefore, this study highlights several effective boundary spanners that benefit Guanxi development based on the Chinese context.

#### ***2.4.2.1 Reciprocal favor exchange***

The term reciprocal favor exchange refers to interpersonal level resource exchanging that is aimed at creating or reinforcing interpersonal relationship or accessing each other's relational network. Due to the definition by Wong and Leung (2001, p.13),



the favor refers to 'the special treatment of an individual, the allocation of resources to another party as a gift in the process of a market transaction, to tighten up the bonds between parties'. Within Chinese culture, such kinds of reciprocal favor have been defined as 'Renqing', which means a personal favor to other individuals as the indebtedness for further return, and always acted as the driver for further long-term collaborative relationship (Ruan, 2017). Numerous previous research works have proved the effectiveness of Renqing in Chinese collaborative interpersonal relationship building (Guanxi) and business transactions (Khan et al., 2016; Zhou et al., 2015; Chen & Bedford, 2015).

In the aspect of Chinese social relations, reciprocal favor exchange includes two crucial objectives: the first is relationship building with a specific potential partner that aims on accessing partner resources of social network and connection for potential use in the future; the second is to offering willingness, kindness, and intention of being a member of the potential partner's social network in order to leverage long-term benefits (Wong & Leung, 2001). Besides, to achieve these two objectives, there are two principles of favor exchange for someone to attempt to build an interpersonal relationship: firstly, they have to keep the communication with potential partners; secondly, they have always to be prepared for favor exchanging, especially support when a partner is in a difficult situation (Wong & Leung, 2001). Moreover, the interpersonal relationship (Guanxi) built depends on favor exchanging (Renqing) and is the relational connection with emotional contact, personal feelings,

and personal sentiment that is more advanced than the transaction-based partnership. Borgatti et al. (2014) address the relation between interpersonal relationships, relationship network, and favor exchange, of which Guanxi is the integration that includes member's acquaintanceship, resources, and trust, while favor exchanging is the behavior to make acquaintanceship with the particular member by resource exchanging that is aimed at earning trust. Most importantly, the feeling of indebtedness resulting from emotional contact in interpersonal favor (Renqing) will be beneficial for long-term interpersonal relationship maintainance, and will enlarge the effectiveness of the particular interpersonal relationship (Guanxi) (Marková & Gillespie, 2008). Hence, the term reciprocal favor exchange (Renqing) has positive influence on interpersonal relationship building with potential partners:

***H4a: Exchange of Reciprocal Favor is significant component of Temporary Trust building for Chinese SMEs***

#### *2.4.2.2 Identification of Guanxi base*

The term Guanxi base refers to mutually personal attributes, like friendship, kinship, and collegiality, that has positive influence on personal identification. Many scholars agree with a classical definition: the 'Guanxi base refers to two or more persons having a commonality of shared identification' (Jacobs, 1979. p.243). The commonality in Guanxi base has multiple definitions. For instance, people with the same social experiences, like school, enterprises, or institutions, used to serve together, and brotherhood (Chi & Seock-Jin, 2017; Wang, 2016). Or natural relations

like blood, kinship, and locality (Omar et al., 2017; Zhang et al., 2015; Chi & Seock-Jin, 2017). Therefore, Guanxi base sources from two different aspects, the natural and social relations. It is a received mutually personal identity that cannot have been built by personal efforts objectively. Importantly, the Guanxi base is the factor that can increase familiarity and good will between individuals, which has supporting effect for interpersonal trust development (Poppo et al., 2016; Zhang et al., 2015; Yao et al., 2017). It has significant influence at the very beginning for people engaging with a particular partnership (Guo et al., 2017). The Guanxi base might not provide determined influences for Guanxi building, but the successful identification of the Guaxi base could be a great start for interpersonal trust development (Yao et al., 2017a; Wong & Huang, 2015). Thus, this research proposes:

***H4b: Identification of Guanxi Base is significant component of Temporary Trust building for Chinese SMEs***

#### *2.4.2.3 Effectiveness of Interpersonal Communication*

Effective interpersonal communication between decision-makers, which exchanges individual perspectives, opinions, interests, and critical information, is able to enlarge the influences of the Guanxi base in interpersonal trust building (Xiaoxin, 2013; Wong & Huang, 2015; Wu et al., 2014). Wood (2015) also addresses that interpersonal communication is crucial for exchanging information about interests, strategy, and planning process, helping partners to rapidly know and work according to ongoing progress. Moreover, effective communication is also the way to bridge

central governance and reduce transaction costs in the supply chain (Shahzad, et al., 2016; Christopher, 2016). Thus, the effectiveness of communication is the factor that benefits SCCR building:

***H4c: Interpersonal Communication is significant component of Temporary Trust building for Chinese SMEs***

***2.4.2.4 Executives' mutual experience***

The mutual experience of executives represents the common period or events that executives have experienced together (Yen et al., 2011). The factor of executives' mutual experiences is also effective at the beginning of interpersonal trust development, as with the Guanxi base. The difference is that the executives' mutual experience emphasizes in-depth personal interaction.

The core value of mutual experiences is mutual affection, known as Ganqing in Chinese culture, that has direct impact on executives' mutual judgment and evaluation (Chen & Chen, 2004). Specifically, Ganqing can be applied in multiple ways in the Chinese business environment. According to Chen and Chen's (2004, p.315) definition, the term Ganqing refers to

the degree of emotional understanding, connections and the sharing of feelings of happiness and fears alike. Additionally, it refers to a sense of loyalty and solidarity, the willingness to take care of each other under all circumstances.

The positive Ganqing emerging through social or personal interactions will positively

affect mutual relationship building. According to Yen et al. (2011), Ganqing is beneficial for both buyer and supplier in Chinese business transactions, as the greater the Ganqing, the higher the level of effectiveness and resource access in the particular collaboration. Zhai et al. (2013) mention the perception depends on Yen et al.'s (2011) finding that the degree of Ganqing in the supervisor-subordinate interpersonal relationship (Guanxi) has a direct positive relation with job satisfaction. For greater affection leads to a greater level of job satisfaction that has positive influence for working performance. Also, Yang and Wang (2011) support Yen et al.'s (2011) perception, and address that Guanxi-based governance mechanism has been widely applied to the management of organizations and business transactions in China. As one of the determining factor of Guanxi, Ganqing worked as crucial ties for resource and information exchanging which is helpful for executives in performance monitoring. Therefore, the development of Ganqing allows executives to strengthen interpersonal relation, connection, and closeness, which has direct influence on personal behavior and intentions (Chen et al., 2015). It can be applied to multiple dimensions of the business transaction, for instance, the reinforcement of buyers' loyalty. On the other hand, Ganqing development is multiple. According to Yen et al. (2011), the easiest way to strength Ganqing (personal mutual affection) is to join the same party, society, or interpersonal interaction. Also, the interpersonal communication discussed above can be used as a crucial mechanism for Ganqing building. In fact, these perceptions could only be viewed as the fundamental factor

rather than the core concept. According to Gillis (2014), reciprocal exchange tends to be one of the most important factors driving Ganqing development. Since Guanxi is a broad concept that contains both emotional and beneficial ties in the Chinese business environment, the development of outstanding Ganqing should rely on reciprocal exchanging by individuals (Tong, 2014; Gillis, 2014). Hence, development of Ganqing from executives' mutual experiences should be an effective factor that helps interpersonal relationship building in terms of SCCR building:

***H4d: Executives' Mutual Experience is significant component of Temporary Trust building for Chinese SMEs***

#### *2.4.2.5 Executive's consensual cognition*

Executives' consensual cognition refers to the managerial cognition in firms' strategic development between SMEs' decision-makers. Managerial cognition covers multiple aspects, for example, the principle of strategy design, value and belief in decision-making, concepts and ideas in knowledge structures. Prior research has widely proved the importance of managerial cognition of top management for supply chain performance. For instance, managerial perception in top management has positive influences on policy-development, investment, cost reduction, and innovation performance for companies (Helfat & Peteraf, 2015).

Confirmation in managerial cognition between partners is also the mechanism that drives the sustainability of collaboration (Hahn et al., 2014). Firms are variable in

their styles, principles, or approaches to operating business; the managerial principle is the factor showing organizational identity which helps in selecting appropriate partners (Lappe & Dörrenbächer, 2017; Zavyalova et al., 2017). Firms with consensual cognitive frames and identity will produce similar ways of decision-making and responses to environment change, and this kind of consensus helps the combination of mutual resources in uncertainty avoidance (Hahn et al., 2014; Evans, 2015).

Therefore, consensual cognition is also the factor that drives the development of norm and commitment development between decision-makers (Colbert et al., 2014).

Theoretically, executives' norms and commitments are created through partners' sense of solidarity, information exchange, and participation in joint activities (Kersten, 2010). The establishment of executives' norms and commitments also has the capacity to making partners' behavior perceptible, fair cooperation implementation, and balanced and acceptable transaction of tangible and intangible assets (Koster, 2007). It would be the core value of norms and commitments as well as executives' consensual cognition. Also, norms and commitments are the keys to developing the normative producing process to ensure production performance through the support of physical equipment, service quality, responsiveness in customers' services, and technical knowledge (Kersten, 2010). For instance, buying firms often have the intention of finding long-term suppliers, but require their particular level of mutual trust, norm and conflict resolution ability underlying the collaborative relationship (Duffy, 2008). That leads to the development of the normative process in line with

collaboration. The normative process will significantly result from organizational interdependence, level of cooperation and interactions, production quality, and joint behavior for supply chain management. In other words, executives' norms and commitments with particular well-developed obligation and operational principles shape the normative producing process for long-term collaboration with supply chain partners (Lai & Cheng, 2009).

Thus, managerial cognition is an intangible factor underlying the firms' strategy. Yet it is important as managerial cognition shows the core principle and value in organizational strategic development. It is also the source of decision-makers' individual and organizational behavior that matters to their manner of interaction with the environment. So managerial cognition will have determined influences on supply chain collaboration:

***H4e: Executives' Consensual Cognition is significant component of Temporary Trust building for Chinese SMEs***

As the summary of this section, all of five critical factors for executives interpersonal relationship (Temporary Trust) are highlighted, including Reciprocal favor exchange, Guanxi base, Interpersonal communication, Executives' mutual experience, and Consensual cognition. These assumptions have been used for research hypotheses, research methodology, data collection, interview design, and result analysis in the further study. The following section provides the result of the literature research into



the influences of successful SCCR on SMEs performance.

## 2.5 Advantages of Supply Chain Collaborative Relationship (SCCR)

According to discussions in section 2.4, the rationale for SCCR building is assumed to depend on both executives' interpersonal relationship (Temporary Trust) and inter-organizational level interactions (Resource Combination). Sections 2.4.1 and 2.4.2 mention the essential factors of each level of interactions separately. By following previous discussions, this section, therefore, assumes the main advantage provided by successful SCCR building.

SMEs can receive multiple types of competitive advantage and support through success relation-based partnership. Cao and Zhang (2010) address the supply chain collaborative advantage referring to improvement of operation efficiency, production flexibility, organizational interdependence, product quality, and organizational innovation capacity. Specifically, inter-organizational collaboration in the supply chain allows partners to exchange legal and critical resources, complementary resources, and social and external supportive resource (Williams, 2005; Seo & Lee, 2015; Li et al., 2015). Thus, inter-organizational collaborative advantage is established by improved tangible and intangible resource exchanging, which is the factor that supports organizations' long-term development. However, for the purpose of this study, there is the requirement to identify specific collaborative advantages for Chinese SMEs. Such particular collaborative advantages are used for discussion about the

effectiveness of SCCR as well as its influences on SME risk management. Therefore, this section highlights five typical SMEs collaborative advantages for further research.

### 2.5.1 Transaction cost reduction

Definitions of transaction cost are multiple, for instance, Challen (2000) addresses that transaction cost emerges through the arrangement of a business trading contract and the related activities in monitoring and enforcement to keep the contract working by partners' mutual expectations. Specifically, the 'related activities' covered a wide range of inter-organizational interactions, including decision-making, information sharing, negotiation duration, and partners' monitoring subsequent behaviors. Suematsu (2014) in his research addresses a similar definition, for the transaction tends to be the minimum element of profit or benefit-oriented activities between firms. The source of transaction costs will not be limited to buying–selling behavior, and it might emerge from all kinds of inter-organizational interactions. Specifically, Williamson (1985) divides transaction cost into ex-ante and ex-post costs. Ex-ante transaction cost refers to the organizational spending occurring before the particular business transaction, which includes the cost of information and decision-making. The ex-post transaction cost relates to the organizational spending occurring after the particular business transaction, which involves the cost of monitoring, implementation, enforcement, and partner switching cost. Within more recent findings, transaction cost in a supply chain system has been classified into three aspects: the expense of Market, Managerial, and Political uncertainty reduction.

In detail, the market transaction cost involves any spending on raw material related to the deal; the managerial transaction cost refers to the implementation and enforcement of the contract in order to protect the agreement to reach all stakeholders' expectations; and finally, the political transaction cost from the spending in adjusting to a certain governance framework, which includes the creating, maintaining, and redirecting of the systematic regulation of the particular supply chain (Oh, 2011; Furubotn & Richter, 2005; Button, 2016; Ha et al., 2017). Thus, the definitions of transaction cost are multiple.

This research adopts the definition provided by Williamson (1985). As the recent findings provide a more completed and detailed view for the source of transaction cost, however, the market transaction cost should belong to production cost, which is the necessary spending for production. And the actual transaction cost is the expense beyond the production needs (Williamson, 1989). On the other hand, Dyer (1997) suggests the building of collaborative relationship is able to improve the mutual credibility of partners, which has direct positive influence on the value of the business transaction. For partners' credibility leads to the development of mutual trust that improves the effectiveness of relation-specific investment (e.g., information sharing). The transaction cost can be therefore reduced. Dyer's (1997) finding is confirmed by Madhok and Tallman's (1998) argument, that the construction of a collaborative relationship reinforces partners' mutual trust, which is able to switch partners' attention from monitoring and governance into trustworthy

cooperation. Specifically, the building of a collaborative relationship leads to the development of organizational interdependence, and partnership is therefore changed into relation-based from transaction-based. Moreover, the supply chain partners' focus will be turned onto mutual value return via the transaction rather than governance (Madhok,2002; Krause et al., 2007; Barringer & Harrison, 2000). Such phenomena will also emerge in Chinese SMEs' SCCR building. As SCCR is built depending on both interpersonal and inter-organizational level efforts, the supply chain partners' relationship should be able to reduce transaction costs in supply chain operation:

***H5a: Transaction Cost Reduction is significant component of Supply Chain Collaborative Relationship***

### 2.5.2 Partners' predictable behavior

The assumption of the predictability of a partner's behavior arises from the idea of partner control, which is a typical academic term in the field of organizational cooperation and strategic alliance management (Brouthers et al., 2015; Garg, 2016; Schilke, & Cook, 2015). Multiple scholars believe that a certain level of partner control can be achieved by the successful and functional supply chain partnership (Das & Teng, 1998; Haines et al., 2018; Wilhelm et al., 2016). Theoretically, the partner control is used for routinizing joint activities in the production process, like transportation and product quality or triggering non-routine activities like joint

learning and risk sharing (Leffers & Mitchell, 2011; Das & Teng, 1998). It is the factor that leads to focal companies being able to forecast the partner's probability of achieving expectations and objectives within the collaboration. A partner's predictable behavior is also the factor reflecting the level of partner control and attainment of collaborative relationship building (Sitkin et al., 1994; Mellat-Parast & Digman, 2008; Christopher, 2016). According to Brinkkemper and Jansen (2016), the predictability of partner's joint behavior depends on the level of trust, while assured partner trust leads to companies having a particular level of confidence for a partner's reliable behavior. Agreements with this have been widely provided by previous scholars. For instance, Dodgson (1993) provides a perception about the influence of inter-personal trust in companies' technological collaboration, which addresses that companies tend to reduce risks and uncertainties caused by technology change through their inter-firm collaboration. A key driver to ensure partners' support tends to be the inter-personal trust established between engineers and managers, and related inter-organizational trust building in sharing essential relevant knowledge. By following Dodgson's (1993) research, another two more recent discussions have contributed more specific discussion on partner control. Bierly and Gallagher (2007) address that the selection of strategic partners essentially depends on two elements: first, the inter-personal trust of managers or decision-makers, which leads to risk reduction in the decision-making process based on inadequate information. Second, the strategic expediency of the inter-firm level.

Therefore, trust is indeed an essential factor in achieving partners' predictability. Conversely, partners' predictability is also a crucial factor to generate partners in deep trust. According to Brinkkemper and Jansen's (2016) research in outsourcing partners, the predictability of partners' behavior is a crucial element in cooperation, which is associated with partners' competence and organizational structure, in generating trust in the partner. And the term partner's ability and organizational structure have additional influence on partners' predictability. A similar perception has also been suggested by Hurley (2011), as partners in joint working or cross-department cooperation might be sidetracked by misunderstanding mutual goals and objectives; then reliable behavior and the attainments of expected performance are key to generating the partner's predictability, which leads to a sense of trust in certain partners. Hence, based on the discussions above, trust is the element triggering a partner's predictable behavior in collaboration while partner predictability is also the mechanism generating mutual trust. There is mutual influence between trust and partner predictability under an assured level of collaborative relationship. Therefore, Chinese SME supply chain partners' behavior will also become predictable for interpersonal and inter-organizational trust and the relationship could be produced by SCCR:

***H5b: Prediction of Supply Chain partners behavior is significant component of Supply Chain Collaborative Relationship***

### 2.5.3 Willingness of partner in exchanging complementary resources

As firms' resources to sustain risk management can be limited, there is a requirement for firms' attempts to build the strategic alliance to leverage competitive resources from the partnership. The partner's willingness in exchanging resources, which represents their attitude in the collaborative relationship, is able to influence the effectiveness and efficiency of partners' support in collaboration (Wu, 2007), which means the focal firms will receive more efficient support and necessary resources with growing partners' willingness in their collaborative relationship. Chen (2003) in his research also suggests that partner's willingness is essential within cooperation, as the performance of collaborative relationships can be limited without willingness in sharing essential resource required by partners. According to Dhillon et al. (2009), the influences from a partner's high willingness in cooperation divide into direct and indirect aspects. The direct aspect refers to the increase of efficiency in production, cost reduction, and resource spending. The indirect aspect is the establishment of a more comfortable working environment and collaborative culture inside the firms (Dhillon et al., 2009; León et al., 2008). Partners' great willingness for interaction can motivate their sense of joint working and encourage in-depth cooperation to achieve higher organizational performance. One of the significant parts of partnership that is influenced by partners' willingness tends to be the inter-firm connection and the degree of mutuality (Dhillon et al., 2009; Fawcett et al., 2007). The degree of inter-firm mutuality should be an incremental benefit from the interactions (Dhillon

et al.,2009). For there would be deeper information, knowledge, resources, and relational behavior established under partners' growing partnership. Moreover, detailed information sharing by frequent communication leads to partners being able to understand each other's needs, in particular working processes more accurately and efficiently. Therefore, the relation-based partnership will increase partners' willingness for sharing information, resources, knowledge, etc., which would be beneficial for each other's operational performance. Moreover, the overall supply chain performance would also be increased as partners are able to support each other for their own firm's performance (León et al., 2008). Since the degree of partners' willingness in exchanging resources is positively correlated with partners' mutuality, many previous scholars have addressed several constructs as the enabler in mutuality building. For example, frequent communication and proactive information sharing support inter-firm trust building (Das & Teng, 1998). Moreover, the certain level of inter-firm trust creates partners' mutual commitments in supporting each other with valued resource exchange (León et al., 2008). The continually positive interaction will also enhance the level of mutuality, as it enables the level of inter-firm trust to raise (Leifer & Mills, 1996). Most importantly, whatever types of efforts that partners have provided into mutuality construction, like frequent communication or resource sharing, its main principle is to let the partner recognize the actual benefits of their cooperation. That would be the main factor to encourage partner's willingness (Scott, 2000). Therefore, this research proposes that greater



partner's willingness in exchanging complementary resources could be achieved through SCCR building. With the development of the mutuality in the partnership, partners will receive greater attention and recognition about the advantage of joint working, which will be beneficial for their further development. Specifically, SMEs will access the higher level of risk reduction performance, as the efficiency and effectiveness could be increased by improving partners' mutual willingness of complementary resource exchanging, therefore:

***H5c: Partner's Willingness in exchanging complementary resources is significant component of Supply Chain Collaborative Relationship***

#### 2.5.4 Open-mind evaluation of partner's work

The term open-mind evaluation is a concept borrowed from unconditional trust in the field of trust building (Solomon & Flores, 2003), which refers to a sense of openness in sharing someone's perception, idea, expectations, or tendency on a particular issue, problem, or event. Unconditional trust relates to the highest value of cooperativeness, which leads to unlimited information, knowledge, or resource sharing in partnership. The open-mind evaluation is, therefore, the outcome of unconditional trust, which acts as the enabler in making a partner provide all the information, knowledge, experience, and evaluations that might be beneficial for the focal company's performance (Jensen et al., 2004). In the meanwhile, several scholars have mentioned the term 'openness' in trust building in the inter-firm

collaboration field. For example, Nooteboom (2004) suggests that openness is part of the core of trust, which can be achieved through a certain level of mutual information sharing and valued resource accessing activities. The openness of the partnership provides the particular contribution in fighting against opportunistic behavior and conflicts emerging in relationship development, and in supporting effective joint solution of risks and uncertainties. Oppat (2009) provides a similar view on this issue that stated the openness in the collaborative relationship determines the partner-specific knowledge transfer that might be highly related to partners' operational performance. On the contrary, openness is also one of the components that determines the condition of the collaborative relationship. According to Zhang (2014), inter-firm trust can be influenced by multiple factors in collaboration, which includes openness of information exchange and quality of communication. As highly an effective collaborative relationship requires a collaborative culture which depends on the condition of partners' mutual trust, without the sense of openness, partners' joint activities, such as communication, information exchange, mutuality, and trust will all be affected (Kock, 2007). On the other hand, the openness of partners cannot be achieved when collaboration remains at the initial stage. Partners' effort of investment in trust building is continually needed in building the trustful collaborative relationship (Botta-Genoulaz et al., 2013). The main purpose of doing this is to create a certain level of trust atmosphere between partners, to encourage the partner's greater willingness in

sharing critical information, knowledge, and technology in supporting the focal company's development (Wu, 2015). Therefore, partners' openness in critical resource sharing is a situation that can only be attained at their highest level of inter-firm trust. Moreover, partners will provide any support unconditionally that is beneficial for the focal company's operation. Taking this assumption back to the topic, Chinese SMEs will be able to achieve in-depth open-mind evaluation on firms' performance in risk management from partners, therefore:

***H5d: Activity of Open-mind Evaluation is significant component of Supply Chain Collaborative Relationship***

### 2.5.5 Inter-organizational collaboration

The inter-organizational collaboration is a crucial metric in evaluating the degree of collaborative relationship, and also acts as a boundary spanner in the inter-firm interaction supporting firms' collaborative activities. A typical definition addressed by León et al. (2008, p.162) is that

inter-organizational collaboration can be viewed as a set of processes crossing organizational boundaries that create interdependence, which need to be coordinated to achieve the goals of the two organizations that based on activities of process alignment, joint decision making and value chain or joint performance metrics.

This finding confirms Lawrence et al.'s (2002) assumption about the nature of inter-organizational collaboration, as it was able to increase the scope of inter-firm

connection into three dimensions by creating interdependence, which is organizational interactions, cooperative structures, and information flow management. So inter-organizational collaboration is a crucial mechanism that combines firms into joint working activities, in order to provide synergistic strategies to maximum the firms' performance (Hardy et al., 2003). Effects from inter-organizational collaboration are multiple. Wu (2015) observes inter-organizational collaboration in Chinese business could enhance companies' information, knowledge, risk sharing, and profits by joint activities. Elmarsafi (2008) states that inter-organizational collaboration improved organizational capacities, competitive advantage, and benefits through resource exchanging and cost minimization. Fendt (2010) mentions several benefits if firms were launching inter-organizational collaboration, which include improvement of competitive advantage, efficiency, process effectiveness, cost and inventory reduction, and improved production capacities. In the meanwhile, as the core element in inter-organizational collaboration, interdependence could be achieved through developing commitment in production quality, innovation, and market share expectation (Wong et al., 2005). As partners in the strategic alliance all have expectations of achieving certain objectives through combining their capacity and resources, the attainment of interdependence tends to be the outcome of their cooperation. For the partners, interdependence will be increasingly consistently with their commitments and expectations about production performance. Also, according

to Wu et al.(2014), the growing inter-firm trust, commitment, and reciprocity is the determinant factor for organizational interdependence. For the joint and synergistic activities conducted by partners, including information, resource sharing, joint decision making,etc, will enhance partners' mutual trust and support that will increase partners' recognition of the importance of participating in the alliance. Hence, the interdependence is the outcome created through partners' joint activities which act as an enabler, letting companies access higher level organizational capacity and resources, because companies have requirements for cooperative behavior against supply chain uncertainties and environmental change (Nishat Faisal, 2006; Sambasivan et al., 2013). Moreover, it is consistent with the original purpose for partners participating in a collaboration for leveraging partners' supports. Most importantly, the degree of inter-firm interdependence will increase by the growth of the depth of collaboration (Sambasivan et al., 2013). Therefore, this research proposes the collaborative partnership in Chinese SMEs produces the inter-organizational collaboration:

***H5e: Inter-organizational Collaboration is significant component of Supply Chain Collaborative Relationship***

## 2.6 Partners' Support for Organizational Risk Management

This section introduces the effectiveness of SCCR in Chinese SMEs' risk management. Its focus is on the partners' supportive activities or behaviors that specifically provide

towards the supply chain risk management which is motivated by the establishment of SCCR.

Many previous research works widely argue for the advantage of building supply chain partnerships towards supply chain risk management. According to Skjoett-Larsen (2000), the construction of collaborative relationships leads to partners' higher level of joint planning, joint product development, mutual exchange information, integrated information systems, and systematic coordination in the supply chain network. Such cross-firm activities have positive influence for risk reduction inside the supply chain. This viewpoint is confirmed by Cao and Zhang's (2011) finding, that the value and advantage of the collaborative relationship is to let partners access superior performance in risk reduction, which depends on combining their synergistic resources and capacities. This researcher agrees with these assumptions, that cross-firm cooperation, such as joint working or supply chain coordination that are enhanced through partnership building, is able to improve the chain-level integrated working performance. Meanwhile, such advantage is quite effective for supply chain risk management because of the improved supply chain capacity in risk identification, assessment, prediction of potential loss, and method design for risk reduction (Harland et al., 2003; Barratt, 2004; Markmann et al., 2013; Heckmann et al., 2015; Ho et al., 2015). Therefore, this research hypothesizes that:

***H6: The development of Supply Chain Collaborative Relationship has significant influence on risk management***

On the other hand, the purpose of this section is to identify several types of partner supports towards SCR reduction, required by SMEs in the Chinese business environment.

### 2.6.1 Risk Sharing

Risk sharing is an activity that depends on partners' assistance in mitigating supply chain risk (Coyle et al., 2010). Traditionally, the process of SCRM is defined in three steps: risk bearing, avoiding, and transfer. Risk bearing and avoiding are the initial steps of SCRM when SCR could be controlled by the company's own capacity. The risk sharing (transfer) is the step to be implemented when SCR is out of control, and requires partners' support for risk reduction (Blecker & Kersten, 2006; Fan et al., 2017). In the meanwhile, risk sharing activities are also classified into two types: 1. The risk sharing with an insurance institution, which aims at recovering the loss by insurance compensation; and 2. The outsourcing of a vulnerable department to alternative partners that aims at removing the source of the risk (Blecker & Kersten, 2006). Moreover, traditional viewpoints also suggest that supply chain partners ought to establish formal obligations regarding mutual responsibility for risk avoidance, sharing, and reduction (Xu et al., 2014; Mobarak & Rosenzweig, 2013). In fact, these findings are indeed the formal methods of modern supply chain risk management, but its effectiveness for Chinese SMEs' risk management needs to be questioned. First, the implementation of insurance, outsourcing, and formal obligations will increase the operational costs (expenses in funding, communication,

or timing) for companies that would lead to additional pressure for SMEs' financial capacity. Second, the issue of lack of competitive resources is identified as the major challenge for Chinese SMEs. Their risk management approach should be able to economize the available resources to minimize the cost of risk reduction. Thus, the researcher thought these assumptions are not appropriate for implementation by Chinese SMEs. The building of SCCR, however, provides alternative selections to Chinese SMEs in risk management. According to Bidgoli (2010), the building of supply chain partnership contributes to integrated operation at the chain-level, which includes revenue sharing, joint working in production design, market demand prediction, decision making, and information sharing. Such a phenomenon leads to the establishment of partners' common objectives, profits, and benefits, and the SCR is also shared among partners. Faisal (2013) addresses the supply chain partnership's ability to connect partners with both advantages and disadvantages, that comprise benefits, value, resources, risks, and uncertainties. The responsibility of risk management has therefore been equally distributed to each partner. Similar views were also mentioned in strategic alliance studies. Nevin (2014) states risk sharing tends to be the most important and fundamental practice in strategic alliances. For partners' mutual trust built through the alliances will enhance the efficiency of resource exchanging that supports the joint working of uncertainty mediation (Gerybadze,1995). Thus, risk sharing should be the outcome of SCCR building that is valuable and applicable for Chinese SMEs' risk management:



***H7a: Risk Sharing is significant component of Supply Chain Risk Management for Chinese SMEs***

## 2.6.2 Collaborative decision-making and planning

Collaborative decision-making and planning are the activities of executives that help supply chain partners in demand, production, and logistic control, which depend on the particular collaborative framework (Blondel & Müller-Rommel, 2016). According to Cao and Zhang (2011), the inter-firm collaboration motivates their joint activities, including joint decision making and planning, which contributes to the responsiveness to mutual requirements, that are able to maximize mutual sustainability. Joint decision making activity has been widely argued in supply chain coordination studies. Kanda and Deshmukh (2008) argue supply chain coordination is the model to optimize the efficiency of information, decision-making, and inventory investment within a supply chain. As the core of supply chain coordination, the inter-firm interdependence would help the improvement of supply chain production and logistic performance (Xu & Beamon, 2006). Thus, as the outcome of a particular collaborative framework (supply chain coordination), the activities of joint decision making enable partners to link valuable perceptions and information together for solving or avoiding potential risks, for instance, the Bullwhip Effect (Lee, 2000). Because supply chain partnership enhances the efficiency of information exchanging, that supports material flow control and product distribution (Wu et al., 2014; Barratt, 2004; Hill & Omar, 2006).

On the other hand, inter-firm joint planning activities are another crucial outcome depending on collaboration (Lambert, 2008). Inter-firm joint planning has a similar function to joint decision-making within an inter-firm partnership, which is to optimize supply chain production and demand control (Scholten & Schilder, 2015). But, joint planning activities could be divided into different types according to information classification, which comprises operational, tactical, and strategic planning, that cover different aspects of firms (Management Association, 2012). Thus, joint decision-making and planning activities have similar functions in improving supply chain performance. Most importantly, both inter-firm joint decision-making and planning can be produced based on a certain collaborative framework. This research therefore assumes Chinese SMEs are able to achieve advanced production and demand control through cooperative decision-making and planning activities by SCCR:

***H7b: Collaborative Decision-making is significant component of Supply Chain Risk***

***Management for Chinese SMEs***

### 2.6.3 Joint relational behavior

Joint relational behavior refers to inter-firm collaborative activities aimed at maintaining sustainable supply chain performance and risk avoidance. Comparing with the collaborative decision-making mentioned in the previous section, joint relational behavior is a formal strategic cooperation between two or more

companies. Inter-firm joint relational behavior involves a wide range of activities. Mohr and Spekman (1994) define joint problem solving capacity as the relational advantage lead by a partnership which contributes to inter-firm conflict reduction. The capacity of joint problem solving of certain partnership matters to partners' mutual satisfaction as well as long-term alliance development (Beamish & Killing, 1997; Mohr & Spekman, 1994). O'Rourke and Collins (2008) address inter-firm effective communication as the relational advantage produced by partnership. The establishment of an alliance contributes to great inter-firm trust, and therefore leads to the development of a joint communicative environment. The reinforced inter-firm communication is helpful in understanding partners' mutual requirements and objectives, which increases the efficiency of production while decreasing potential uncertainties (Xu et al., 2013). Liao (2008) divides joint relational behavior into two different dimensions: joint operation activities and joint information activities. Joint operation activities cover inter-firm problem solving, material flow management, and integrated working; and joint information activities emphasize information flow, knowledge, and technical skills exchanging and management. Moreover, joint relational behavior the material import and demand control. Lambert (2008) suggests supply chain partnership leads inter-firm joint operational behavior, which reinforces effective supply chain monitoring, report, event, and situation evaluation process that contributes to resilient supply chain capacity in reacting to change, uncertainties, and downstream requirements. Thus, the advantage of joint relational

behavior includes inter-firm communication, information sharing, joint operation, and problem solving. Such advantage could be reinforced by inter-firm trust that is produced by supply chain partnership. Most importantly, inter-firm joint relational behavior increases supply chain capacity in reacting to potential or ongoing SCR. Therefore, joint relational behavior is identified as part of the SCCR contribution for Chinese SMEs:

***H7c: Joint Relational Behavior is a significant component of Supply Chain Risk Management for Chinese SMEs***

#### 2.6.4 Quick response

The behavior of quick response refers to a supply chain partner's agile and efficient reaction to market, downstream, and environment change. The building of supply chain partnership is able to encourage a member's quick response behavior in manufacturing, logistic, and distribution aspects (Bruce et al., 2004). Previous scholars recognize quick response behavior benefits two managerial dimensions: first, quick response contributes to supply chain flexibility in reacting to company internal and external uncertainties (Ayers, 2003; Zsidisin & Ritchie, 2008), which have direct impacts on supply chain sustainability (Kersten, 2011). Meanwhile, Zeng and Wang (2010) suggest highly supply chain flexibility leads to a high level of supply chain performance in material replenishment, predictability, reliability, responsiveness, and agility. Second, quick response is able to avoid supply chain disruptions by increasing

performance visibility through effective information sharing (Handfield & McCormack, 2007; Kim & Chai, 2017). Supply chain disruptions refer to the breakdown of supply chain working due to inconsistent cooperation among partners, for instance, the Bullwhip Effect caused by inadequacy information transfer across partners (Lee et al., 2000). The application of quick response enables partners to deliver timely, critical information to effectively react to uncertainties (Reiner, 2010). Material, equipment, and knowledge sharing are also key elements in managing sustainable supply chain performance, which could be enhanced through quick response (Colye et al., 2010). Moreover, supply chain flexibility and visibility have correlated effect. Improved chain-level flexibility increases members' joint capacity in demand control and material velocity, which has direct positive influences on lead time reduction in manufacturing, production, and logistics (Christopher et al., 2004). Such positive effect will directly improve supply chain resilience in risk management and reduction (Reiner, 2010; Hadjiconstantinou, 2012). Thus, as the outcome of successful partnership, supply chain members' quick response behavior is identified as the contribution of SCCR towards Chinese SMEs:

***H7d: Behavior of Quick Response is a significant component of Supply Chain Risk Management for Chinese SMEs***

### 2.6.5 Resource Sharing

Obviously, resource sharing is a crucial factor of a collaborative relationship, as it is

both a factor in partnership construction and the positive outcome of a collaborative relationship (Cao & Zhang, 2012). Resource sharing is also an important collaborative activity in supply chain risk management (Christiansen, 2015), for supply chain members are able to effectively reduce uncertainties by leveraging partners' critical resources (Ross, 2015). Previous scholars have provided multiple definitions about critical resources shared for risk management with an underlying partnership (Gadde & Hakansson, 2008; Grant, 1991; Mills et al., 2003). Das and Teng (1998) suggest that there are mainly four types of resource exchanging encouraged by the strategic alliance that are beneficial for partners' mutual performance: financial, technical, managerial, and physical resources. Financial resources refer to investments or funds that are specifically geared towards financial problems in focal firms. Das and Teng (1998) believe that effective investment can be brought from the strategic alliance in helping the focal firms' critical cash flow problem. Technical resources are those expertise supports, such as critical technical and knowledge, supporting firms' technical-related problems. Managerial resources are partners' specific know-how or capacities which are able to solve a particular problem taking place in the operational process in focal firms. And physical resources specifically points to raw materials, equipment, and other supplies that are used to reduce certain risks or uncertainties in focal firms' operational performance. Gadde and Hakansson (2008) based on Das and Teng's (1998) finding conclude a new type of category in resource exchanging under supply chain partnership. For resource exchanging is a hierarchical interaction

that is divided into three levels, Primary, Secondary, and Tertiary. The closeness of two or more firms in a partnership determines the level of resource sharing. As partner resource exchanging starts with primary level, that involves a single production or dimension in their business transaction, the primary level resource sharing will become secondary level with several dimensions due to the growing closeness of the partnership. The tertiary is the strategic level that remains on top of the resource sharing hierarchy, that firms will provide the full range of resources for partners. This finding has been supported and extended by several scholars for supply chain integrated and dynamic performance studies (Baraldi et al., 2012; Cantù et al., 2012; Clifford Defee & Fugate, 2010). Moreover, the SCCR is built depending on both interpersonal and inter-organizational interactions that might be able to achieve the tertiary-level resource sharing (Gadde & Hakansson, 2008), while Chinese SMEs will be able to reduce their supply chain risks with full range resource sharing, such as financial (financial cash flow risk) or physical (logistic risk) resources (Das & Teng, 1998). Thus, this research hypothesizes that;

***H7e: Resource Sharing is significant component of Supply Chain Risk Management for Chinese SMEs***

## 2.7 Summary

In conclusion, this chapter highlights literature findings for this study. As the core of the theoretical lens, the SCCR is built depending on both interpersonal (Temporary

Trust) and inter-organizational (Resource Combination) efforts. This chapter also introduces the rationale for the theoretical lens building, including the nature and implementation of basic theories, organizational risks for Chinese SMEs, the effectiveness and influence of SCCR, and the SCCR performance (Motivation of Partner support) in risk management.

Besides the discussion of literature findings, this chapter also highlights all the research hypotheses. There are seven hypotheses developed in total, including the analysis of Chinese SMEs' supply chain risks (Hypothesis 1); the influences of Resource Combination and Temporary Trust building with supply chain risks and SCCR development (Hypothesis 2); assumptions of Resource Combination and Temporary Trust building (Hypotheses 3 and 4); assumptions of SCCR (Hypothesis 5); the influences of SCCR to Partner's support in Risk Management (Hypothesis 6); and the assumption of Risk Management (Hypothesis 7). Meanwhile, Hypotheses 1, 2, 3, 4, 5, and 7 contains sub-hypotheses in terms of literature discussions.

Figure 2.1 is the conceptual framework created depending on the literature findings, and also showing the relation of the hypotheses in this study. The next section introduces the research methodology of this study.



## 2.8 Conceptual Framework

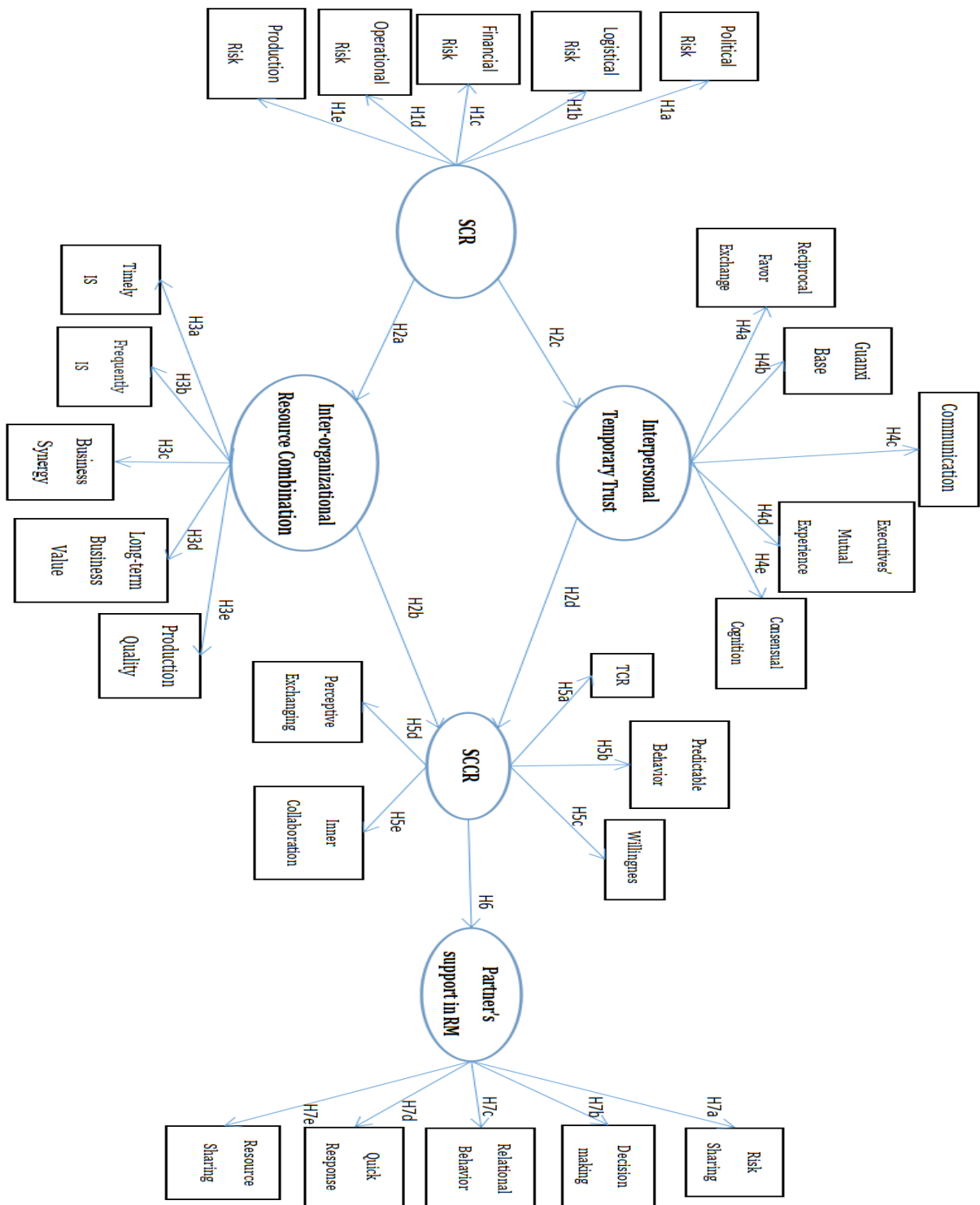


Figure 2.1 Conceptual Framework

## Chapter 3 – Research Methodology

### 3.1 Introduction

This chapter interprets the research methodology in this study. Interpretations contains the identification of research philosophy, research approach, research method, research design, investigation procedure, sampling strategy, data collection, and data analysis. As mentioned in the introductory chapter, this research aims to explore the practical pattern of Chinese SMEs' SCCR building as well as its influences on organizational risk management in the Chinese business environment. There are objectives to uncover the nature of certain Chinese social phenomenon, and practical approaches for Chinese executives to develop reciprocal relationships against supply chain risks.

Both qualitative and quantitative methods have been widely employed in social research by previous scholars. The qualitative research, which aims at detecting in-depth personal perceptions and beliefs, is helpful for the researcher in uncovering real personal experiences for relationship building. The quantitative research contributes to the research in investigating general opinions from the larger scale of sampling. Therefore, considering the advantages of both quantitative and qualitative research, the researcher expected the selection of both of them would significantly benefit the research. The researcher selected Pragmatism as the research philosophy rather than Positivism, Constructivism and Transformative, etc. (Creswell, 2013). The

Pragmatist philosophy has the advantage to ‘emphasizes the practical application of ideas by acting on them to actually test them in human experiences’ (Guttek, 2013, p.76). The theory of Pragmatism is able to uncover the real practice of certain social phenomenon that match the research objectives of this study and could perfectly answer the research questions addressed. By following this philosophy, the researcher identified Mixed-Method Research as the research methodology of this study. Thus, this chapter is structured as follows: it starts with discussion of selecting research philosophy, approach, and research methods. Then the research design, including research process, practice and instruments, is addressed.

### 3.2 Overview of research philosophy and methods

According to Guba (1990), the research philosophy refers to the fundamental discipline, principle, value or beliefs that leads the researcher’s behavior throughout the research procedure. In other words, the research philosophy is the most important principle underlying the entire research process, which has a determined influence on research design. Thus, the identification of the most appropriate research philosophy tends to be the most important issue before starting the research. However, categories of modern research philosophy are multiple. Saunders et al. (2011) in their ‘Onion diagram’ highlight six crucial types of philosophy, namely: Positivism, Realism, Interpretivism, Objectivism, Constructivism, and Pragmatism. Creswell (2013) defines four main philosophies that are most attractive to current researchers: Post-positivism, Constructivism, Transformative and Pragmatism. Wilson

(2014) states three research philosophies for business research: Positivism, Interpretivism, and Pragmatism. Additionally, the identification of the research philosophy affects the selection of research methods, which also influences the choosing of instruments for data collection, research procedure design, and data analysis (Guba, 1990; Creswell, 2013). For instance, Positivist studies recommended quantitative methods to observe the actual phenomenon, which aims at carrying out research outcomes through scientific hypotheses, data statistics and interpreting social relations via logic predictions (Sandelowski, 2000). Therefore, the identification of research methods for the study of many such options is crucial to the success of the study. However, previous scholars have contributed multiple research methods for different types of research (table 3.1).

**Table 3.1 Highlight of research methods and techniques (Patton, 1990; Cooper et al.,2003; Glaser & Strauss,2009; Marshall & Rossman, 2014)**

	<i>Qualitative</i>	<i>Quantitative</i>
<b>Research methods</b>	<ul style="list-style-type: none"> <li>● Interview (structured/ unstructured/ semi-structured/ focus group)</li> <li>● Observation (Participant/ Non-participant/ Passive participant, etc)</li> <li>● Fieldnotes/ Transcript poetry/ Grounded theory/ Case study/ Organizational Storytelling/ Documents analysis/ Ethnography</li> </ul>	<ul style="list-style-type: none"> <li>● Questionnaire Survey  (Online, paper, mail, mobile, etc)</li> </ul>

As table 3.1 presents, research methods can be mainly separated into qualitative and quantitative, which are associated with different research methods for data

collection (primary or secondary) as well as data analysis. However, some existing research methods might not be suitable for this study. For instance, Observation research, includes complete, non-, and passive participant observations, requiring the researcher to spend a specific period of time in observing change in the phenomenon (Spradley, 2016). However, this study needs individual perceptions of Chinese SMEs' partnership building, and such information can be gathered by interview without long observation. Meanwhile, related research based on observation, such as fieldnotes and transcript poetry, were rejected accordingly (Canfield, 2011; Burdick, 2011). Grounded theory is applied for innovative research when scholars have no previous findings about a particular topic (Bogdan & Taylor, 1990). Case study research is suitable to be employed in interpreting existing relations, strategy, and the nature of certain social phenomenon, but is not appropriate in developing new approaches (Klonoski, 2013). Based on the same concern, organizational storytelling research was also rejected (Connell, 2008). In addition, document analysis research is similar with case study research, but document analysis was rejected as it has several disadvantages in efficiency, availability, cost effectiveness, and stability (Bowen, 2009). Ethnography is a qualitative research method able to picture the culture of a certain group. However, Ethnography has always been made dependant on participant observation, which is time-consuming while it has a judgemental and selective bias led by the ethnographer (Hammersley, 2006). Thus, the identification of research philosophy as well as research method

require specific discussion.

### 3.3 Identification of research philosophy and methods

As mentioned before, the researcher employs *Pragmatism* as the research philosophy for this study by considering the attributes of this research. According to Creswell's definition (2013), Pragmatism emphasizes exploring all kind of factors available that are related, or have potential influence in interpreting the research problem, which is a significant methodology for deducing practical 'actions, situations, and consequence' (p.10) remaining in a social phenomenon. Such characteristics leads to a significant advantage of the Pragmatist view that is distinctive from the rest of research philosophies – for which pragmatic researchers do not have an antecedent personal stance for research objectives (Wilson, 2014). For example, as the representative methodology in the field of objective approaches, positivism is able to deduce research outcomes depending on observation while the researcher has very few interactions with participants. This approach is highly reliable because of its structured procedure, but also has the possibility of missing crucial insights (Wilson, 2014). On the other hand, the interpretivism of subjective approaches emphasizes the interactions between the researcher with their research topic. This kind of approach allows researchers to deeply interact with participants, on purpose to understanding the participants' stance and perception on certain issues (Wilson, 2014).

However, pragmatic philosophy encourages the researcher to address certain conclusions through the combination of either observation and interaction approaches as long as it is beneficial for research progress (Creswell, 2013). The researcher would have a high degree of freedom in selecting research approaches, methods, and instruments to uncover the truth and real current practice about the particular research topic without potential bias. Specifically to this study, the researcher's individual experiences would be helpful for research literature structure and hypothesis development. Such personal understandings support interactions with participants. In the meanwhile, the research protocol was designed based on the pragmatic view leads the researcher to conduct detailed observations about participants' perceptions, opinions, and ideas related to SCCR development and risk management. The combination of interactions and observations would effectively help the researcher in uncovering the nature of SCCR creation among Chinese SMEs. Thus, Pragmatism is the most appropriate research philosophy for this study. Afterwards, the researcher selected the Mixed-method approach as the research method that applies quantitative and qualitative methods together, by following the identification of the research philosophy. Mixed-method research was developed in the 1980s, and is a relatively new research method compared with qualitative or quantitative research. It has been mainly applied in the fields of behavioral, educational, social and business studies since the 1990s to present (Onwuegbuzie & Leech, 2005; Tashakkori & Teddlie, 1998). Early studies define mixed-method

research as the mixing method, including at least one qualitative method and one quantitative method for data collection, which emphasizes extended research breadth and scope through combined methods within the investigation (Mark & Shotland, 1987; Greene et al., 1989). Tashakkori and Teddlie (1998) refine mixed-method research as a methodological orientation with its own philosophy, worldview, approaches, and techniques. Johnson and Onwuegbuzie (2004) in their article conclude that mixed-method research is the third paradigmatic methodology, following qualitative and quantitative research. They emphasize the objective of using it is to enhance the advantages while reducing the weaknesses by combining research methods, techniques, and approaches from both qualitative and quantitative methodologies. Also, it abandoned traditional conflicts in philosophical debates, for instance, constructivism and positivism, and replace them with a pragmatically oriented philosophy (Tashakkori & Teddlie, 1998). In other words, mixed-methods research has actually 'taken' research instruments from both qualitative and quantitative research, and applied them in one single study. The purpose of doing this is to uncover and examine particular standpoints through multiple methods, which is beneficial in interpreting certain phenomena in society (Tashakkori & Creswell, 2007; Greene, 2007). Within more recent research, Creswell (2013, p.4) argues that mixed-methods research has the advantage in combining 'philosophical assumptions and theoretical framework' that provide higher level and deeper exploration in research objectives. It would be more advanced than



quantitative research by examining objective theories in relationship between variables or qualitative research to deduce a problem based on themes of participant answers in social studies. In other words, the benefits of using mixed-method research is to obtain research outcomes based on interaction between quantitative and qualitative research. According Creswell (2014), the core value of adopting mixed-method research arises from its connected strength in either applying statistical findings (close-ended data from quantitative research) and individual experiences (open-ended data from qualitative research) (Creswell, 2014). Thus, based on the discussions above, mixed-method research is therefore a methodology constructed on depending on mutual characteristics from quantitative and qualitative research. On the other hand, despite many previous scholars defining multiple advantages for researchers by using mixed-method research, it does not mean it is more advanced than quantitative or qualitative research. In fact, mixed-method research indeed has its own specialty in interpreting particular research problems, but does not completely fit every kind of research.

Consideration of adopting a mixed-method methodology in this research is based on two main reasons: first, this study is consistent with the field of MMR's specialty. As this research belongs to supply chain management, it is research in a business field that involves investigation of both interpersonal and inter-organizational interactions that relate to both behavioral and managerial studies. Also, considering the social factors and culture issues involved, both statistical findings and individual

experiences are required for comprehensive and complete investigation about relationship building and its influences on supply chain risk management (Onwuegbuzie & Leech, 2005; Tashakkori and Teddlie, 1998; Creswell, 2014). Second, using MMR helps the researcher to avoid bias and misunderstanding during the process of research with its attributes. Several benefits would be gained by accessing comprehensive understanding of these research objectives: the practice about Chinese SMEs' SCCR building involves a large range of companies from multiple industries, which is a huge topic in social studies. That leads to using a single source of data possibly being insufficient for hypothesis testing and interpretation (Creswell & Clark, 2007). In the meanwhile, both quantitative and qualitative research have their limitations in line with the research. For example, qualitative research is able to form an in-depth investigation based on practical personal experience and perception but the research validity would be limited by the number of interviewees. Also, quantitative research focuses on statistical investigation in reflecting a general individual's opinion of a certain range of a population. But, it would be inadequate without personal critical comments on certain culture-related issues (for instance, the practice of personal favor exchange in building interpersonal relationships). Thus, doing MMR with the research is therefore the optimal option for the researcher to carry out a more complete investigation and an effective conclusion through combining the findings from both quantitative and qualitative research.

### 3.4 General research approaches

Although MMR is defined as the 'combination of quantitative and qualitative research' above, there are also specific segmentations of MMR for specific research criteria. Typically, MMR is categorized into four types of approach in classifying different ways of 'Combination.' According to the latest finding from Creswell (2013), MMR is divided into four areas (table 3.2).

By following the description in table 3.2, the researcher employs ***Exploratory sequential mixed methods*** by considering research objectives and attributes. Both convergent and sequential MMR are part of Triangulation research methodologies (Creswell & Clark, 2007), but have differences in data collection. Convergent MMR, which adopts a convergence model, is to complete qualitative and quantitative data collection concurrently but is used in interpreting the same research problem separately through comparing two different findings from different samples. While sequential MMR, which adopts the multilevel model, collects qualitative and quantitative data hierarchically, which starts with one type of data collection, and its results are used in modifying, revising, or optimizing the next, different type of data collection. However, findings from each type of data collection are used consistently in explaining research problems. So, both convergent and sequential MMR are similar in objective, which to develop more complete understanding about the same research problem through combining qualitative and quantitative research approaches. But their rationale is different: convergent MMR is single-phase research,

and sequential MMR is two-phase research (Creswell & Clark, 2007). There are no certain judgments about which type of MMR is more advanced. However, the researcher selects exploratory MMR of sequential methodology instead of others because of its attributes, and its suitability for this research.

**Table 3.2 Highlights of Mixed-Method Research**

<ul style="list-style-type: none"><li>● <i>Convergent parallel mixed methods</i></li></ul> <p>By using this type of MMR, the researcher should collect both quantitative and qualitative data at the same time and apply them together in explaining the research problem addressed within the research.</p> <ul style="list-style-type: none"><li>● <i>Explanatory sequential mixed methods</i></li></ul> <p>By following this approach, the researcher will complete the quantitative research first, followed by qualitative research. The researcher would uncover the general trends about the particular research problem, then explain the particular issue with qualitative data.</p> <ul style="list-style-type: none"><li>● <i>Exploratory sequential mixed methods</i></li></ul> <p>This type of MMR is designed based on Explanatory sequential mixed methods, which requires the researcher to complete the qualitative research first, followed by quantitative research. The entire research process begins with qualitative research in order to gather detailed information from participants. The qualitative results are used for research modification, including re-identification of variables and ideas, for the following quantitative research.</p> <ul style="list-style-type: none"><li>● <i>Transformative mixed methods</i></li></ul> <p>This is a complex research approach that mixes the three methods above. Data would be used convergently or sequentially in interpreting more detailed issues.</p>
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The convergent MMR allows researchers to collect qualitative and quantitative data

at the same time, which is a more efficient research method compared with sequential MMR (Creswell & Clark, 2007). It is quite effective in time- and effort-saving for an investigation.

On the other hand, convergent MMR values qualitative and quantitative data equally, that will potentially lead to several challenges for the analysis and discussion (Creswell & Clark, 2007). First, quantitative and qualitative research have unequal size of data sets. It is a natural distinction that leads to qualitative results having less diversity in samples. As assumed in this study, SCCR is built for supply chain risk management by Chinese SMEs. Which means the differences of their main supply chain risks, as well as relevant requirements in risk reduction, have significant impact in partner selection in order to access complementary resources. Thus, qualitative and quantitative data might address different results in major supply chain risk identification due to their unequal diversity of samples. Second, the inconsistent sample size also affects the exploration into the key factors in SCCR building, such as information sharing, Guanxi base, or long-term business value, etc. The key factors can be emphasized differently in different industries. Thus, it will be hard to address the conclusion when contradictions emerged from quantitative and qualitative results, and additional investigations might be required to explain such phenomena.

The application of sequential MMR helps in removing these challenges in convergent MMR. First of all, sequential MMR (Explanatory or Exploratory) is formed into the two-phase structure, which only needs to collect one kind of data in each phase

(quantitative or qualitative research). It is indeed a more time-consuming method than convergent MMR, but much easier to handle for one researcher. That leads to sequential MMR being thereby naturally more appropriate for this Ph.D. research. Moreover, functional difference leads to sequential MMR being more suitable than convergent MMR for this study. The research findings from sequential MMR are dependent on the combination of qualitative and quantitative results, while results of convergent MMR are made by comparison. According to Morgan (2013), the main difference between convergent and sequential MMR is

that the former compare[s] the result from different methods that investigate the same research question, while the latter uses the results from one method to contribute to the needs of another. (p.11)

Sequential MMR allows one result (from quantitative or qualitative research) applied as the supplementary resource to modify another result on purpose to adjust the general research track (Morgan, 2013). The combination of qualitative and quantitative results contributes to this study in detecting the approach for SCCR building that is workable to for the majority of Chinese SMEs. Organizations will have particular types of supply chain risk due to their industrial attributes, and the research into SCCR building can be specific to different industries with justification according to their attributes. The outcome of this study depends on the investigation on general social phenomena.

Within the segmentation of sequential MMR, the researcher adopts exploratory

sequential MMR rather than explanatory sequential MMR by comparing their main purpose in research design. In explanatory sequential MMR, quantitative research should be conducted first followed by qualitative research; the qualitative findings are used to interpret findings from the quantitative investigation. The qualitative findings are viewed as supporting information to explain particular issues emerging in the investigation in the general population (Compeau et al., 2003; Creswell & Clark, 2007). This kind of research method should apply when the researcher has certain understandings about certain research problems. Explanatory sequential MMR is not suitable for this study, for the rationale of SCCR building belongs to the research objectives. Moreover, the potential critical factors that are important for SCCR building could be missed in literature and quantitative research. Exploratory sequential MMR is the optimal option for this researcher, as it can replenish valued ideas to adjust the conceptual framework through the qualitative research (Compeau et al., 2003). Also, comparing with explanatory sequential MMR, exploratory sequential MMR is the better choice in a relationship study, and has advanced performance in researching real phenomena in society (Morgan, 1998).

### **3.5 Overview of mixed-method research procedure design**

The following sections provide the general introduction about the research procedure designed for the study. Firstly, the researcher launches a step named 'Initial stage' for theoretical background and conceptual framework building. Secondly, the researcher launches the investigation by following the outcome of the

initial stage. The investigation is structured according to the principle of exploratory sequential MMR, and the entire investigation procedure is separated into two phases: Phase 1 for qualitative research and Phase 2 for quantitative research. Thus, the research procedure has three steps: 1. Initial Stage; 2. Qualitative Research; and 3. Quantitative Research. This section provides the overview about these three stages in order to clarify the objectives as well as the connection between each stage (table 3.3).



**Table 3.3 The process of investigation: Initial Stage, Phase 1, and Phase 2**

<b>Initial stage</b>	<b>Schedule</b>	
1. <i>Theoretical structure and conceptual framework building</i>	Oct 2013-	
2. <i>Variables identification for qualitative research</i>	June 2014	
<b>Phase 1: Qualitative Research</b>		
3. <i>Identification of the purpose in qualitative research</i>	July 2014 - Sept 2014	
4. <i>Develop the principle, approach, and method of qualitative research</i>		
5. <i>Design the questionnaire according to the variables identified in the initial stage</i>		
6. <i>Conduct semi-structured interview with participants</i>		
7. <i>Data analysis</i>		
8. <i>Revised Conceptual Framework based on the results from interviews</i>		
<b>Phase 2: Quantitative Research</b>		
9. <i>Summarize research finding to date</i>		Dec 2014- June 2015
10. <i>Conceptual Framework improvement and quantitative research approach development (pilot study – Jan 2015)</i>		
11. <i>Questionnaire design and Main survey</i>		
12. <i>Data analysis</i>		

As table 3.3 presents, objectives in the Initial stage of the research involved theoretical structure and conceptual framework building, and the identification of variables for qualitative research. This stage emphasizes initial engagement with

related theories, research fields, and literature. Objectives of this stage are to effectively identify core research fields, theories, and typical assumptions in previous research. The construction of the conceptual framework, associated with basic assumptions, research objectives, and hypotheses, is the main outcome for this period of research. The researcher attains the primary understanding about the research objectives and develops related assumptions according to previous scholars while generating his own perceptions about SCCR construction in China. On the other hand, the researcher also generates the core variables in preparation for further qualitative research. Studies of the Initial Stage provide essential preparation for Phase 1 investigation, and the whole research process shifts into practical investigation from desk research at this stage. The researcher clarifies the main purpose of the qualitative research, and develops related principles and approaches to normalizing the research method based on outcomes from the initial stage. The entire qualitative research is formed into Semi-structured Interview, and five participants are invited to join the investigation. Participants participating in the interview are executives in Chinese SMEs. Based on the results of qualitative data analysis, the researcher revises the Conceptual Framework and develops several new thoughts for the research. All findings from the qualitative research are used to support the quantitative research approach development. The quantitative research is both the final stage of MMR and also the main survey of this study. A pilot study is made to verify the qualitative results in line with the quantitative questionnaire

design. Thus, the quantitative research questionnaire is designed based on the latest version of the conceptual framework, which is justified according to findings from both the qualitative research and pilot study. Moreover, findings from this stage are viewed as the main research outcome for the whole study.

### 3.6 Detailed interpretation of the research procedure

This section follows the description in section 3.5, and provides the interpretation about the process of investigation in phases 1 and 2. Within this section, there is a detailed description and discussion about how the researcher forms both the qualitative and quantitative research. Discussions and evaluations for the reason for the chosen research approach and method are also provided.

#### 3.6.1 Phase 1: Qualitative Research

##### *3.6.1.1 Statement of research purpose*

As mentioned before, the qualitative research remains in the middle of the entire research procedure, which follows the literature research and is followed by the quantitative research. In the meanwhile, it is also the starting point of the exploratory sequential MMR, which aims to gather research findings to support the quantitative research. Therefore, it is a crucial stage that connects the ongoing and following investigation phases, and has significant influence in directing the overall research track. On the other hand, the qualitative research plays an important role in a more specific dimension for the research. The researcher views the qualitative

research as the crucial method for gathering empirical findings to support assumptions from the literature research. It is the opportunity for the researcher to explore the real distinction from previous academic contributions and current practices in SMEs. The research is beneficial for uncovering the current practice of Chinese SMEs in both interpersonal and inter-organizational levels in line with SCCR building. The in-depth and critical qualitative results collected in the investigation significantly benefit this study and further research.

#### *3.6.1.2 Evaluation of semi-structured interview of the study*

By following the discussion in section 3.2, the semi-structured interview is adopted as the qualitative research method in this study. The semi-structured interview was designed according to the particular structure, and allowed participants to answer those questions based on their experience and perception unconventionally (Drever, 1995). The questionnaire of semi-structured interview is formed from normative questions and open-ended answers. The design of the semi-structured interview questions should be based on certain themes, with each question containing certain perceptions for participants to evaluate. Meanwhile, themes of questions should be identified according to the research objectives. So, despite the participants in the semi-structured interview being 'allowed to perform freely,' the overall research process cannot be sidetracked as certain themes remained behind the interview. The advantage of the semi-structured interview is it able to uncover participants' attitudes and beliefs on the particular phenomenon while exploring their perceptions

about particular issues (Raworth et al., 2012). Also, the semi-structured interview is able to capture unanticipated ideas that are excluded in the theoretical structure. Therefore, the semi-structured interview was adopted as the qualitative research method because of its significant advantages for this study compared with structured or unstructured interviews. Semi-structured interviews have been widely applied in business management studies (Mogaji et al., 2017). Klandermans and Staggenborg (2002) identify four types of semi-structured interview:

- Oral history interviewing
- Life histories interviewing
- Key informant interviewing
- Focus group interviewing

***Figure 3.1 The classification of Semi-structured interview***

As figure 3.1 presents, these four types of the semi-structured interviews are mainly categorized by participants who are invited to respond to the questions. Participants in the oral history style are those people who have experienced certain events. As an example from this study, the participants tend to be those partners selected by the focal SMEs in SCCR building. On the contrary, participants in life histories are those people who have been through certain events without participating, or they are part of the event but not the main practitioners. For this study, this kind of potential respondent could be employees who participate in the procedure of partnership

construction but are not the decision-makers. The key informant style targets people who are the main practitioners in certain events. Finally, the focus group semi-structured interview is formed in the style of the group interview with semi-structured questions.

The researcher adopts ***Key informant interviewing***. It is the most suitable style among the four options for this study because target partners or employees might not have critical opinions as valuable as practitioners'. Qualitative results collected from practitioners are practical and will have effective influence on the research justification. On the other hand, the researcher rejects focus group interviewing because its format might not be suitable for this study. Participants might have hesitated in answering sensitive questions during the interview when others attended, such as the factors 'specific investment' and 'favor exchange' involved in the conceptual framework. The one-to-one interview could also avoid arguments when participants have conflicted perceptions on the particular issue, which could effectively improve efficiency.

#### ***3.6.1.3 Sampling strategy of the qualitative study***

Sample selection for the qualitative research remained as the priority issue, for it determines the validity and depth of research findings (Polgar & Thomas, 2013). Categories of sampling strategy are even more complex in qualitative research over quantitative research, because it will have direct influence on insight and perception generated through the investigation (Grove et al., 2014 ). According to Grove et al.

(2014), typical sampling methods in qualitative research include multiple kinds, such as: purposive sampling, snowball sampling, theoretical sampling, and convenience sampling. Considering the key informant style identified is the interview approach, the researcher adopts **purposive sampling** in line with the interview design. Macnee and McCabe (2008) state that purposive sampling is also known as judgmental sampling or selective sampling; the researcher can invite participants with particular purpose or conscious reason (Grove et al., 2014). Research samples ought to be comprehensively and diversely selected from the general population in line with generating complete understandings (Macnee & McCabe, 2008; Polgar & Thomas, 2013). However, the background of the interview participants should be consistent with the research problems. In order to correctly identify the target participants for this research, the researcher developed several criteria for sampling design, according to Ritchie et al.'s (2013) theory. They clarify four crucial characteristics of participants selection (figure 3.2).

1. Build up a fluent and logic framework for the interview that is themed by factor or participants are proved effective by related paper and academic findings.
2. Respondents who are qualified to cover the majority variables in the framework, and helpful in achieving research aims.
3. Respondents are able to cover the variables that are identified according to the hypotheses.
4. Respondents who might have the knowledge to identify sub-field variables (e.g. Unanticipated perception).

***Figure 3.2 Participate selection approach of Semi-structured interview***

Dependent on the approach suggested in figure 3.2, the researcher developed the following criteria for selecting participants:

- ***Qualification for participants***

Participants should come from SMEs in China. SMEs, according to the Chinese official definition, are those small and medium enterprises that have less than 500 employees. Participants should be the founder, top leader, or CEO who is completely in charge of the management of the company (a decision-maker).

- ***Qualifications for firms***

The target SMEs should have a complete supply chain that has a stable relationship with both upstream and downstream partners, and stable performance in profits and



operations. Also, SMEs should have stable connections and interactions with large enterprises, stated-owned enterprises, and governmental departments.

- ***Experience***

Participants should have experiences in company risk reduction through partnership once before. It does not matter if their objectives were achieved or not, but they have to have participated in the situation. Hence, five participants were identified based on the assumptions generated in this section. These participants were all the executive (founder/ superior leader/ decision-maker) of their company.

- ***Targeted location***

All five participants were selected from an Enterprise Incubator (EI) located in Shenzhen, China. They focused on different industrial fields, and all participants had experience in organizational management for more than 20 years. Three of the participants were running their second or third company. The interviews were completed in Sept 2014.

The EI is an industrial zone containing infrastructural equipment, such as office buildings, factories, and R&D hubs that were specifically offered to SMEs with very low rents. It is a non-profit project funded by the Chinese government in order to support domestic SMEs' development. Normally, the EI is located in the suburb of the city, and contains hundreds of SMEs from multiple industries. There are entry requirements for SMEs. Entry is approved by the government with formal application,

while the assessment depends on the SMEs' firm size, profits, and number of employees.

#### *3.6.1.4 Preparation, protocol design and implementation for data collection*

Works are divided into three stages before interviews: preparation, protocol design, and implementation. Therefore, this section describes these three stages in detail.

##### *3.6.1.4.1 Preparation*

The researcher clarifies the semi-structured interview for the research technique, with related interview style and sampling strategy before the preparation stage. Therefore, the main job to be completed within this stage is the design of the questionnaire. The questionnaire in the semi-structured interview is used as the schedule with prepared questions in leading conversations (Klandermans & Staggenborg, 2002). Although participants in the semi-structured interview are given much flexibility in answering particular questions, there is still need of a certain structure to avoid the whole conversation being sidetracked. Of course, all questions for the interview are designed accordingly towards the research objectives and conceptual framework. There are two advantages of doing this: first, the researcher can double-check the effectiveness of factors and ideas identified through the literature review. It is crucial to fix questions in line with the research expectations, and this ensures the results' validity. Second, the researcher reinforces particular knowledge about this field. It was important to let participants be aware that the

researcher has certain understanding about the topic, which could effectively raise participants' willingness to answer questions, and motivate them to provide in-depth perceptions (Klandermans & Staggenborg, 2002; Brace, 2008).

#### *3.6.1.4.2 Protocol design*

The researcher also developed the specific protocol for the interview in order to ensure the effectiveness and efficiency of conversation based on the semi-structured interview principle mentioned by Raworth et al. (2012):

- ***Initial engagement***

After the requests to interview were agreed by the participants, the researcher sent basic information about the investigation, to make participants understand the purpose of the interview. The basic information contained the researcher's background information, research aim and objectives, and research purpose. Essential information, such as potential topics in the conversation were also provided. In the meanwhile, the researcher sent a copy of the questionnaire to participants.

- ***Attendance and confidentiality***

Interviews are formed as one-to-one in-person conversation, which allowed two person attendance only,. The superficial purpose of this setting is to build an appropriate environment for the interview. Conversation with the participant could effectively avoid disturbance from the participation of another person. A more inner purpose is to protect the data and content of the conversation from inappropriate

revealing.

- ***Timing***

The researcher designed the specific schedule for the interview, while the schedule required mutual agreement from the participant and the researcher. It is crucial to prepare enough time for the interview to avoid rushed conversation. Suitable duration should be one hour for the conversation.

- ***Location***

All of the interviews took place in participants' offices.

- ***Equipment and recording***

Except for the copy of questionnaires, the researcher also prepared a note book and sound recorder for data collection.

#### ***3.6.1.4.3 Implementation***

As the outcome of the research protocol design, the researcher had successfully implemented all the approaches and rules designed for the interview. The selection of location, material, and equipment all worked perfectly. However, there were two unexpected issues: first, the time spent exceeded the planned schedule. Each interview lasted nearly one and a half hours. Fortunately, all participants felt fine about the time, and conversations were not affected. Second, note-taking became a crucial issue in recording new variables. As mentioned before, the semi-structured

interview allows participants to comment flexibly on the content, and several new variables might emerge through interactions in the interview (Mitchell & Jolley, 2012). When several new factors or variables emerged through the investigation with the first interview, the researcher marked them as additional factors and applied these in following interviews for discussion with other participants.

#### *3.6.1.5 Data analysis*

The researcher adopted the thematic approach for data analysis. Thematic analysis allows the researcher to capture the key viewpoints from the contents of conversations (Braun & Clarke, 2006), and summarizes all the key viewpoints as qualitative results for examination of conceptual framework. In the meanwhile, the application of thematic analysis is also consistent with the pragmatic philosophy in designing the main methodology (Aronson, 1995). The process of coding the qualitative data from the interview enables the researcher to enhance the advantages of pragmatic philosophy, which is to form critically realistic factors from the industry in order to explore the truth of the field.

#### *3.6.1.6 Data measurement software*

Qualitative data measurement depends on the software NVivo, which helps the researcher to effectively extract the main themes from the transcript of the interview.

### *3.6.1.7 Ethics*

The researcher has the responsibility for protecting records and information gathered from interviews. In order to ensure the safety of data, the researcher followed these three aspects:

- ***Application of data***

All data is for academic use only, and specifically used in this study. The content of interviews can only be accessed by the researcher, the supervision team, and the participant. The researcher did not allow any information to be shared with alternative researchers, institutions, or other research hubs.

- ***Protection of participants information***

The researcher should strictly protect each participant's identification among all participants.

- ***Confirmation of contents***

Each participant receives a summary about the main content of their interview. The researcher has to gather confirmation from each participant for conversation content.

### *3.6.1.8 Language and translation*

Considering this study focuses on Chinese-related issues, since all participants were Chinese, who might not have qualified English ability. The researcher acted as the

translator of the questionnaire, related materials, and results.

### 3.6.2 Phase 2: Quantitative Research (Main Survey)

#### *3.6.2.1 Statement of Research Purpose of this stage*

Phase 2 of MMR is quantitative research, which is also treated as the main survey for this study in final stage of the investigation. The researcher revised and justified the research hypotheses and conceptual framework based on results from Phase 1. The quantitative research survey was used as the mechanism to bridge the empirical findings to the larger sample and examined all assumptions of the research through mathematical and statistical methods (Neuman, 2002). So the researcher examined all findings from both literature and qualitative research with a large number of participants, on purpose to test the reliability of the hypotheses, while also exploring the attitudes, perceptions, and opinions about the assumptions stated within the study (Creswell, 2013).

#### *3.6.2.2 Design of the survey*

The survey questionnaire was designed based on the new conceptual framework, which was justified according to the qualitative findings. Questionnaires were translated into the Chinese language before release to participants. Participants were also selected from executives of Chinese SMEs, most importantly, all of the five participants in the qualitative research were not invited to the main survey. Questionnaires were transformed into an electronic version and sent to participants

via internet instruments. The researcher received 216 responses to 250 questionnaires sent in total. Participants came from multiple industries, which include pharmaceuticals, services, inventory, information systems, education, printing, real estate, etc. Their length of service in the field or their company ranged from 2 to 30 years. The software adopted for data analysis were SPSS and AMOS. The researcher conducted the principle component analysis through SPSS, and the results were applied in AMOS for confirmatory analysis as the examination of the conceptual framework.

#### *3.6.2.3 Sampling method*

The ideal participants in this quantitative research are also executives of Chinese SMEs consistent with the qualitative research. But the quantitative research has a much larger sample size than the qualitative research to examine the research findings in the general population through investigating their attitudes and perceptions about the identified variables. The random sampling strategy was adopted in the main survey participants' selection. Many scholars would conduct a cluster sampling before the random sampling, to divide particular populations into several subgroups, and select participants randomly from each subgroup (Henderson & Sundaresan, 1982; Marshall, 1996). The advantage of doing this was to ensure the results' effectiveness by avoiding bias caused by differentiation for group perceptions due to unequal sample size (Henderson & Sundaresan, 1982). The researcher abandoned the cluster sampling, because participants invited to the survey were



executives of SMEs officially listed on the Enterprise Incubator information system. This means all participants are naturally segmented into one group. Also, the investigations have predetermined criteria for participant selection (see section 4.6.1.3), the non-qualified participation issue can be therefore effectively avoided. In addition, participants were also required to mention their job position, service years, and company name, both to evaluate their qualifications and reduce non-effective response (see Appendix 2).

#### *3.6.2.4 Instrumentation*

There were two major instruments of the data collection, the questionnaire and the survey system from a third party service. The questionnaire was designed according to variables and constructs highlighted in the conceptual framework. It was divided into five sections target different research objectives (see Appendix 2). It was formed in a structured style, with five optional answers provided for each question, which ranged from strongly disagree to agree strongly.

The survey system applied for quantitative research was provided by a third-party institution that operates the survey-supporting service. Their service allows surveys conducted through smart devices, which transforms the questionnaire into an e-version, and is readable in various applications (Wechat, a chatting app used as a main communication instrument by Chinese people) on cellphones. Data collection (questionnaire filling) can be therefore completed in anywhere and anytime during the investigation period, which largely improved the efficiency of the quantitative

research. Detailed information about each questionnaire was also recorded, such as IP address, completed time and duration, which helped in reducing repeated participation. For the survey results, this survey system allows data to be extracted through Microsoft Excel, with all responses to each questionnaire presented in detail. As all of information of the main survey is traceable through the survey system, the impartiality and validity of the entire investigation are therefore guaranteed.

#### *3.6.2.5 Pilot study*

Previous scholars have widely provided arguments about the nature of the pilot study. Some of them even have opposed views about its definition. According to Maxwell (2012), the pilot study is defined as Prior Exploratory research that aims at improving the reliability and validity of research findings through uncovering more features and viewpoints of the research problems and topic. On the other hand, Blessing and Chakrabarti (2009) state that a pilot study has a major difference from exploratory research, aiming at identifying problems or weakness of the research process unknown to the researcher. These problems would provide significant negative effects towards the validity of the results. Despite the opposition between these two viewpoints, there is a core feature of a pilot study has been agreed by both of them: that a pilot study was used to test and examine the research findings and progress through investigation of empirical approaches.

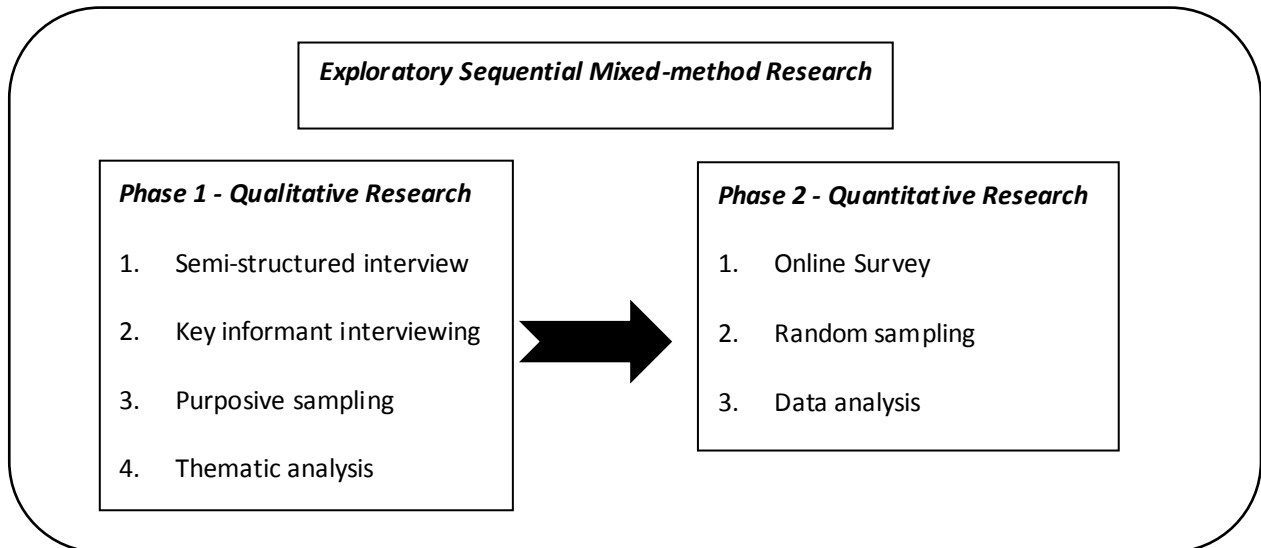
The examinations might cover multiple aspects. Blessing and Chakrabarti (2009) state the justification of both theoretical findings and research methodology would be

benefitted by the pilot study, including data processing, analysis, and conclusion development. Moreover, research instruments and techniques could also be revised. Yin's viewpoints (2015) confirm this assumption that a pilot study enables justifying the research in multiple aspects, such as research design, procedure, instruments, and technique of data collection and analysis. Also, the definition of research questions, perception, and assumptions might also be justified by pilot study findings. On the other hand, Hall's perception (2008) about the pilot study is mostly consistent with the assumptions above. His viewpoints are mainly developed based on pilot studies' contribution to result validity. For a pilot study helps the researcher to identify unanticipated perceptions, problems, or academic perceptions based on feedback from participants. As ideas and opinions from participants might have conflict towards researchers' up-to-date findings, and these perceptions are able to help the researcher in evaluating their work. So based on these assumptions, it is clear that pilot study is effective to examine research findings. Realistic findings from the pilot study might generate conflicts with literature research findings, or provide confirmation and assessments. This function tends to be the core value of conducting the pilot study. The researcher might need to make several modifications for the research, which contains the justification of research problems, ideas, and opinions, and the selection of research methods, approaches, and techniques. The ideas, perceptions, and assumptions tend to be the relative inner factors of the research in comparison with research methods and techniques. It drives the

mainstream of the research process, for which the research methodology is designed accordingly. Therefore, exploring unanticipated ideas and opinions should be the core purpose when conducting a pilot study, and the valued insights emerging from the pilot study could be used in developing further research, including justification of the conceptual framework and designing the research methods. Thus, a pilot study was conducted before the main survey to verify the qualitative results in order to support further investigation.

### **3.7 Summary**

To sum up, this chapter interprets the design of the research methodology for this study. The interpretations contain the selection of research philosophy, research methods, and general research approach development. Detailed discussions about the chosen MMR types, techniques, and advantages for this study are given. Most importantly, this chapter also discusses the research procedure of MMR, including the actual process completed in both Phase 1 and Phase 2 associated with the chosen protocol, techniques, and methods.



**Figure 3.3 The flowchart of important factor in investigation**

Figure 3.3 presents the flowchart of the key elements mentioned in this chapter also shows the key elements of each investigation phase.

Meanwhile, comparisons of existing approaches are also highlighted throughout the chapter, and the purpose and advantages of the chosen approach, methods, and techniques were provided. Chapter 4 provides discussions on data analysis and interpretation of the research.

## Chapter 4 – Data Analysis and Interpretation

### 4.1 Introduction

This chapter provides the analytical results based on the qualitative and quantitative findings, and related interpretation about data analysis is given as the outcome of this chapter. As mentioned in Chapter 3 Research Methodology, the entire investigation process is divided into phases 1 and 2. Phase 1 is the qualitative research that was formed as the semi-structured interview with five SME executives. Phase 2 was the quantitative research employing the survey of more than 200 SMEs to uncover the general perceptions about this study from a large-scale investigation. So this, therefore, provides detailed analysis on the two kinds of data collected from both the qualitative and quantitative research. The qualitative data is analyzed through thematic methods to extract the main perceptions provided by participants. The quantitative data, however, is analyzed by statistical methods through the combination of a measurement model and a structural model suggested by the Two-stage Approach (Anderson and Gerbing, 1988). Meanwhile, the Descriptive Statistic Analysis and Principal Component Analysis (PCA) are also involved as crucial analysis methods in the quantitative research. Therefore, this chapter is structured as follows: the data analysis and interpretation of the qualitative data is firstly given at the start of this chapter, followed by the quantitative data analysis. The quantitative analysis is separated into statistical analysis, principal component analysis, the discussion of the Two-Stage Approach, and the results of the measurement and

structural models are given at the end of the chapter.

## 4.2 Qualitative data analysis

There is a requirement for an introduction to the participants in qualitative research before the analysis of qualitative data. The following section, therefore, provides related background information for the five participants: their company information, operation industry, and fields. Meanwhile, the issue about how many participants for a interview is enough has been widely discussed. Prior researchers adopt varying sizes of qualitative respondents from small (less than 12), medium (13– 30), or large (30–100+) (Baker et al., 2012). The application of sample size should depend on the requirements of the investigation (Baker et al., 2012). This research selected five participants from multiple industries randomly, while the data collected are highly similar, and no significant differences are shown. So five participants are sufficient to provide valued insights for the investigation.

### 4.2.1 Background information about the qualitative research

As mentioned in the Research Methodology chapter, the qualitative research was completed in 2014. The researcher conducted five interviews with five participants separately in China. Each participant was both the chief decision-maker and the founder of their firm. The semi-structured interview questionnaire is attached as Appendix 1.

#### *4.2.1.1 Background information of participants*

This section briefly introduces each SME, including the name, industry, position in the market and supply chain. These five participants are named as A, B, C, D, and E in the following descriptions:

##### ***Participant A***

##### ***Name of SME: “JJ Technology Development Company, Ltd”***

*(“JJ” was the abbreviation of their official name in Chinese: “Jujia Jingpin”. The abbreviation will be applied to each participant below for reading convenience).*

JJ produces an LED Video Display Screen System, specifically for buildings' curtain wall decoration. Their service focuses on technology development on energy-saving LED products. Participant A removes all “unnecessary” departments of the company to outsourcing partners, including manufacturing, raw material transportation, and distribution for maximum profit. Participant A mentions that due to the low profit margin of LED products, companies should maximize the return through large volume production and sales. However, JJ is operated in another way, for high-tech LED products have both lower-level market competition within the industry and better government support through an energy-saving policy.



### ***Participant B***

#### ***Name of SME: "DX (De Xia)Technology Development Company, Ltd"***

The main operation of DX is medicine trading but is named as "Technology Development Company, Ltd". DX is operated as the middleman for the latest medicine imports to mainland China from foreign companies. The participant claims they would be in charge of the whole promotional process for the product after they gain the sole dealership from their foreign suppliers. The promotional process includes license application, advertising design, product packaging design, and distribution towards downstream retailers. On the other hand, the main job of DX is the license application and distribution part, while the advertising and packaging design, and the logistic service depend on outsourcing partners.

### ***Participant C***

#### ***Name of SME: "BT (Bei Teng)Technology Development Company, Ltd"***

BT produces air drier machines for factory use. Similar to participant A, BT has removed their manufacturing part to outsourcing partners. However, they are in charge of product design, transportation, and installation. Participant C claims that their product could be vulnerable to the transport and installation work handled by the non-professional party. BT also provides the repairing and maintaining service for their customers.

### ***Participant D***

#### ***Name of SME: “SY (Sai Yi)Technology Development Company, Ltd”***

SY is a circuit board producer specific to low-end electronic products, such as an electronic clinical thermometer, automobile data recorder, and household devices (juice extractor, coffee machine, air purifier, etc.). SY is a program solutions provider to other smart-device manufacturing companies. Their main operation emphasizes technical development, and product manufacturing has been outsourced to third-party services.

### ***Participant E***

#### ***Name of SME: “BaT (Bang Tai) Technology Development Company, Ltd”***

BaT services emphasizes battery development for smart devices, which involves MP3 players, smart phones, Bluetooth headphone, GPS, etc. BaT’s organizational structure is more diversified than other participants’, for they have the full production line, including product development, manufacturing (self-developed assembly line production), and distribution service. The participant claims that their production capacity enables them to afford normal-sized orders around production of 2 million batteries per month. However, they might require manufacturing support when there is higher requirement for product volume.

#### *4.2.1.2 Summary of participants backgrounds*

- ***Participants Attributes***

Within the initial background investigations, these five participants are identified as the most appropriate targets for the interview. For they are the chief decision-maker of the company, and also experienced people in supply chain risk management. All participants were aged 40–47 with at least 15 service years in the company. Participant A was the oldest one at 47 years' old with more than 20 years' working experience of his company and 25 years in the industry. Participant B was the youngest one, 40 years' old with 15 years' experience in medicine-trading field.

- ***SME Attributes***

Each SME is the main driving force of their supply chain development and operations. In other words, the whole value of the supply chain depends on the participants' SMEs' performance. For instance, the technology provided by participants A, C, D and E's companies determine the products' value for end-customers, their performances have also direct influences on partners' profits. Participant B is the key role in an entire product import line; his performance directly influences the success of product launches. Such special position results each in participant having opportunities to engage with all partners in the supply chain, which means they are also the riskiest member in the supply chain. On the other hand, they also have the most significant responsibility in preventing supply chain disruptions. Therefore,

qualitative research participants have valuable insights and experience in risk management that are very beneficial for this investigation.

### ● **Interview**

As expected, the researcher was invited to the office by each participant to do the interview. The duration of the interviews averagely lasted one and a half hours. Interviews were conducted strictly according to the research protocol designed previously. Meanwhile, participants provided a large amount of comments and insights regarding SCCR building based on their own experiences. The following sections highlight all the findings from the qualitative research.

#### **4.2.2 Research findings of the semi-structured interview**

This section interprets findings from the interviews into two separated parts: the first part highlights the inconsistent and new findings with previous assumptions from the literature research. The second part mentions the findings consistent with previous assumptions, as well as the influences on the following quantitative research. Transcripts from the interviews are applied in both parts in order to support the interpretations.

##### *4.2.2.1 Important viewpoints from participants and new findings inconsistent with previous theoretical findings*

###### *4.2.2.1.1 Evaluation of Supply Chain Risks*

Participants A, C, D, and E consistently placed financial risks as the major problem for

an SME. The financial risks, which were always attributed to a firm's cash flow disruptions, is a more destructive uncertainty than other types of risks in Chinese SMEs, because A, C, D, and E are production-oriented firms, and cash flow is the key in maintaining sustainable operation and production process. Otherwise, the supply chain or firms' operational collapse might occur. Participant B is quite special in this case because of the nature of his firm. Participant B's SME is a transaction-oriented firm in medicine import and trading rather than a producer of any products, and their condition of cash flow depends on the success of market launches through medicine license applications with a governmental department. Thus, participant B ranks political risks at the top. Normally, the shortage of cash flow is caused by the delay of receivable payments from downstream customers. Chinese SMEs apply the rule of "Deposit-Product-Receivable" (DPP) in business transactions, as participants mentioned:

*"customers are required to pay deposit before the order successfully placed. Normally, the deposit is 50 per cent of the full amount. The participant starts the production as soon as deposit received. The receivable payments are the rest of total amount that should be paid once customers receive products".*

The receivable payments are always delayed for two reasons: first, downstream customers unable to repay or defaulting the payments because of their financial circumstances. This is a low-probability situation unless unexpected problems happen in downstream customers. As participant A claims:

*"...we always started our cooperation by very small transactions...as small*

*as we could afford to lose. Then increased our transaction value gradually depends on our mutual satisfaction. It was a procedure to test each other's credits and firms capacity".*

Participant C says:

*"..I would try to gather information from alternative parties who known my customers well...This was the background investigation, and it was important for the cooperation between me and my customers. I could also know about customer capacity in risk avoidance through the investigation, and that would help me to make correct evaluation about their financial capacity".*

So participants are able to avoid intentional payment delay through long-term interaction and background information collection. Second, the mismatching of product quality and customers' expectation always happens when participants and customers have a misunderstanding about mutual requirements or have dysfunctional communications. An example introduced by Participant D is:

*"...one of my customers once refused to pay the receivables because they thought my products were not qualified for their expectation. It was an issue that leads to the quality of raw materials".*

On the other hand, unhealthy cash flow is also the source of many common risks or uncertainties in an SME. Typically, when participants are suffering shortage of cash flow, they are unable to repay the receivables for their upstream suppliers, which includes the provider of raw materials, transportation services and external manufacturing supports. There are three major consequences of such a

phenomenon: first, the delay of further business transactions. Participants would process several transactions together in the same period with several upstream suppliers and these transactions service several different downstream customers. And they would all be adversely influenced when delayed receivable payments happened in one transaction. Participant A claims:

*“...the issue of receivables payments should be reduced in-time. Otherwise, all of my following projects could be delayed if I cannot pay my suppliers”.*

Participant D provides similar viewpoints:

*“...it is horrible when receivable delayed from downstream. For I would never hold large amount of cash flow in the account. So I can't afford to pay suppliers when customers refused to pay me..and my suppliers will have doubts on my performance that will lead distrust”.*

Second, the “Bank Runs”. Participant C claims that:

*“if I was suffering by the serious cash flow breakage and my suppliers realized that, they would come together to press me to make sure they will get the money. It is a serious situation which will damage my reputation, and there would be difficulty to find qualified partners in future for me”.*

This phenomenon is identified as “Bank Runs” by participants A, C, and D; it is the term borrowed from financial studies to define this particular situation happening between participants with their suppliers. In the meanwhile, except for negative effects of reputation, there will be other related damages caused by “Bank Runs”.

Participant A introduces:

*“the ‘bank runs’ enable leads internal risks within my company...my employees would think about job-hopping when company remained into this bad situations. Especially those key technical staffs, there might be uncertainties in revealing key technology if they went to my competitors”.*

Third, extra operational costs might emerge due to the shortage of cash flow.

Participants A says:

*“...I have to spend more time in negotiations with either of my customers and suppliers, sometimes it matters as timing was a serious term in business transactions...if I am late in product delivery in my following transactions, there might be the extra penalty...”.*

In the meanwhile, participant C mentions a similar situation:

*“...so, sometimes I have to borrow money from financial institutions to paid my suppliers and salary to employees to avoid other troubles..., but there will be the extra cost in interest expenses of loan...”.*

Therefore, the extra spending in time and funding are the related effects with shortage of cash flow in SMEs. Besides, the interest expense for a loan can be serious.

As participant D claims:

*“...to be realistic, Chinese SMEs are hard to borrow money from large financial institutions, like large banks, they will think we are too small, and are risky applicants that always have difficulty in repayments...so we normally adopt loan from small financial institutions or investment company with much higher interests...”.*

Similar viewpoints are also claimed by participants A, C, and E, while participant A



mentioned another relevant serious circumstance:

*“..sometimes partners would provide loan with low interests for us, but we require to use company share as guaranty, then there will be probability of losing company..and it happened once before to my friends...”.*

Hence, the financial risks (cash flow) are reasonably identified as the key risks for Chinese SMEs. Participants A and D described the cash flow as “the blood” of an SME. And the shortage of cash flow could be both the results of existing firms’ risks, and the source that might cause other serious uncertainties.

#### *4.2.2.1.2 Current practice of SCCR construction adopted by participants*

In interviews, the researcher found two crucial features of SCCR building in Chinese SMEs:

- ***Executives own the outstanding authority to dominate company strategy, and acted as the only representative on behalf of the whole SME***

Chinese SMEs are directly controlled by one chief decision-maker, normally the executives or the founders of the firms. In other words, executives have the power to dominate any strategic movements depending on their idea without consultations with other shareholders or employees of the firm. This is indeed an informal way of firms’ operation, but a real situation existing in this field. Participant A claims:

*“..our company is too small to be identified as a company...I mean..I have fewer employees than a department of large enterprises...and I am either the founder of the company and only shareholder of our company...so I have*

*the power to work in that way...”.*

Participant E describes this phenomenon based on the nature of company:

*“..large companies are too huge to handle by their chief decision-maker, so there is formal working procedure to separate the authority to several department leaders. SMEs are working in the different way that we are highly centralized due to company size, and executives of SMEs, like myself, enable to the made decision on behalf of the company in every aspect...which includes interactions with customers”.*

Moreover, Participant D provides another perception:

*“the working efficiency matters to our development, we cannot afford to have many meetings like large companies. Sometimes me and partners would made a transaction by oral agreements depends on mutual trust, and addressed a formal contact later”.*

Therefore, this particular phenomenon emerged based on practical needs. While this phenomenon makes SMEs more dynamic, efficient, and flexible in proceeding with formal decisions, and means they spend less time in production than large enterprises, in the meanwhile, such a phenomenon provides heavier pressure for SME executives, as participants B, C, and D consistently described it as a *“great challenge for executives’ experience and ability.”*

- ***Interpersonal trust leads to interpersonal relationship building between executives. But the development of SCCR relies on both interpersonal relationship and qualified organizational capacities and performances***

Executives from Chinese SMEs would attempt informal interactions before formal SCCR building, such as conversations, informal meetings, or social activities. This is the attempt for interpersonal trust building. Participants mention interpersonal trust is made depending on mutually positive evaluations, which is a determined factor of interpersonal relationship building, as well as partnership building in the future. Considering the importance (authority) of SME executives, interpersonal trust is therefore an extremely crucial factor, and has been viewed as an antecedent key factor in SCCR building. On the contrary, participants would directly reject certain partners, as well as SCCR building in the future, when adverse evaluations remain.

All participants mention this phenomenon consistently according to their own experience during the interviews, as the evaluations on executives are important to personal relationship and SCCR building. Participant A provides a typical concept in explaining the nature of this phenomenon:

*“...the antecedent evaluation on executives was applied as the protective approach for ourselves in partnership constructions. For SMEs are strictly behaved according to their executive's personal will. It would be a problem for certain SMEs has an executive that I would negatively evaluate about their moral quality, credits, and reputation. A trustworthy partner is important to us, for it would be hard to afford the consequences occurred*

*due to conflicts, there will be potential extra time and funding cost in the lawsuit... So I would start a partnership by personal interaction with their executives first, and make the evaluation based on my own experience”.*

While participant C provides a similar viewpoint:

*“...the executive evaluation was the approach applied in replacing the dysfunctional law protection. For example, I would rather select a partner will repay the receivables in time, but not to get my receivables via lawsuits. We could still lose a lot even winning the lawsuit, for its expensive...this would be the major difference between the large company and us.”*

In other words, the antecedent interpersonal trust building and executive’s evaluation are a protective approach in avoiding further significant uncertainties. On the other hand, interpersonal trust is not enough to use as the determining factor in SCCR constructions, where organizational capacity is also important. Participant E claimed:

*“...this shall be easy to understand, for business value was still the most important factor within the cooperation. We are actually selecting a qualified partner from those executives we trust...”.*

Other participants’ viewpoints have proved its reliability, as the failure of SCCR construction might result from *“potential partners organizational capacity mismatched their production criteria,”* although positive evaluation on executives already exists.

#### *4.2.2.1.3 Key factors of SCCR building*

The researcher identified ten factors in total in line with SCCR construction from the literature research, separated into two different dimensions. There are five essential factors in interpersonal level relationship building: Consensual Cognition, Favor Exchange, Guanxi Base, Executive's Mutual Past Experience, and Regular Communication; and another five essential factors in organizational-level relationship building: Production Quality and Long-term Business Value, Business Synergy, Timely and Frequent Information Sharing. These factors are identified to sketch the contours of the typical pattern of SCCR building. In interviews, participants identify Consensual Cognition in the interpersonal level and Production Capacity in the inter-organizational level as the key factors for SCCR building.

- ***Mutual Consensual Cognition is identified as the most important factor in developing an interpersonal relationship***

Spoking of interpersonal relationship building, all participants consistently indicated mutual consensual cognition with partners as the most important factor in line with further interpersonal relationship development. Literally, Consensual Cognition is an ideological connection depending on consistent recognition about particular affairs. Participants believe there are shared individual values, beliefs and moral standards with partners when they have consistent recognition about certain events, issues or affairs. Detecting individual values and moral standards is important because personal behaviors are conducted depending on such factors. Participants are

therefore able to predict partner's behaviors and objectives in future based on consensual cognition. Participant B claims:

*"..that is why effective communication and background investigation is important to our potential partner selections, there could be the huge difference between the people want to produce great productions while earning money and those people emphasized on earning money".*

Since participants treat interpersonal trust seriously in line with SCCR construction, the term Consensual Cognition has therefore been employed as a crucial indicator in a partner's credibility evaluations. Also, a partner's behavior would become predictable by exploring Consensual Cognition. Participant C claims that:

*"It was a crucial instrument in estimating partner's determination in fulfilling their contract and obligation. For example, I would believe people who seriously valued their personal reputation and organizational image, or organizations that always had been reliable for their partners, will strictly fulfill the obligations and made the payment in-time".*

Hence, building interpersonal trust is adopted as a protective approach because legal protection is dysfunctional due to its high cost for Chinese SMEs. The identification of consensual cognition is the practice for trust building. In the meanwhile, building the interpersonal relationship, with partners who have consensual cognition, is the way to reduce potential risks to the maximum extent.

- ***Production Quality is treated as the most important issue in developing an inter-organizational relationship***

Similar to Consensual Cognition, Production Quality is the factor in inter-organizational level relationship building that is viewed most importantly, followed by the importance of organizational capacity in SCCR constructions. As mentioned before, despite the importance of interpersonal relationship in SCCR construction, organizational capacity is still another crucial factor which determines long-term SCCR development.

#### ***4.2.2.2 Findings consistent with previous theoretical findings and influences on further research phase***

##### ***4.2.2.2.1 Overview of current practice of supply chain partnership***

Based on the investigation of the qualitative research, the researcher found the minute division of labor in the production process has become a significant attribute and phenomenon in current practice in Chinese SMEs' supply chain partnerships. In other words, Chinese SMEs have been simplifying the business function and acting as functional units inside the supply chain to avoid negative influences from limited company size and capacity. For example, participants A, B, C, and D narrow their service down to product R&D or market launching, and have outsourced the logistic, manufacture, or distribution to alternative partners. Participant E is a particular case in developing a diversified service department, but they are producing semi-finished products while outsourcing service is also required when demands exceed their

production capacity. There are two advantages by means of minute division of labor: first, SMEs will benefit in cost reduction, including financial inventory and time spent, by removing manufacturing and logistical services to outsourced partners.

Participant A claims that:

*“...developing own manufacturing system was a costly job for SMEs like us, and it would take very long time in value return. It will also affect company's cash flow performance...”*

Second, the phenomenon of the division of labor is caused by issues of SMEs' limited company capacity and size. Separating the production process, through acting as functional units in the supply chain, is the way to maximum profits for SMEs and supply chain for the entire production. SMEs are also able to enhance their main competitive advantage under such a phenomenon. Hence, developing in-depth SCCR with supply chain partners to either motivate high-level supply chain performance and improve interdependence between partners has become part of the priority requirement for Chinese SMEs' long-term development. On the other hand, since a certain level of company interdependence has been established through SCCR constructions, the firm's risk management has, therefore, become a chain-level issue rather than firm-level. The establishment of SCCR has changed SMEs' supply chain into an interesting community, where partners share benefits and value with each other. Partners are shareholders for supply chain performance that also have the responsibility of effort providing for each other's risk reduction and avoidance. This finding demonstrates the basic assumptions of this research. The researcher assumes



the construction of SCCR is in line with the supply chain of the entire performance improvement and this has remained as one of the core requirements for SMEs. Risk control, avoidance, and reduction should be a chain-level issue that should depend on partners' integrated effort, rather than firms' isolated working.

#### *4.2.2.2 Confirmation of Supply Chain Risk classification*

Findings from the interview confirm all types of supply chain risks that were identified in previous literature findings: Political, Logistical, Financial, Production, and Internal Operational risks. While THE qualitative findings verify the assumptions before the investigation, that the main category of supply chain risks is divided into two aspects: the firm's internal risks and external risks at supply chain level. Only micro environmental risks that emerged through interactions with governmental departments would be relevant towards supply chain disruptions. The classification of supply chain risks would depend on responsibility and arise in accordance with actual situations. As participants reveal, external risks are those *"uncertainties or troubles that resulted from external factors while we were working correctly"*. However, participants should still provide essential solutions for external risks. Otherwise, they would be negatively affected. For instance, participant A claims their external risks would mainly be caused by *"production capacity of third party outsourcing services, and the quality of raw materials from upstream suppliers"*. Moreover, their downstream customers would decline receivable payments when the participant's service or production failed to reach their expected criteria. On the

other hand, participant D mentions a similar case. He has once suffered the trouble of receivable payments by the downstream partner for his products missing the reached criteria. Participant D undertakes the main responsibility in non-effective communication with the upstream material supplier and outsourcing manufacturer. However, participant D also claims that *“only 20% of product was unqualified, but this trouble results them could only recover the cost while the loss all of the profits”*.

Participant B mentions an example of political risk in their business transactions. Since participant’s specialty was the distribution of import medicine brands from overseas, they have major political uncertainties in the license application for new products from Chinese governmental departments. According to participant B:

*“this process (license application) was extremely complex, as medicine trading was a serious matter that each stage of distribution will involve into the audit procedure, such as and temperature in transportation, leak-proofness in packaging, advertising and qualification of my foreign suppliers, etc. Moreover, the failure of application could be resulted by any issue happened in any stage of this process, the prevention of this external risk could not fully be controlled by my own”*.

In the meanwhile, uncertainties in material transportation is another type of external risk that was identified by participants. There are two major kinds of transportation problem: first, the failure of in-time material delivery or damage of material in the delivery process. This kind of trouble leads to more transport services that will further affect in-time production and product delivery. Second, the temporary

shortage of material supply. For suppliers might run out of supply because of an industrial issue, for change in government policy can result in the immediate control of the source of a raw material. Therefore, the external risks refer to transformable uncertainties that happen due to mistakes made by partners. The main external risks of Chinese SMEs are normally in logistical, political, and production aspects. On the other hand, the internal risks have been classified into two aspects by participants: Financial and Internal operation risks. The Financial Risk, as mentioned before, is a serious issue for Chinese SMEs. Except for disruption of cash flow, financial risk would be attributed to increased firms' operational cost in debt, to protect the cash flow. Participants would try to manage the firms' operation through debt from legal or illegal parties. The legal parties are typically their partners guaranteed by company share. The illegal parties refer to others who provide usuries (High-interest Loan) for them. Participants C, D, and E used to admit that they used to borrow usuries (High-interest Loan) to pay suppliers or employee salaries. In addition, Internal operational risk refers to several mistakes caused by participants' managerial mistakes, involving key staff loss due to unsatisfying salary; core product intelligence revealed to competitors due to staff bribe-taking; and staff conflicts, etc.

Another typical case which often takes place in SMEs is mentioned by participant A, the *"failure of reaching production criteria due to participants overrating of own company capacity"*. This phenomenon is confirmed by all participants, which always happens when participants fail effective communication with customers or suppliers

in product criteria. The misunderstanding of production criteria can lead participants to overrate their productivity. There will be potential negative effect in company reputation, profit loss and a long time spent in a negotiation period. Hence, internal risks can be caused by any issues of firms' internal aspects but might have relation to negative influence for a firm's own, or partners' and supply chain performance. In general, despite a certain difference between "internal" and "external" existing in risk classification, this researcher finds they have indeed shared several similar attributions through the interviews. Both internal and external risks were transformable to stakeholders inside the supply chain. Every partner is relevant when supply chain performance is affected by one single partner unexpectedly and by unsatisfactory performance. The classification of risk type for supply chain partners was actually aimed at clarifying the responsibility for mistakes, and then the following compensation in following collaborations. In addition, the macro environmental risks are selectively ignored as assumed in previous research. Chinese SMEs always ignore the environmental risks because of their significant impact. The macro environmental risks provide impacts on an entire industry, which are too large to be managed by SMEs. According to participants, environmental risks refer to industry collapse, natural disasters, and destructive influence from the change of governmental policy on purpose for Macro business environmental control. These issues arise from the Macro level of the environment and are too significant for SMEs to avoid. Therefore, when environmental risk took place, executives would tend to

give up, or they might start a new firm in another field. Fortunately, the environmental risks have very low possibility of occurring. As participants recall, environmental risks have only emerged three times within this century: 1. The SARS crisis in 2003; 2. The industrial collapse of Roll Film due to the rise of digital cameras from 2004; and 3. The global economic crisis in 2008. Therefore, an SCCR will offer little positive support in managing environmental risks.

#### *4.2.2.2.3 Essential factors of SCCR construction*

Since participants are convinced that SCCR construction should depend on both interpersonal and inter-organizational level interactions with partners, they also provided evaluations about factors previously assumed for SCCR building. The following sections summarize the main contents of their evaluations according to their experiences and perceptions regarding current practice of SCCR development in the Chinese business environment among SMEs. The discussion is separated into interpersonal and inter-organizational aspects for convenience.

##### *4.2.2.2.3.1 Factors supporting Interpersonal level relationship building*

First of all, except for the factor of consensual cognition mentioned before, the rest of the factors, Favor Exchange, Guanxi Base, Executive's Mutual Past Experience, and Regular Communication, have also been confirmed by participants as effective in personal relationship building. According to participants, they rank the factor of consensual cognition at the top as it is the crucial indicator of personality. Favor

Exchange, Guanxi Base, and Mutual Experience are essential in earning partners' goodwill, while Regular Communication is the essential activity that encourages effective information and idea sharing.

- ***The influences of Favor Exchange, Guanxi Base, Executive's Mutual Past Experience***

Specifically, these factors have universal functions in showing friendliness, which is a particular advantage of relationship building according to Chinese culture. Participant B claimed:

*"...when we were trying to create Guanxi (in-depth relationship) with partners, and there should be the external investment made that specifically showing our determinations..especially when I intended to get familiar with new partners".*

Also, participant A provides another perception in explaining this phenomenon:

*"..being a long-term stable partner means someone intend to access my extra help, support or resource from my relation network, then they shall firstly showing their sincerity to me and vice versa ..".*

Moreover, participant D specifically indicates Favor Exchange including both *"official and non-official kinds"*. Sometimes they would even provide the favor for *"someone irrelevant toward business but mattered to the target partner to build partnership"*.

So these factors have been used as boundary spanners with partners based on Chinese culture, and it would be extremely effective in initial interactions that enable

providing great opportunities in developing a deeper relationship. Meanwhile, participants also claim that Favor Exchange has differences with both Guanxi Base and Mutual Experiences. Favor Exchange was the kind of controllable activity that participants were able to choose between doing or not doing. The factor of Guanxi Base and Mutual Experiences is a natural personal attribution that could not be gained through personal efforts. As participant A claims:

*“...they are beneficial factors rather than determined factors, it would be great if I could own all of them (Guanxi Base and Mutual Experiences) with my potential partners at the same time, but it would not be trouble if I am not. The trust and product (quality) were the most important factor after all”.*

Therefore, considering that showing friendliness is the universal function shared by each factor, executives of Chinese SMEs have different options on interpersonal relationship building.

- ***Regular communication was a normal factor in SCCR construction***

As participants disclose, the factor Regular Communication is an essential but also normal activity in SCCR constructions. As they would conduct Regular Communication with both normal customers and highly trusted partners, it is a necessary job in exchanging crucial information about company circumstances, productivity, and product quality criteria. There is no determinant relation between regular communication with in-depth relationship, but it highly effective in avoiding

potential uncertainties. On the other hand, there are two situations where Regular Communication could be highly effective for interpersonal trust development. First, the situation when communication could be highly effective and efficient. Time spent is one of the significant costs accounted to business transactions by participants, for whom less time spending in negotiations and discussion could be extremely helpful to reach a mutually favorable impression as well as building trust. Participant A described this phenomenon in nature:

*“...there suppose to be consensual cognition underlying when me and my partner enable reached highly effective communication. So we tend to trust persons with same value and ideas.”*

Second, conducting social interaction with partners in private time, especially family visiting: participants mentioned off-time social activities are important in developing personal emotional ties. Especially family visiting, this is a crucial activity enabling them to show friendliness to potential partners. However, it will also depend on partners' personal hobbies; the invitation for social interaction can be rejected if partners prefer to stay only with family during off-time.

#### *4.2.2.2.3.2 Factors supporting Interpersonal level relationship building*

- ***Timely and frequent information sharing***

Participants confirm the importance of information sharing in line with organizational level partnership building as well as the construction of SCCR. According to participants, activities of information sharing in both timely and frequent ways would



depend on the attributes of the information. Information about emergent problems would need to be updated in a timely manner with partners. This kind of information matters for mutual benefits that might involve on-going projects, change of government policy, or supply from upstream. As participant B mentions:

*“me and my partners will share messages about sudden issues timely. It was a mutual requirement, that timely information sharing could reduce potential risk we could not afford. For instance, license application was the most important job for us. Me and my partners will timely sharing information about material preparations, otherwise, the application could fail, and wasted all of our previous investment”.*

Moreover, frequent information sharing has been treated as a regular activity between participants and their partners. Normally, the content of frequent information sharing covers the essential strategic messages about the changing of production, local market, and industrial development trends, on purpose to keep partners aware of timely circumstances. As participant A claimed:

*“I would always make sure my partners have clear understanding about the company and environment change in the formal or non-formal way. The formal way means the proceeding of official email to my partners, and the in-person meeting was the non-formal way to share our latest strategic information, personal perception and ideas. We require mutually information sharing frequently in this way, as it will be beneficial to our further cooperation...”*

Generally, as participants claim, Chinese SMEs always have “climates” to proactively

share essential information in the supply chain. This is their method of supporting each other for long-term development and collaboration. SMEs are relatively more vulnerable than large enterprises in a changing environment. The essential information about the product, market, and environmental change has, therefore, become crucial for SMEs in order to avoid potential uncertainties. In addition, information sharing activities protect overall benefits in avoiding potential risks and uncertainties. Meanwhile, continually positive performance in information sharing supports trust building with partners. Trust from a target partner would increase based on reliable performance in information sharing. On the other hand, information sharing is a hierarchical activity that is consistent with the degree of interpersonal level relationship. In other words, the information would be separated into different classes, and partners will have different levels of permissions in accessing participants' information. For instance, participants A, B, and D claimed that they could only share "*basic information about their production capacities*" with new or potential partners. Strategic information, which matters to further company development, are "*critical firm assets*" that may be shared with long-term and highly trusted partners. Participant E has also claims that

*"I would only describing existing issues or factor to partners without highly trust. While towards those I am highly trusted, all of the information about further strategic movements, company development planning, and my personal perceptions would be shared....so does my partners".*

- ***The influences of Long-term Business Value***

Participants claim the importance of the factor Long-term Business value in the interviews. This is the same as the factor of firms' Production Capacity: these two factors are also crucial indicators about a firm's own competitive advantages, which are related to further interdependence construction. As participants claim, these two factors would normally be used as the essential indicator in evaluating potential partners' qualifications for participating in the partnership as well as the supply chain system. Despite interpersonal level of relationship and trust remaining as the fundamental factors in line with partnership construction, the actual benefits of business transactions tend to be another crucial factor in partner selections. As participant E claims: *"...we would just be remained as great friends with partners, if the particular level of interpersonal trust existed without certain business value and benefits"*

#### ***4.2.2.2.4 Advantage of SCCR in terms of Risk Management***

Within the findings from the literature review, the researcher has separately highlighted five factors to measure SCCR and Risk Management, as table 4.1 shows.

**Table 4.1 The variables of SCCR and Risk management**

<b><i>Collaborative Partnership (SCCR)</i></b>	<b><i>Partner's Suport in Risk Management</i></b>
Partner's Predictable Behavior	Risk Sharing
Transaction Cost Reduction	Joint Decision-making
Partner's Willingness in Resource Sharing	Relational Behavior
Inter-organizational Inner Collaboration	Quick Response
Open-Mind Perception Exchanging	Resource Sharing

Participants has both confirmed its effectiveness in all factors, and indicated their direct relations: firstly, based on the firm's interdependence and personal mutual consensual cognition, the ***"partner's behavior would become predictable"***. For shared value and objectives existing in line with mutual developments, as participants B, C, and E claimed, they would be ***"very confident"*** about their partner's performance when they ***"request for help to risk reductions"***. Therefore, participants tend to believe that partner's performance and relevant behavior could be ensured and highly dependable in risk management under SCCR. Secondly, they are able to benefit from ***transaction cost reduction*** under the establishment of SCCR. The transaction cost refers to time spent on communications and negotiations. The time cost reduced via SCCR establishment improved efficiency in responding to uncertainties. Participants enabled agile access performance based on their particular level of connection. As participants A and C claimed, there would be

*“clear and sufficient understanding about each other, therefore some unnecessary process could be removed, and we could access quicker response in working procedures”.*

Therefore, the factor of transaction cost reduction would have potential influences on quick responses in terms of risk management. Thirdly, participants and their partners would have great **willingness for resource exchanging to help each other with risk management**. It could be identified as the norm or commitment of the SCCR for long-term development.

Moreover, as participants claim, this particular factor of SCCR would have direct impact on the factors of partners’ relational behavior and collaborative decision-making. The partner's relational behavior will affect risk management support at the organizational level, while collaborative decision-making or planning are the activities at the individual level. The establishment of SCCR results with partners shows great willingness in supporting participants’ sustainability, which will encourage their supportive behavior at both individual and organizational levels. Fourthly, participants are able to build in-depth **inter-organizational collaboration** with partners in strategic aspects when SCCR is underlying, aimed at protecting their combined benefits in risk managements. The factor of Risk and Resource sharing has, therefore, become the outcome as inter-organizational cooperation exists. As participants mention, the factor of interdependence could be viewed as the key to bridging inter-organizational cooperation. With a certain level of interdependence, the activity of risk sharing, therefore, becomes a responsibility between each other,

for which they have already deeply shared common objectives and benefits. Most importantly, with development of interdependence and mutual responsibility, participants will access the advantage of a partner's quick response for any requests for risk reduction, as to timely and effectively mediate the impact from supply chain risk matters to mutual benefits. Fifthly, as mentioned before, the SCCR of two SMEs leads to the highest level of information as well as personal perception sharing. Participants claim this *"phenomenon would effectively lead the activity of **open-mid perception and evaluation on partners circumstance sharing**"*. Moreover, they will be also supportive towards the factor of joint relational behavior at individual levels, because participants have consistently valued their personal perception about certain issues, like the methods of risk management, as a *"crucial individual assets that would prudently disclose to the partner who has been highly trusted"*. It was to avoid unexpected or unpredictable problem purposefully due to information asymmetry. The establishment of SCCR dispels this concern since mutual benefits are underlying.

#### 4.2.3 Results of the pilot study

As mentioned in Chapter 4, a pilot study was conducted before the quantitative research to examine the qualitative results. The researcher designed a structural questionnaire, based on the themes that were coded from the qualitative data, associated with a Likert scale from 1 to 5, "Strongly disagree" to "Strongly agree" (see appendix 3). Participants were required to evaluate each theme depending on

their perceptions. Twenty-five 25 questionnaires in total were sent to new respondents to gather their opinions about the findings summarized from the interviews. These 25 respondents excluded the five participants from the pilot semi-structured interview, to reduce confirmation bias. The researcher received 25 completed questionnaires. The result of the Pilot Study indicated that all themes coded from the interview were confirmed, with no significant comments to indicate any improvements. Therefore, the qualitative results were verified as applicable for the quantitative research.

## 4.3 Quantitative data description and analysis

### 4.3.1 Background information

The quantitative research was a survey with a structured questionnaire. There were 250 questionnaires sent to identified participants, and the researcher received 216 responses. The participants in the survey were also executives of SMEs, the same as the previous investigation. Most importantly, the new participants in the survey excluded the executives who had already participated in the previous research phase. Within the quantitative research, every participant was required to complete the questionnaire based on their perceptions and experiences. It was a large-scale investigation that aimed at examining the findings with a larger population, executives (participants) were therefore selected from multiple industries and positions in the supply chain.

## 4.3.2 Procedure of the quantitative data analysis

### *4.3.2.1 The principle of quantitative data analysis*

The procedure of the data analysis was divided into two steps. The researcher firstly conducted Principle Component Analysis (PCA) within the software SPSS to extract the main variance from the data sets through dimension reduction. Secondly, a Confirmatory Factor Analysis (CFA) via AMOS software was conducted depending on the PCA results. The CFA was conducted according to the “Two stages data analysis procedure” (Anderson & Gerbing, 1988), separated into measurement and structural modeling. The following sections provide the detailed description of the process of the quantitative data analysis.

### *4.3.2.2 The approach of quantitative data analysis*

PCA could highlight the linear combination, to explain the total variance (as well as eigenvalues and standard deviation) of the overall data in terms of the interpretation of variables' similarities and differences (Jolliffe, 2002; Velicer & Jackson, 1990). Thus, PCA is the effective method that allows the researcher to identify the underlying factors of data sets (Papachristou et al., 2014). This procedure is required before the CFA, because the issue of multicollinearity existing among the quantitative data sets could result in dysfunctional data analysis, so the researcher needs to extract and classify the main components among the data sets according to their characteristic similarity (Abdi & Williams, 2010). On the other hand, Exploratory Factor Analysis

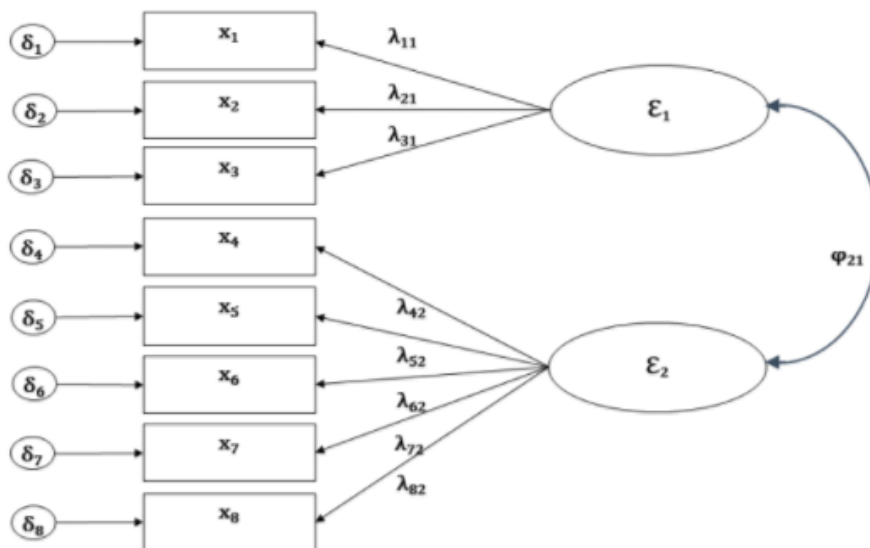


(EFA) was another technique for variable reduction similar to PCA (Rencher, 2002). However, EFA summarizes certain data sets towards smaller sizes by hypothesizing the underlying constructs (Bro & Smilde, 2014; Suhr, 2005). It would be more appropriate for application in studies without antecedent hypotheses (Finch & West, 1997). PCA was therefore a better choice for this study, because the research hypotheses were pre-determined, and examined by the qualitative research.

In addition, CFA is employed to test the degree of consistency between measure and constructs in a conceptual framework (Thompson, 2004). Structural Equation Modeling (SEM) is the method to perform CFA, normally completed by AMOS, LISREL, or Mplus software (Ullman & Bentler, 2003). Despite SEM containing multiple types of modeling, in order to perform an effective analysis of the quantitative data, the researcher adopted the two-stage approach addressed by Anderson and Gerbing (1988). This approach recommends researchers to combine measurement and structural models in testing the conceptual framework in terms of hypothesis examination, based on the significance of coefficients and model fits of performance among constructs and measures (Novak et al., 2000; Ping, 1996; O'Rourke & Hatcher, 2013; Enders, 2010;). By following the two-stage approach, the measurement model, also known as the CFA model, is firstly launched to test the reliability of the theoretical background, while the structural model, also known as the SEM model, is secondly used to test hypotheses (Ullman & Bentler, 2003). On the other hand, the Linear Regression Model is another method often used for CFA

analysis. However, the linear model is better used to test a simple framework's structure; the conceptual framework built in this study is too complex to employ a linear model. Therefore, SEM modeling is a better choice (Montgomery et al., 2012; Yan & Su, 2009 ).

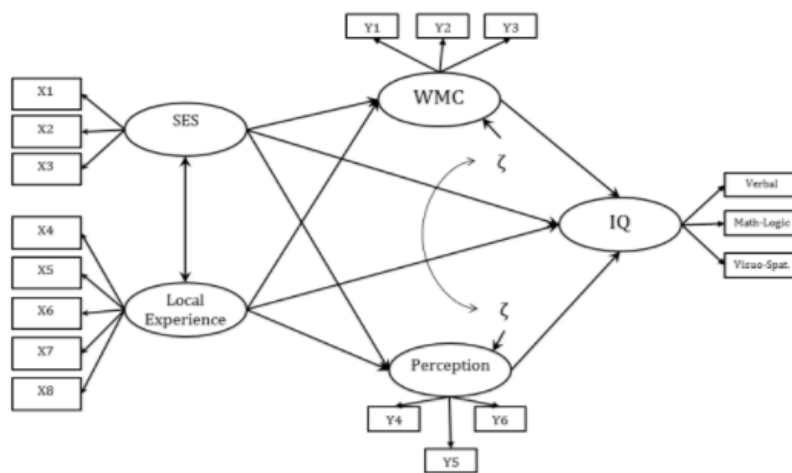
As figure 4.1 presents, the measurement model can effectively analyze the reliability of the theoretical structure of this study by examining the relations between constructs and its own measures (Bandalos, 2002).



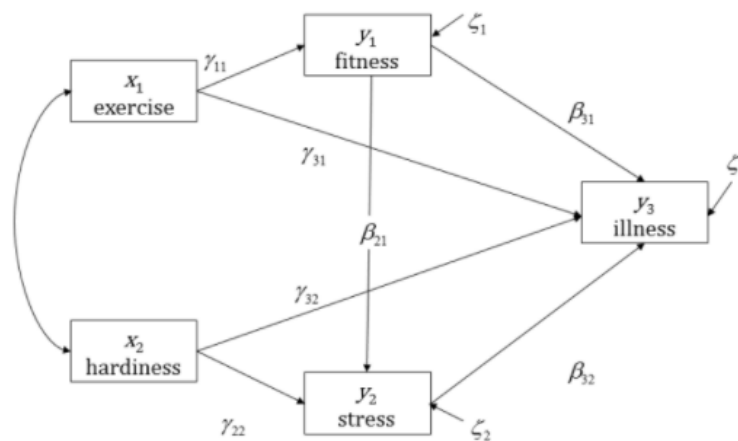
**Figure 4.1 Example diagram of the measurement model**

The structural model, however, was built in accordance with the conceptual framework of the study, purposefully to test the hypotheses based on the theoretical structure (Bandalos, 2002). On the other hand, the path analysis model is another modeling instrument widely used in examining hypotheses within CFA. In nature, despite the path analysis model (figure 4.3) could only reflect the relations among

the constructs (O'Rourke & Hatcher, 2013); this is the same with the structural model (figure 4.2) in examining the linear relationship between dependent and independent variables (Stoelting, 2002). Additionally, the examination of model fits in both measurement and structural models is made by a Chi-squared test, Incremental Fit Index (IFI), Tucker–Lewis Index (TLI), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA) (Hooper et al., 2008).



**Figure 4.2 Example diagram of the structural model**



**Figure 4.3 Example diagram of the path analysis**

Hence, PCA supports the researcher to identify underlying factors comprised in the

data set. CFA allows the researcher to test the theoretical structure and hypotheses previously assumed. The combination of measurement and structural models contributes to more persuasive and comprehensive results in terms of research findings.

### 4.3.3 Principal Component Analysis

As mentioned above, PCA was selected as the initial stage of the quantitative data analysis. It has the objective of reducing dimensions of data sets, to clarify the potential constructs that remain. The clarification is made depending on the Variance Explained in each construct, which should exceed 50%. The PCA results indicate the number of survey items in each construct had been decreased differently, as shown in table 4.2.

**Table 4.2 The result of principal component analysis**

<b><i>Organizational Risk</i></b>	<b><i>Temporary Trust</i></b>	<b><i>Resource Combination</i></b>	<b><i>SCCR</i></b>	<b><i>Partner's Support</i></b>
<b><i>OR5</i></b>	<b><i>CT4</i></b>	<b><i>RC1</i></b>	<b><i>UT1</i></b>	<b><i>PS2</i></b>
<b><i>OR6</i></b>	<b><i>CT5</i></b>	<b><i>RC7</i></b>	<b><i>UT2</i></b>	<b><i>PS5</i></b>
<b><i>OR7</i></b>	<b><i>CT6</i></b>	<b><i>RC9</i></b>	<b><i>UT3</i></b>	<b><i>PS6</i></b>
<b><i>OR8</i></b>	<b><i>CT7</i></b>	<b><i>RC10</i></b>	<b><i>UT4</i></b>	<b><i>PS7</i></b>
			<b><i>UT5</i></b>	<b><i>PS8</i></b>
			<b><i>UT6</i></b>	<b><i>PS9</i></b>

As table 4.2 shows, the construct of Organizational Risk, Temporary Trust, and Resource Combination has four measures remaining. The constructs of SCCR and Partner's support are better with six measures each. However, looking at table 4.2, several items have been removed because the loading is below 0.5. The result of the measured items is used for further measurement and structural model testing. Meanwhile, the researcher also applied the validity test for PCA results through examining the performance of KMO, Bartlett, Item loading, AVE (Average Variance Extracted) and CR (Composite Reliability), as in table 4.3.

**Table 4.3 The validity test of PCA results**

<b><i>KMO</i></b>	<b><i>Sig. Of Bartlett</i></b>	<b><i>Cumulative value of items loading (Total Variance Explained )</i></b>
.814	.000	59.219%

As table 4.3 indicates, the KMO value of the new data sets is .814, which is greater than 0.6. The Significant Value of the Bartlett Test is .000, which is lower than 0.05. The item loading value is 59.219%, which is greater than 50%. The PCA result is therefore acceptable. In addition, the results from AVE, CR, and separated KMO and Bartlett examination for each construct are also positive and significant (table 4.4).

**Table 4.4 AVE and CR result of PCA**

	<b>AVE</b>	<b>CR</b>	<b>KMO</b>	<b>Sig.</b>
<b>Organizational Risk</b>	.5189	.800	.741	.000
<b>Temporary Trust</b>	.5329	.799	.651	.000
<b>Resource Combination</b>	.5753.	.794	.685	.000
<b>SCCR</b>	.5009	.8566	.840	.000
<b>Partner's support</b>	.5014	.857	.810	.000

As seen in table 4.4, all factors reach their expected value for achieving a reliable outcome in PCA. Hence, the result of PCA is valid to apply the following analysis.

#### **4.3.4 Confirmatory Factor Analysis**

CFA is applied to examine the level of fitness of the quantitative data with a SEM built according to the conceptual framework designed previously. It is both the final step and the most important stage of the data analysis, as its results determine the success of the research.

##### **4.3.4.1 Measurement Model**

The researcher launched the measurement model in order to test the relationship between constructs. According to the analytic result of the CFA test, the performance of the model fits is shown in table 4.5.

**Table 4.5 Model fits of measurement model**

<b><math>X^2(DF)</math></b>	<b>IFI</b>	<b>TLI</b>	<b>CFI</b>	<b>RMSEA</b>
423.449(242)	.875	.839	.870	.062

As table 4.5 presents, the measurement model fits very well. The  $X^2$  achieves 423.449, while DF reached 242. The IFI value is .875; TLI is .839; CFI is .870; RMSEA is .062. Meanwhile, the performance of the correlation loading is shown in table 4.6.

**Table 4.6 Correlation results between constructs**

<b>Variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>1. Organizational Risk</b>	<b>1.00</b>				
<b>2. Interpersonal Temporary Trust</b>	<b>-.013</b>	<b>1.00</b>			
<b>3. Organizational Resource Combination</b>	<b>-.059</b>	<b>.474</b>	<b>1.00</b>		
<b>4. SCCR</b>	<b>-.017</b>	<b>.501</b>	<b>.442</b>	<b>1.00</b>	
<b>5. Partner Support in RM</b>	<b>.140</b>	<b>.464</b>	<b>.521</b>	<b>.802</b>	<b>1.00</b>

As table 4.6 presents, the construct “Organizational Risk” achieves non-significant and negative correlations with the rest of constructs. However, both of the constructs “Interpersonal Temporary Trust” and “Organizational Resource Combination” have significant positive correlation with the construct “SCCR”: the loading of “Interpersonal Temporary Trust” and “SCCR” is .501 ( $P < 0.01$ ), “Organizational Resource Combination” and “SCCR” is .442 ( $P < 0.01$ ). While the

correlation between “SCCR” and “Partner Support in RM” is also significant at .802 ( $P < 0.01$ ). Hence, the performance of construct correlation has confirmed the main theoretical assumptions that both interpersonal and organizational level efforts contribute to the construction of SCCR. Moreover, this contribution has positive relation in motivating partners’ behavior in providing support for focal SMEs’ risk management.

In addition, as figure 4.4 shows, the parameter loading between measures with their constructs is significant and ranged from .42 to 1.57, which proves the convergent validity of the measurement model.



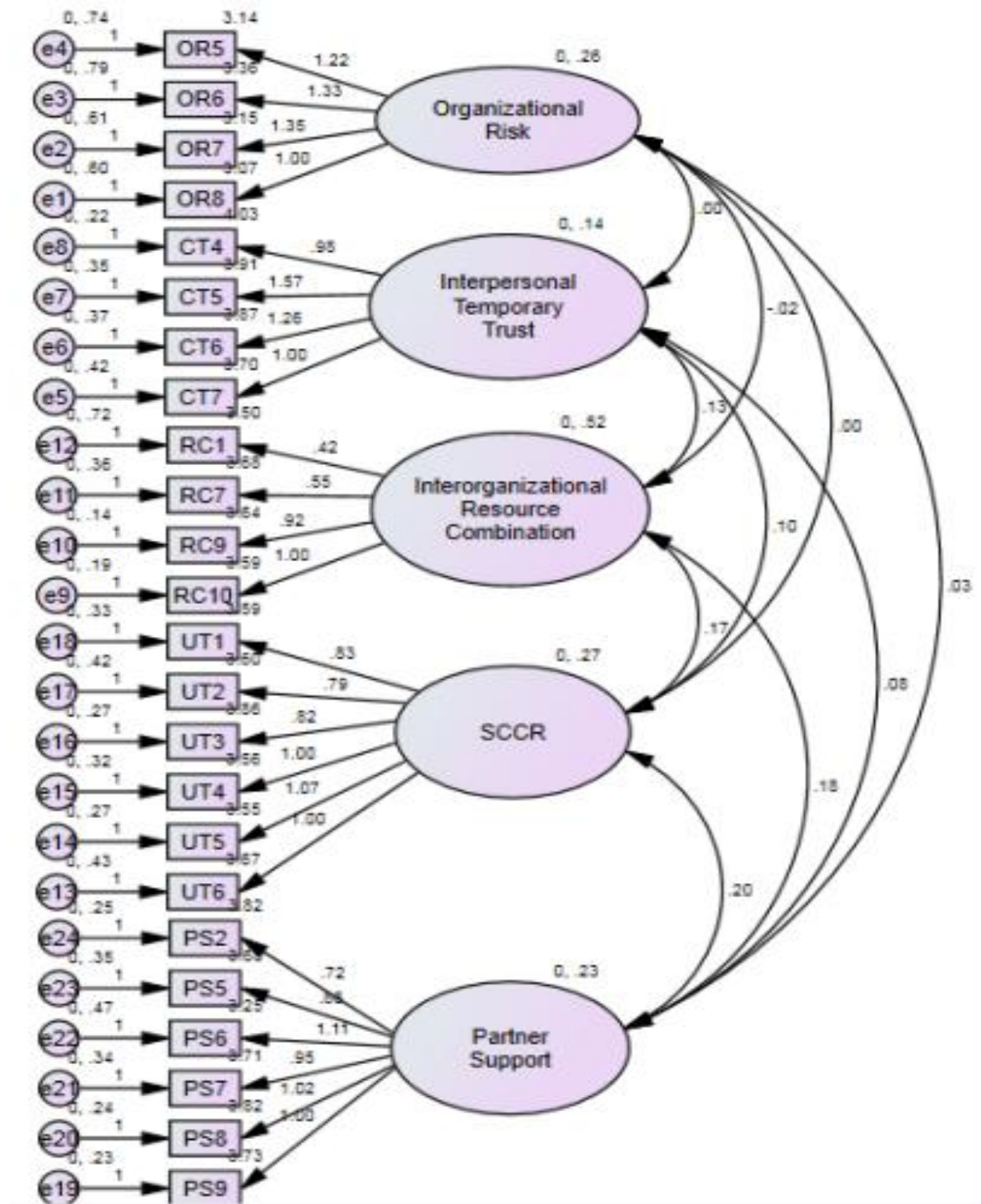


Figure 4.4 The measurement model of the latent variables in the Conceptual Framework in Figure 2.1

#### 4.3.4.2 Structural Model

The SEM is applied in order to test the hypotheses of this study. Due to the analytic results, the performances of model fits are shown in table 4.7.

**Table 4.7 The performance of Model fits of structural model**

<i>X<sup>2</sup>(DF)</i>	<i>IFI</i>	<i>TLI</i>	<i>CFI</i>	<i>RMSEA</i>
465.507(247)	.849	.810	.844	.067

Table 4.7 indicates the SEM model fits nicely: the P-value test result is .000 which lower than 0.01 in expectation; while the RMSEA index is .067; the CFI and TLI index are .844 and .810, respectively. Meanwhile, the result of the SEM test has also performed very well, indicating excellent model fits for the hypothesis testing. Figure 4.5 displays the structural model with the values of structural links.

Data interpretation of the structural model is separated into dependent and independent variables as follows:

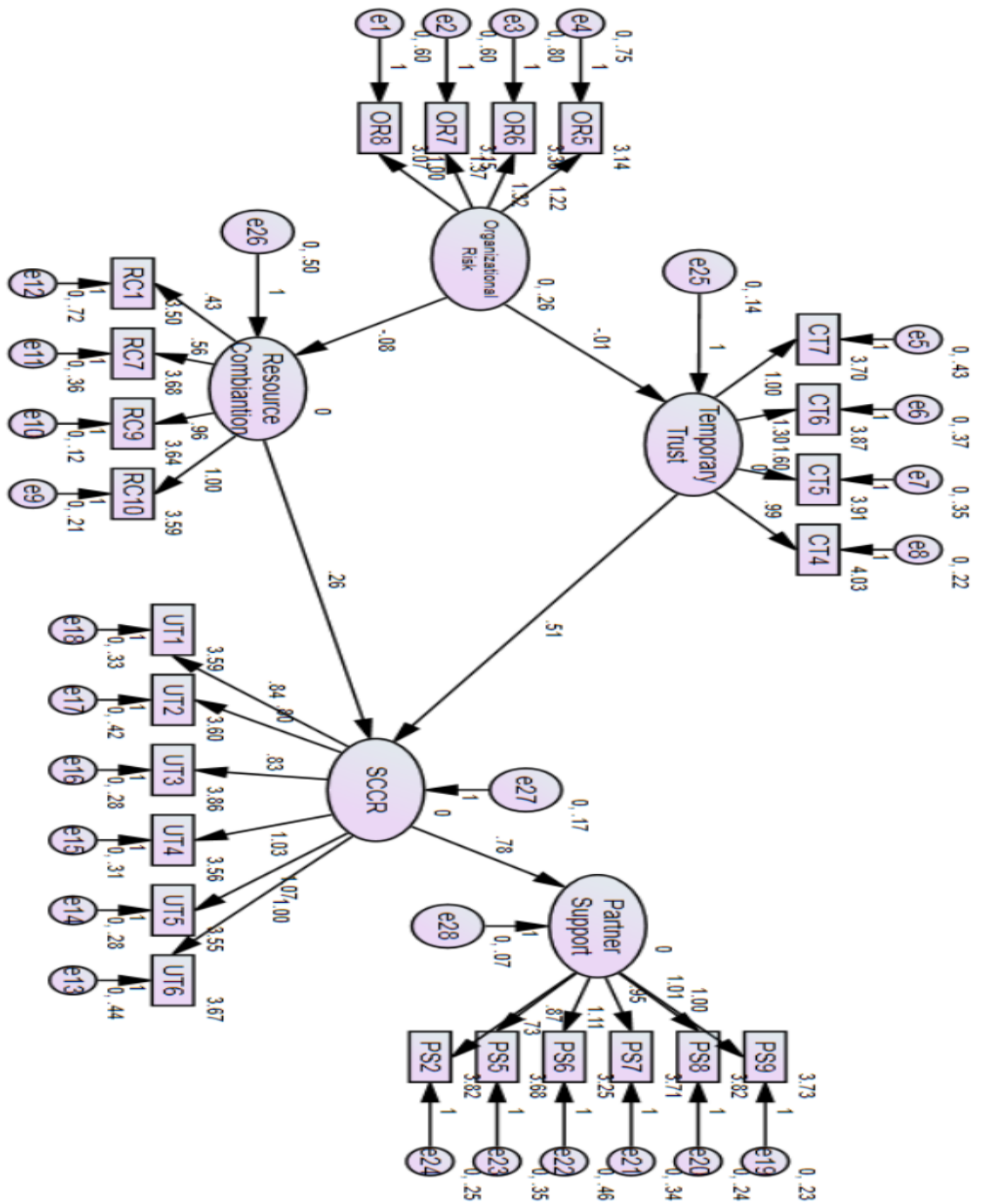


Figure 4.5 The structural model of the relationship among the variables in the Conceptual Framework in Figure 2.1

#### *4.3.4.2.1 Dependent variables*

As figure 4.5 presents, the structural model highlights five dependent variables of the study: “Organizational Risk”, “Organizational Resource Combination”, “Interpersonal Temporary Trust”, “SCCR”, and “Partner Support in RM”. As seen in this figure, there are negative structural links from “Organizational Risk” with both “Interpersonal Temporary Trust” and “Organizational Resource Combination” (Structural links =  $-.01$  and  $-.08$ ,  $P\text{-value} < 0.01$ ). This demonstrates both links were not significant. Therefore, hypotheses H2a and H2c are not supported. Moreover, executives’ concerns for their own organizational risk do not have an indirect relation with their attempts at SCCR constructions. Meanwhile, the result also indicated the links of both “Interpersonal Temporary Trust” and “Organizational Resource Combination” to “SCCR” are positive and significant (Structural link =  $.51$  and  $.26$ ,  $P\text{-value} < 0.01$ ). These results therefore support hypotheses H2b and H2d, and demonstrate focal SMEs’ efforts at both interpersonal and inter-organizational levels would contribute to SCCR with their partners. On the other hand, the link between constructs “SCCR” and “Partner Support in RM” performs even better (Structural link =  $.78$ ,  $P\text{-value} < 0.01$ ). Hence, Hypothesis H6 is supported, which shows the SCCR has direct and positive influence in leading partners’ behaviors in supporting focal SMEs’ risk management.

#### *4.3.4.2.2 Independent variables*

##### *4.3.4.2.2.1 Organizational Risk*

Based on the results of the measurement model, the construct “Organizational Risk” consists of 4 independent variables: OR5, OR6, OR7, and OR8. As figure 5.4 indicated, each measure of the construct performed very well. The loading value of OR5 is 1.22 (P-value<0.01); OR6 is 1.33 (P-value<0.01); OR7 is 1.35 (P-value<0.01); OR8 is 1.00 (P-value<0.01). These results indicate that hypotheses H1a, H1c, and H1e are supported. Which means the political, financial, and production risks are major supply chain risks for Chinese SMEs.

##### *4.3.4.2.2.2 Interpersonal Temporary Trust*

The construct “Interpersonal Temporary Trust” contains four measures as shown in figure 5.4: CT4, CT5, CT6, and CT7. The results show positive and significant connection between the construct and its measures. The loading value of CT4 is .98 (P-value<0.01); CT5 is 1.57 (P-value<0.01); CT6 is 1.26 (P-value<0.01); and CT7 is 1.00 (P-value<0.01). These findings indicate hypotheses H4c, H4d, and H4e are supported, while measures of Interpersonal communication, Consensual cognition and Executives’ mutual experience are proved as significant factor in interpersonal relationship building among executives.

##### *4.3.4.2.2.3 Organizational Resource Combination*

The construct “Resource Combination” contains four measures that indicate crucial

factors in inter-organizational level trust and relationship building among SMEs. The four measures are: RC1, RC7, RC9, and RC10. Specifically, the loading value of RC1 is .42 (P-value<0.01). Hypothesis H3a is therefore supported, which indicates the factor of Timely information sharing contributes to organizational level relationship building; RC7 achieves better results at .55 (P-value<0.01) in supporting Hypothesis H3e, which indicates the positive influence of focal SMEs' advantage of production quality in organizational relationship building; meanwhile, RC9 is .92 (P-value<0.01) and RC10 is 1.00 (P-value<0.01), hypothesis H3d is therefore supported. That means the factor Long-term business value between focal SMEs and their partners contributed to organizational relationship and trust building.

#### *4.3.4.2.2.4 SCCR*

In the construct SCCR, UT1 achieves .83 (P-value<0.01) in loading, which indicates Hypothesis H5b is supported; so the construction of SCCR enables predicatability of partners' behavior; UT2 is .79 (P-value<0.01), supporting Hypothesis H5a, which confirms the SCCR helps reduction of transaction costs. On the other hand, the measures UT3 and UT4 refer to the same hypotheses for H5c, which points to the effectiveness of SCCR in motivating partners' willingness in sharing essential, valued and complementary organizational assets, that includes technical (UT3) and additional help (UT4). It is confirmed by the results: the loading value achieves .82 and 1.00 (P-value<0.01). Therefore, hypothesis H5c is supported. The same result applies to hypothesis H5e as well, as is reflected by the measures UT5 and UT6 (1.07

and 1.00,  $P\text{-value} < 0.01$ ). So hypothesis H5e is therefore supported in confirming the effectiveness of SCCR in building inter-organizational collaboration by motivating tangible and intangible resource transformation specifically for risk management needs.

#### *4.3.4.2.2.5 Partner Support in Risk Management*

The construct “Partner Support” contains six measures: PS2, PS5, PS6, PS7, PS8, and PS9. Hypothesis H7a is supported as its related measure PS6 reached 1.11 ( $P\text{-value} < 0.01$ ) in loading value, which indicates the factor of risk sharing is part of supply chain partners’ support in risk management. Also, the measure PS5 reaches .86 ( $P\text{-value} < 0.01$ ) which proves collaborative decision-making belongs to the partners’ support; PS7 has loading value .95 ( $P\text{-value} < 0.01$ ), which convinces existence of quick response. Hence, hypotheses H7b and H7d are supported. In addition, the measures PS2, PS8, and PS9 point to Hypothesis H7e, and achieve high values at .72, 1.02, and 1.00 ( $P\text{-value} < 0.01$ ). Hypothesis H7e is supported: the activities of resource sharing belong to supply chain partners’ support in risk management.

## **4.4 Summary**

In conclusion, this chapter highlights the analytic results of both qualitative and quantitative data collected from Phase 1 and Phase 2 investigations. The results of the qualitative research have confirmed the major parts of the assumptions based on

previous literature research. For instance, both interpersonal temporary trust and organizational resource combination are proved to have significant impact on the development of SCCR. Importantly, several valued insights are presented in the qualitative data. For example, executives in Chinese SMEs have outstanding authority in decision-making. This finding supports the assumption that SCCR is built depending on both interpersonal and inter-organizational level efforts.

The qualitative findings contribute to the foundation of the quantitative research. The questionnaire and conceptual framework used in the quantitative research were revised depending on the qualitative results. This chapter also highlights the results of the PCA and CFA in the quantitative data analysis. The outcome of the hypothesis testing is given accordingly. The rationale for the quantitative data analysis is also explained. In next chapter, the findings and discussions of the study are provided through combining the analytical results of the qualitative and quantitative research. An extended conceptual framework that contains the relations of the research hypotheses and results to provide the overview of the research outcome, is given at the end of the next chapter.



## Chapter 5 – Findings and Discussion

### 5.0 Introduction

This chapter discusses the findings of this research based on the content previously developed in Chapter 2 Literature review and Chapter 4 Data analysis. Discussions in the literature review introduced theoretical lens of this study, and led to the development of the hypotheses. Chapter 4, which provides interpretation of the bdata collected from the investigations, tested the research hypotheses accordingly. Therefore, this chapter provides the comparison of the investigation results and theoretical lens to highlight the outcome of this research. The structure of this chapter is divided into two sections: firstly, the researcher interprets the findings that are consistent with previous research about the construction of partnerships. Secondly, the researcher highlights new findings that further previous findings.

### 5.1 Findings and results confirming previous research

#### 5.1.1 Categories of Supply Chain Risks

Nearly a decade ago, a typical classification divided supply chain risks into external, internal, and environmental types, which aimed at improving the effectiveness of risk reduction through the separation of types. This assumption has been agreed by many researchers in the field (Ho et al., 2015; Markman et al., 2013; Heckmann et al., 2015; Brindley, 2017.etc.). A more recent trend of research has furthered this

assumption and decreased the supply chain risk categories into Network and Process risks that target uncertainties caused by supply chain level and company level issues (Heckmann et al., 2015). Results from both the qualitative and quantitative data manifest these classifications as all correct, as supply chain risks can be caused by the failure of partners (network risk) and own performance (internal risk). However, qualitative findings manifest that compared with network risk happening at the chain level and process risks at company level, environmental risks are too significant for SMEs to manage depending on their limited resources and capacity. Environmental risks are therefore ignored in the process of strategy designing for risk management. Hence, the classification of supply chain risks into two dimensions for Chinese SMEs is confirmed.

### 5.1.2 Identification of Supply Chain Risks

The exploration about real supply chain risks in Chinese SMEs is part of the research objectives in this study. Based on the literature research, the researcher hypothesizes five supply chain risks as the most common uncertainties that have significant impact on Chinese SMEs' operation: Political, Logistical, Financial, Production, and Operational risks. The results of this study manifest that the political, financial and production risks are common uncertainties in Chinese SMEs.

#### 5.1.2.1 *Political Risk*

Although political risks have been viewed as environmental risks by many previous

researchers (Wagner & Bode, 2006; Ghadge et al., 2012; Tang & Musa, 2011; He et al., 2014), political risks form a broad concept involving multiple dimensions. Alon and Herbert (2009) suggest that the political risk should be separated into Macro and Micro types. For Macro political risks are economic-, society-, government-related issues, and Micro political risks are Industrial-, Firms internal-, project-related issues. The Macro and Micro political risk is categorized by their level of controllability.

Participants in the qualitative research claim environmental risks happening at the macro level against the entire industry are hard to overcome for SMEs, but micro political risks are manageable through partnership efforts. Descriptions about environmental risks here are consistent with Alon and Herbert's (2009) perception about Macro political risks. They are also consistent with Deng and Low's (2013) perception, that *'the Macro political risk is significant that cannot be reduced by firms capacity'*. And Darendeli and Hill's (2016) argument, that *'the negative impact from Micro political risk can be limited via managerial approach'*. Qualitative results manifest that micro political risks are supply chain risks that have impact on Chinese SMEs and supply chain sustainability. And this finding is also manifested by the quantitative results. Therefore, political risks are involved as Chinese supply chain risks.

#### **5.1.2.2 Financial Risk**

The researcher highlights three types of financial risks in the literature review chapter: the cost increasingly incurred by incident issues, such as natural disasters

(Heckmann et al., 2015; Christiansen, 2015); the shortage of cash flow lead by incorrect prediction of downstream demands, like the 'Bullwhip Effect' (Tangsucheeva & Prabhu, 2013); and the delay of payments from downstream partners (Tsai, 2011; Chen, 2011). Qualitative research participants suggest cash flow disruption lead by payment delay is a common phenomenon in Chinese SMEs supply chain risks. Meanwhile, the quantitative results manifest cash flow uncertainties as significant factors impacting SMEs. Therefore, financial risks belong to Chinese SMEs' common supply chain risks.

#### *5.1.2.3 Production Risk*

In the qualitative research, the researcher found Chinese SMEs always adopt outsourcing service from third-party partners as manufacturing supports due to the limitation of company ability. And production risks are generated from misunderstanding about production criteria because of dysfunctional communication by focal SMEs with customers or partners. The misunderstanding in production criteria leads focal SMEs to overrate their systematic productivity, and potential conflicts or uncertainties arise accordingly. This finding is consistent with Inman et al.'s (2013) approach, as *'production quality could be impacted by organizational production system design and firms own integrate management'*. And Liu and Xie's (2013) theory addresses *'the lack of monitor and supervision process in production line tend to be the main factor in production quality collapse'*, as outsourcing services can be considered as part of a production system once they are employed as

manufacturing support. Focal SMEs are responsible for their production supervision, communication, and productivity qualification examinations. So production risks are confirmed as one of the common supply chain risks in Chinese SMEs.

Hence, political, financial, and production risks are found as the common supply chain risks for Chinese SMEs. Moreover, as the qualitative results indicate, they are also highly transformable, which can result in many relevant effects throughout the supply chain system. Therefore, common supply chain risks are also motivating factors for SMEs in seeking integrated cooperation and stable partnership for risk reduction. Sharing risks and responsibility, as well as the critical resources exchange, are the main objectives in SCCR building.

### **5.1.3 Beneficial factors or activities in SCCR building**

Various existing academic findings suggest multiple factors in supporting partnership building, like information sharing, specific investment, and trust development. In the meanwhile, multiple scholars link Chinese culture and traditions in addressing the particular pattern for partnership construction in China, such as Guanxi, Renqing, and Personal relation networks. The main purpose of this research is to develop a practical approach based on previous findings for SCCR building that is specific for SMEs in the Chinese business environment. And this approach might have differences with the practice of partnership building in large enterprises. However, based on the investigation, the researcher found several beneficial factors that are

universal and workable in both large enterprises and SMEs.

#### *5.1.3.1 Timely Information Sharing*

Results of the main survey manifest the activities of timely information sharing has significant impact on inter-organizational resource combination building in terms of SCCR development. The qualitative results also indicate the activities of timely information sharing are mutually essential and desirable between the focal SME and their partners. Firstly, the in-time information sharing helps in understanding partners' condition, progress, and demands. The focal SME is able to adjust their product design and material supply in accordance to timely information, to avoid potential uncertainties that are caused by dysfunctional communication. This phenomenon is consistent with Lee's viewpoint (1997) about the Bullwhip Effect, as the *'Bullwhip Effect refers to the negative impact of distorted information, and its transformable damage caused by supply chain disruption. The term Bullwhip Effect happens when downstream incorrectly communicated the demand information, or distorted information delivered throughout supply chain upstream, and result in significant influence in end-supply and cost increasing for partners.'* Moreover, it also confirmed Lee's further viewpoint in 2000, that *'to improve demand correlation and effective information sharing is the key to reduce bullwhip effect.'* For effective communication is the key to reduce negative effects from demand uncertainties from distorted information. Conducting timely information sharing allowed supply chain members to clarify each other's needs, expectations, and perceptions. It is also a

principle in line with Chinese SMEs' working produces. Secondly, Chinese SMEs are more vulnerable compared with larger enterprises due to their natural limitation in company capacity and assets. Timely information sharing is therefore the key activity in building agile supply chain cooperation to generate in-time reaction for market and environmental change. This phenomenon confirms arguments from Kim and Chai (2017) and Eng (2016), that *'conducting timely information sharing increases partners responsiveness that has positive influences towards firms innovation and strategic development. The responsiveness can also support supply chain operations such as demand control.'* Also, qualitative findings indicate continually reliable information sharing contributes to trust building. It demonstrates Nyaga et al.'s (2010) suggestion that *'partner trust and commitment built depends on joint activities like information sharing would create the sense of collaboration among partners'*. Therefore, the activity of timely information sharing is a beneficial factor of SCCR development.

#### *5.1.3.2 Long-term business value*

Similar to production quality, long-term business value is also a factor that can maintain long-term SCCR development. According to interview participants, the factor of long-term business value indicates the predictable value and benefits in SCCR development for supply chain members. In other words, it has the power to picture the further advantage and value of partnership, and a long-term stable partnership is therefore sustained. This finding confirms literature findings as *'for*

*SMEs are facing higher level of challenge in competition due to the development of global industry and market. Success collaboration with long-term business value leads to partners' long-term collaboration and the increase of mutually survivability (Stonkutė & Vveinhardt, 2016; Ramanathan & Gunasekaran, 2014; Camarinha-Matos and Afsarmanesh, 2006).'* Therefore, the long-term business value is a beneficial factor of SCCR development.

### *5.1.3.3 Interpersonal Communication*

Literature findings suggest effective interpersonal communication has significant impact towards interpersonal relationship building, e.g. *'The effective interpersonal communication between decision-makers, which exchanges individual perspective, opinion, interest and critical information, able to enlarge the influences of Guanxi base in interpersonal trust building'* (Xiaoxin, 2013; Wong & Huang, 2015; Wu et al., 2014). Moreover, Wood (2015) also observes that *'interpersonal communication is crucial, for exchanging information about interest, strategy, planning process help partners to rapidly know and work according to ongoing progress'*. These theoretical findings are proved by qualitative results, for SME executives would like to conduct regular communicative activities, including family visits, business visits, or attending the same conferences, to keep the frequency of interactions in either official or non-official aspects. Moreover, the exchanging of crucial information or value messages through their visiting is crucial. It is the attempt to show goodwill to partners which aims towards interpersonal trust building. Therefore, effective



interpersonal communication is a beneficial factor of SCCR development.

#### 5.1.4 Advantages of SCCR

##### *5.1.4.1 Transaction Cost Reduction*

The results find cost reduction is one of the major advantages with the establishment of SCCR. Partners with a stable relationship are able to leverage each other's resources with lower cost than alternatives. The resources refer to either tangible and intangible kinds, which include information, technical knowledge, raw material, and other types of organizational competitive advantage. On the other hand, the establishment of SCCR enables partners to minimize managerial and negotiation costs, especially when operational conflict emerges during business transactions. These findings are consistent with the classification of transaction cost into the types of market, managerial, and political (Oh, 2011; Furubotn & Richter, 2005; Button, 2016). For market transaction cost points to company spending in accessing essential assets or materials in business operations; while managerial and political are those tangible spendings (for example, the time cost) for agreement protection, enforcement, and governance. The development of SCCR replaced the non-necessary cost by trust and credits in each partner, and made partners have confidence with each other's performance (Dyer, 1997).

##### *5.1.4.2 Partner's willingness in exchanging complementary resources*

This research demonstrates that along with the development of SCCR, partners'

willingness in exchanging complementary resources will be increased accordingly. And such willingness is higher than supply chain members without SCCR partnership. This sense of willingness arises from the in-depth trust generated in SCCR building. Moreover, the growth of willingness in resource sharing strengthens inter-firm connections in order to strategically overcome supply chain risks. This finding is consistent with Dhillon et al.'s (2009) and Fawcett et al.'s (2007) suggestion, that *'One of the significant part of the partnership that influenced by partners willingness tend to be the inter-firms connection and the degree of mutuality'*. The development of 'mutuality' is one of the key goals in SCCR development. The partnership can be highly effective when mutual support becomes one of the strategic objectives. Thus, Wu's (2007) assumption is also supported: *'The partner's willingness in exchanging resources, which representing partners attitude in the collaborative relationship, enables to enlarge the effectiveness and efficient of partners support in collaboration'*. Therefore, the partners' willingness in exchanging complementary resources is a beneficial factor of SCCR development.

#### *5.1.4.3 Inter-organizational collaboration*

The results of this research manifest that development inter-organizational collaboration has significant impact on organizational interdependence building. The results confirm the finding about *'inter-organizational collaboration can be viewed as a set of processes crossing organizational boundaries that create interdependence, which need to be coordinated to achieve the goals of the two organizations that*

*based on activities of process alignment, joint decision-making and value chain or joint performance metrics. (Leon et al., 2008, p.162)'. The development of organizational interdependence is a great boundary spanner that bridges inter-firm relationships. It can be built depending on 'inter-firms trust, commitment, and reciprocity' (Wu et al., 2014) through official interactions. Moreover, qualitative research participants introduced several advantages of inter-organizational collaboration in the interview which are consistent with previous literature findings, such as 'enhancing companies' information, knowledge, risk sharing and profits by joint activities.' (Wu, 2015); moreover, 'improving organizational capacities, competitive advantage, and benefits through resource exchanging and cost minimization' (Elmarsafi, 2008). Thus, development of inter-organizational collaboration is a beneficial factor of SCCR development.*

## **5.1.5 Partner's Support for Supply Chain Risk Management**

### ***5.1.5.1 Risk Sharing***

The results identify risk sharing as the activities of transferring risk responsibility, or partners joint performance in risk mediation. The traditional ways of risk reduction rely on certain protocols or agreements that are established before the business transaction, in order to clarify the official principle and responsibility (Blecker & Kersten, 2006; Coyle et al., 2010; Fan et al., 2017). Risk sharing has been viewed as a kind of abnormal return or benefit through the establishment of SCCR, that is able to

make partners share the risk and responsibility with high willingness (Faisal, 2013; Nevin, 2014). This pattern of risk sharing is confirmed within Blecker and Kersten's (2006) findings about risk mediation, which comprise: 1) Risk bearing; 2) Risk avoiding through insurance; and 3) Risk Transfer by removing the source of risk to alternative parties. Therefore, the research finding demonstrates that Chinese SMEs can access the advantage of risk sharing through building SCCR.

#### *5.1.5.2 Collaborative decision-making*

Research findings suggest collaborative decision-making is one of the partner supports in risk management with the development of SCCR, because effective collaborative decision-making is conducted depending on in-depth information sharing which can be achieved through SCCR building. Theoretically, decision-making is the joint activity involved in supply chain coordination which aims at maximum supply chain performance by pulling chain-level resources to achieve a certain objective (Kanda & Deshmukh, 2008; Xu & Beamon, 2006). The result confirms this assumption, while Lee's (2000) theory about *'Joint decision-making enable to link partners valuable perceptions and information together in solving or avoiding certain or potential risks'*; Wu et al.'s (2014) and Barratt's (2004) perception about *'supply chain partnership enhance the efficiency of information exchanging, that supports the material flow control and product distribution'* are also demonstrated. Therefore, the research finding demonstrates that Chinese SMEs can access the advantage of collaborative decision-making through building SCCR.

#### 5.1.5.3 Quick Response

Qualitative results indicate the building of inter-organizational collaboration has direct influences on partner's quick response behavior. While quantitative results demonstrates quick response significantly connects to partner's support in risk management. This finding is consistent with Bruce et al.'s (2004) assumption, for the *'building of supply chain partnership is able to encourage members quick response behavior in manufacturing, logistic and distribution aspects'*. Also, Christopher et al.'s (2004) finding is confirmed for *'the improved chain-level flexibility increase members joint capacity in demand control and material velocity, which has direct positive influences towards lead time reduction in manufacturing, production, and logistic'*. Naturally, the development of SCCR has influences on the growth of mutual responsibility and benefits among members, to quickly respond to partners' request for risk management contributes to the efficiency of risk management that can minimize potential loss for SMEs. Therefore, the research finding demonstrates that Chinese SMEs can access the advantage of quick response though building SCCR.

#### 5.1.5.4 Resource Sharing

Qualitative results demonstrate that resource sharing is an advantage from SCCR building, while quantitative results manifest these findings. It confirms the theoretical findings for resource replenishment and essential resource sharing in risk reduction and prevention of supply chain disruption (Christiansen, 2015). Therefore, the research finding demonstrates that Chinese SMEs can access the advantage of

resource sharing through building SCCR. Interestingly, recent scholars argue the resource sharing under collaborative relationship as *'a crucial factor of the collaborative relationship, as it's either the factor to partnership construction, and the positive outcome of collaborative relationship'* (Cao & Zhang, 2012). Within the research, the factor of timely information sharing has been identified as a crucial factor in building SCCR, and resource sharing is also demonstrated as an advantage of SCCR development. This viewpoint has therefore also been manifested.

Taken together, there are several research findings in this study consistent with existing theoretical findings in the academic field. The political, financial, and production risks are demonstrated as the most common uncertainties that have influences on supply chain disruption. The factors of timely information sharing and long-term business value are manifested as beneficial to inter-organizational relationship building. Also, effective interpersonal communication contributes to interpersonal relationship building. The development of SCCR contributes to cost reduction, partner's willingness in resource changing, and inter-organizational collaboration. Such advantages have direct influences on motivating partners' support of collaborative decision-making, quick response, and risk and resource sharing.

The following section introduces the new findings of this study that different the theoretical findings.

## 5.2 New findings of this research

This study has several new findings regarding SCCR building in Chinese business environments. Meanwhile, several theoretical assumptions which are widely accepted by previous scholars were not supported in the research findings. Hence, this section interprets the inner reasons about such phenomena.

### 5.2.1 Supply Chain Risks

#### *5.2.1.1 Financial risk has been identified as the most crucial issue for SMEs*

The qualitative research findings suggest the financial issue, specifically, the health condition of cash flow, is the prior concern for executives in both risk management and partner selection aspects. Although the findings for financial risk are consistent with existing literature, its importance has been classified at the highest level by these research participants above other types of risks.

Based on the investigations in the qualitative research, this researcher finds that SME executives placed more concern onto those uncertainties that were not fully controllable. The maintaining of the SME's cash flow is just one of those concerns that relies on the focal SME's and partners' performance. Meanwhile, the collapse of cash flow has quite a high possibility of happening in each Chinese SME. Due to participants claims, there are two major reasons might which result in the shortage of cash flow: first, payments delay because of the unhealthy financial status of downstream partners. In other words, cash flow uncertainty is a transformable risk

which takes place when a downstream partner runs out of funds. Second, protracted receivable payments led by conflicts in production. As mentioned before, the employment of outsourcing services can be the reason leading a production risk. Customers will protract the payment when they have disagreements with the production quality or criteria. Focal SMEs will therefore have concerns about their cash flow when payments are protracted. Most important, unhealthy cash flow is able to trigger multiple adverse effects, such as material supply, loss of employees, and company internal conflicts. Therefore, the financial risk remains as the priority issue due to its correlated effects. Research participants view cash flow as the blood of SMEs in evaluation of its importance.

#### *5.2.1.2 The logistical and internal operational risk was not supported by the results*

Interestingly, both logistical and internal operational risks are mentioned in the finding from the qualitative research, but all vanished after Principle Component Analysis. In fact, it would be more appropriate to interpret that they are found correlated with other variances via PCA instead of 'not supported'. Literature findings conclude that logistical risk would occur when '*failure of functional and dynamic working process by partners in supply chain*' happened (Christopher, 2005), especially when '*uncertainties in physical material transportation within supply chain system, includes unreliable behavior performed by members in material handling, warehouse management, security, and protection*' (Heckmann et al., 2015). In the meanwhile, '*dysfunctional demand and supply control in the supply chain*' (Lee et al.,



1997) results from the failure of *'systematical demand planning applied by supply chain partners to effectively reduce logistical risk through timely and agility communication about demand volume, customer expectation and information exchange'* (Stadtler & Kilger, 2013). Depending on participants' experiences, attainment of functional and systematical planning of market demand and material supply is a 'hard work to be completed' and the 'risks could not overcome and require partners supports'. Firstly, effective demand and material control are not difficult for SMEs, because normally they would not require large volume production according to the company size and capacity. Secondly, as mentioned before, potential risks in this aspect are able to be controlled through effective communication with partners. Partners' support for risk management would not be required in this aspect except for incident issues. In addition, the theoretical finding also suggests the application of an IT system can be an option when communication channels are needed with external supports (Kherbach & Mocan, 2016). On the other hand, the shortage of cash flow tends to be the main reason for logistical risks, which have negative effects in sustaining functional material supply and delays incoming business transactions and projects. Similarly, participants claim operational risks are the internal uncertainties in a company's managerial aspects (Chen et al., 2013), which are normally caused by the failure of firms' internal control in the working process (Heckmann et al., 2015). But it always appears as the related consequence of production, financial, and political risks, which are unlikely to happen as an isolated

issue.

## 5.2.2 The practice of SCCR building

### *5.2.2.1 The development of SCCR requires simultaneous efforts of interpersonal and inter-organizational relationship building*

The development of SCCR is hypothesized in need of business value and individual emotional connection in the Chinese business environment. Qualitative results confirm this assumption while quantitative results manifest the significant connection between SCCR with both of interpersonal and inter-organizational relationships.

The personal level efforts, defined as Temporary Trust in this research, refer to interpersonal relation building between chief executives of the focal SME and partners. The researcher assumes in-depth inter-personal trust is important in partnership construction. Decision-makers (executives) in an SME would largely involve personal emotions and affections in line with managerial approaches. In other words, personal relations are based on a certain level of interpersonal trust able to affect strategic movements by Chinese SMEs. Especially when focal SMEs request partners to fulfill particular needs such as the support of risk reduction, the interpersonal emotions, affections, and trust would functionally replace the formal agreements and law enforcement in encouraging the partner's helpful performance. On the other hand, the inter-organizational level efforts, defined as Resource Combination, are the terms that emphasized business value and actual benefits that

the partner is able to gain through the partnership. Partners might join into the SCCR temporarily based on mutual emotional ties with the focal SME, but the potential business benefits are the key in maintaining the long-term partnership.

The research results demonstrate these hypotheses. Firstly, chief executives are the unique decision-makers in Chinese SMEs, having conclusive influences on SMEs' operations and any related issues. Executives' inter-personal relations and emotional ties would therefore have a significant impact on company strategic decisions. Secondly, business values like production capacity, assets, competitive advantage, and resources in the focal SME is another crucial issue towards SCCR building, because Chinese SME executives would attempt to access reliable relational networks and stable profits through long-term SCCR development, and the business value is the motivational factor that attracts a partner's participation in SCCR. In nature, members in an SCCR should have consistent objectives in organizational development even while there are emotional ties. That is the key to SCCR's effectiveness in supply chain risk management.

These research findings are correlated with several propositions generated through literature research. Chinese SME executives had deeply applied culture and traditions in line with SCCR creating and maintaining. Typically, research findings suggest SCCR is a business relationship but has emotional ties and personal affection contained in it. This finding is consistent with the theoretical finding from Yen et al. (2017), that Guanxi contains Ganqing, Renqing, and Xinren, which refer to emotional attachment,

favor exchange, and interpersonal trust. In the meanwhile, the research findings also demonstrate the theory of 'Conditional/Unconditional Trust', where '*unconditionally interpersonal trust building should depend on two different efforts: conditional trust and satisfied interactions. The term conditional trust is the antecedent step or the foundation within unconditional trust development, as it might evolve to either unconditional trust or distrust. When conditional trust remained, the continually satisfied interaction is required in line with unconditional trust establishment. (Roe et al., 2008)*'. Qualitative results indicate that the development of executives' interpersonal relationships (Temporary Trust) is the antecedent factor of SCCR, while positive interactions on the inter-organizational level (Resource Combination) is continually required for the development of SCCR.

#### *5.2.2.2 New findings for the key factors in SCCR building*

##### *5.2.2.2.1 Consensual cognition*

Consensual cognition among executives is viewed as the most important factor within interpersonal relationship development. The term Executives' consensual cognition refers to the managerial cognition in firms' strategic development between decision-makers of SMEs. Within the investigation, executives in focal SMEs tend to build partnerships with consensual cognition, because they believe that partners' behavior in further collaborations can be significantly motivated and directed by their belief and value in moral aspects. Because executives in each SME act as chief decision-maker in both company operational control and strategy designing, their

SMEs' overall performance would also perform according to the executives' decisions within business transactions. This results confirms the literature finding that *'firms with consensual cognitive frames and identity will produce similar way of decision-making and response towards environment change, and this kind of consensus helps into the combination of mutual resources in uncertainties avoidance. (Hahn et al., 2014; Evans, 2015)'*. Decision-makers' consensual cognition presents their consistent principle and value in firms' strategic development. It could be viewed as the guarantee of their will in fulfilling further objectives, agreements, and commitments. Therefore, consensual cognition is the most important factor in interpersonal relationship development.

#### *5.2.2.2.2 Production quality*

Qualitative findings manifest production quality is the most crucial factor in resource combination building in line with SCCR development. Quantitative finding demonstrates that qualified production ability has significant impact with inter-organizational resource combination building in terms of SCCR development. Therefore, the factor of production quality indicates focal SMEs' qualification of being a reliable partner, which is the attribute of focal SMEs to attract valued partners, and also benefits maintaining a long-term partnership. This result confirms literature findings as *'organizational production capacity has been widely viewed as the consequence from collaborative relationship building. Meanwhile, the firm's own production quality is also the factor that supporting partnership building'* (Fawcett et

al, 2015; Ross, 2015; Christopher, 2016; Camarinha-Matos & Afsarmanesh, 2014; Eltantawy et al., 2015). In the meanwhile, Camarinha-Matos and Afsarmanesh's (2014) argument, that *'advanced production capacity reflects the firm has outstanding and stable ability in operational planning, internal management, and quality control. And such features is beneficial for partner satisfaction building in terms of partnership building'* is also confirmed. Moreover, this finding is also consistent with the discussion of 'Production Risk' as Chinese SMEs' common supply chain risk in the previous section. Sufficient, qualified, and reliable production quality can be viewed as a crucial factor in SCCR building, since production risk is identified as a common uncertainty in Chinese SMEs. Therefore, reliable production quality is a beneficial factor of SCCR development.

#### *5.2.2.2.3 Partner's Predictable Behavior*

One of the advantages from the establishment of an SCCR is partners' behavior when focal firms sending the request for risk management support could become predictable. Focal SMEs would have such confidence in partners based on the long-term development of interpersonal and inter-organizational relationships. Also, this factors could be used as one of the indicators showing a certain SCCR has been attained between the focal SME and partners. The term 'partner's predictable behavior' is the factor that is proposed based on the concept of Partner Control from the field of Strategic Alliance (Brouthers et al., 2015; Garg, 2016; Schilke, & Cook, 2015). Previous scholars suggest partner's control is the mechanism emerging based

on the trust of decision makers, which could be used to direct partners' routinized behavior in transportation and production, and forecast non-routinized behavior in joint organizational learning and risk sharing. It was the factor indicating that capacity of a strategic alliance. The finding of partner predictable behavior in SCCR furthers this assumption, which indicates non-routinized partner's behaviors including risk and resource sharing and joint activities in risk reduction could be ensured based on mutual understanding and trust among decision-makers and the in-depth business benefits connection attained through long-term interactions.

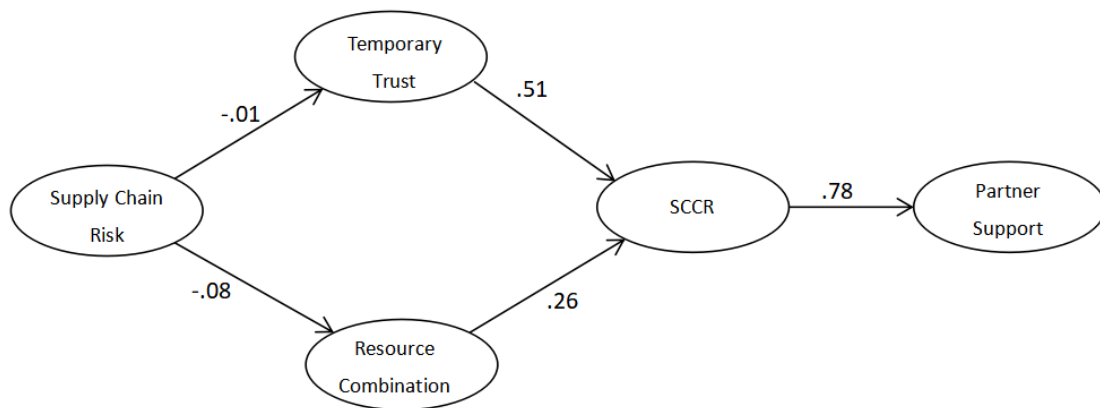
#### *5.2.2.2.4 Favor exchange, Guanxi base, Executive's mutual past experience*

Factors of favor exchange, guanxi base, and past mutual experience were generated through the literature research, which identified these as effective factors in Guanxi development according to Chinese traditions. Theoretically, these three factors emphasize different aspects: favor exchange refers to formal or informal benefits of giving among people; guanxi base refers to natural connections in blood, schooling, kinship, etc.; and mutual experience means the positive interactions in the past when they might have had opportunities working together. The qualitative findings suggest they share the same functions as the mechanism to bridge interpersonal relations, and can be used as boundary spanners in interpersonal relationship development. In fact, they share the same objective, which is to earn partners' willingness in line with trust building. Also, executives from focal SMEs were capable of providing a strong indication towards targeted executives that implied their high

interest in and intentions of being partners.

### 5.2.2.3 The connection between Organizational Risks with either Temporary Trust and Resource Combination

Besides the new findings and the findings that confirmed existing theories, an interesting result was also gained in the phase 2 (Quantitative Research) analysis, for there is negative factor loading between Supply Chain Risks with both Temporary Trust and Resource Combination in the large sample investigation.



**Figure 5.1 The Quantitative analysis results of the research**

As figure 5.1 indicates, the results of Confirmatory Factor Analysis (CFA) provide strongly positive loading between the constructs of Temporary Trust and Resource Combination with Collaborative Partnership, while there is also positive loading between the construct of Collaborative Partnership with Partner Supports. However, loadings of Supply Chain Risk towards both Temporary Trust and Resource Combination are  $-.01$  and  $-.08$ , which suggest non-correlated relations. This phenomenon is interesting because: as mentioned in the Research Methodology



chapter, the investigation process of the research was divided into phases 1 and 2. Phase 1 was qualitative research with a small group of respondents in order to explore in-depth perceptions from executives about partnership construction. Phase 2 was quantitative research, a large sampling investigation for hypothesis testing.

The qualitative results indicate building effective partnership (SCCR) is motivated by the requirements of supply chain risk reduction. Also, the common supply chain risks highlighted by the theoretical findings are demonstrated as well. In the meanwhile, the assumption of 'effective partnership construction requires both interpersonal and inter-organizational effort' by chief decision-makers among SMEs is also confirmed by participants from the interview.

The investigation in Phase 2 quantitative research is designed according to the results of Phase 1. And the quantitative results demonstrate the majority of the research hypotheses. Therefore, the assumption about the pattern of SCCR development (interpersonal and inter-organizational level simultaneous efforts) is supported by both qualitative and quantitative results in the different samplings. However, as for the motivational factors, the assumption about supply chain risks with Temporary Trust and Resource Combination, is confirmed in the small sample investigations but rejected in the large sample investigations.

There are two explanations able to interpret such phenomenon. First, the five supply chain risks identified in the conceptual framework (Political, Financial, Production,

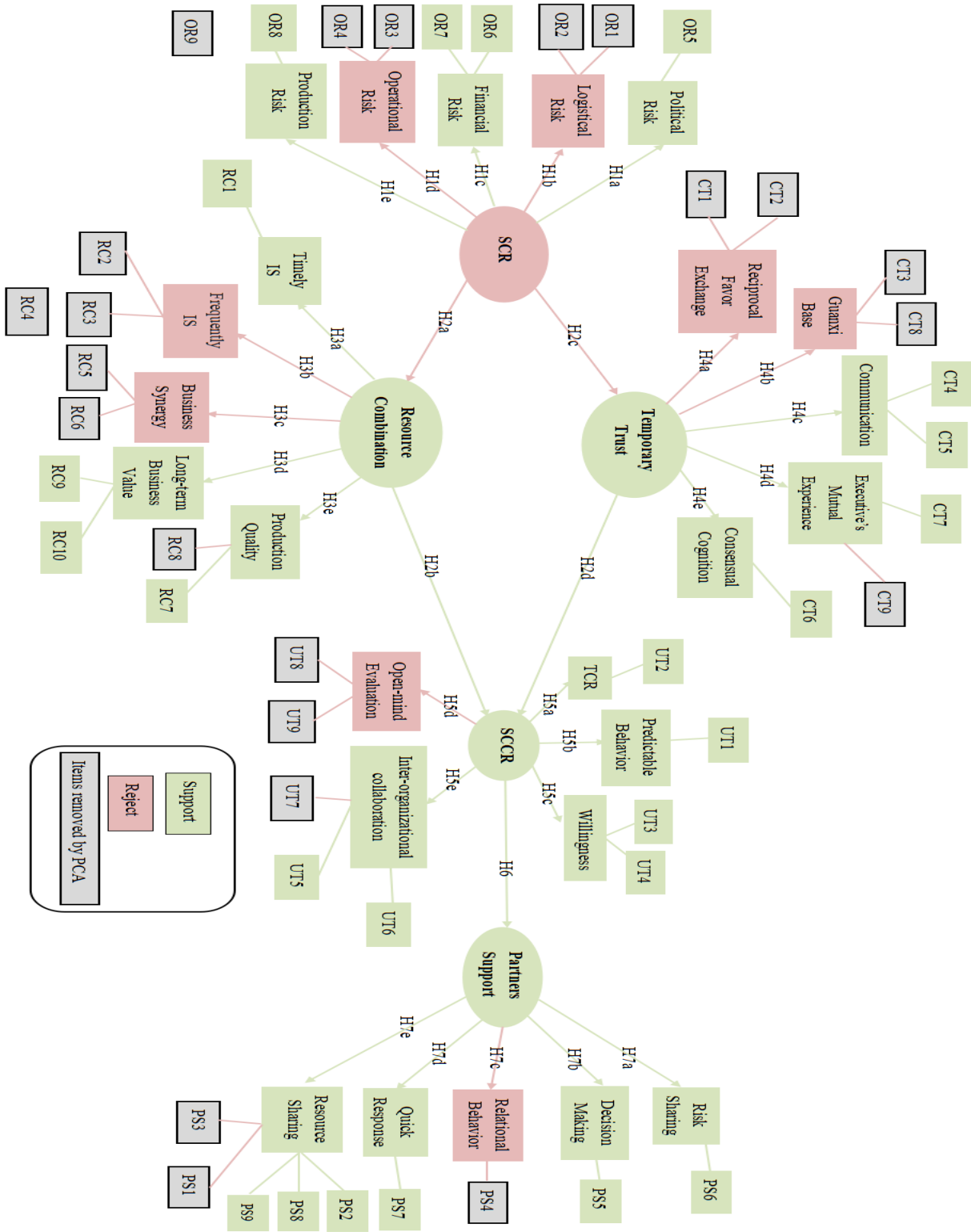
Logistical, Operational risks) are indeed common uncertainties for participants in the qualitative research. However, the diversity of risk classification is increased due to the growth of the sampling size from the qualitative research to the quantitative research. Thus, the loading performance in the larger sample research is affected. Second, this study initially assumes that the concern with supply chain risks is the motivating factor that encourages Chinese SMEs to build SCCR with appropriate partners. However, the qualitative results demonstrate such an assumption is imprecise. The purpose of Chinese SMEs in SCCR building is mainly to optimize the company as well as the supply chain performance, for which the advantage in supply chain risk management and reduction is an appendant influence rather than main objective. Therefore, the assumption of supply chain risk with SCCR building is incorrect in this research. In general, despite the factor of supply chain risk having negative loading, the main component of the research – Temporary Trust and Resource Combination – are demonstrated as effective for SCCR construction. This is therefore a successful research in addressing the pattern of partnership building for risk management for Chinese SMEs.

### **5.3 Review of research hypotheses and research objectives**

By following the discussion of all research findings, it is necessary to review the achievement of the research hypotheses as well as the research objectives addressed in Chapter 1.

Figure 5.2 presents the results of the hypothesis examination based on the conceptual framework (figure 2.1). Each item is also linked to its related coded question (eg. OR1, CT1, RC1) on the survey questionnaire (Appendix 2). The items in green color are the supported hypotheses, while those in red color are rejected hypotheses. The gray color items are removed by Principle Component Analysis (PCA).

Figure 5.2 The results of hypothesis testing in the conceptual framework



As mentioned in Chapter 1, this research has six research objectives in total. First, what are the major SCR for SMEs in the Chinese business environment? As shown in figure 5.2, this research found political, financial and production risks are major SCRs for Chinese SMEs. Second, what are the key factors of inter-organizational relationship building for Chinese SMEs? The result indicates timely information sharing, long-term business value, and production capacity are the key factors in inter-organizational relationship building. Third, what are the key factors of interpersonal relationship building between SME executives? The result argues effective communication, executives' mutual experiences and consensual cognition. Fourth, what is the relation between interpersonal relationship and inter-organizational relationship in SCCR building? The result presents that their combined influences have significant impact on SCCR development. Fifth, what are the collaborative advantages of SCCR? The result indicates SCCR leads to predictable partners' behavior, transaction cost reduction, willingness in resource exchanging, and in-depth inter-organizational collaboration. Sixth, how could SCCR influence partners behavior? Research finds the SCCR encourages partners in risk sharing, collaborative decision-making, quick response, and resource sharing.

## 5.4 Summary

This chapter highlights all the research findings from both the qualitative and quantitative research. New findings and findings confirming previous theoretical results are mentioned separately. Also, findings that not consistent with assumptions have been interpreted. Finally, the review of the research hypotheses and research objectives is given. The following chapter provides the conclusion to the entire thesis.

## Chapter 6 – Conclusion

### 6.1 Introduction

This concluding chapter reviews the literature review, research hypotheses, data analysis, and research results. The evaluation of the research outcomes and contributions of this study are given, accordingly. This is followed by the research limitations and recommendations at the end of this chapter.

### 6.2 Review of original objectives

This research aimed at providing a practical approach regarding supply chain collaborative relationship (SCCR) building for SMEs in the Chinese business environment. The exploration of common supply chain risks, the influences of individual and organizational efforts in partnership building, the competitive advantage of SCCR, as well as the influences of SCCR on risk management are the core of investigation.

### 6.3 Summary of chapters

This thesis contains six chapters in total. The first is the introductory chapter that addresses the research motivation, gap, aim and objectives, and introduces the research background briefly. The second chapter is the literature review which discusses the theoretical lens development associated with the research hypotheses. A conceptual framework (figure 2.1) is given as the summary of the literature

discussion. The third chapter indicates the rationale of the research methodology development, including the approach to selection of an appropriate research method, approach, and strategy. The fourth chapter highlights the results of the data analysis as well as the outcomes of hypothesis testing. The fifth chapter provides the discussion of the research findings based on the research data and literature findings.

## 6.4 Overview of the research findings

As discussed in section 5.1.2, the research findings suggest the political, financial, and production risks are the most common uncertainties that impact SME operation in China. Results also suggest effective SCCR should be built depending on the combined influences at both interpersonal and inter-organizational levels. Meanwhile, the establishment of SCCR enables partners to access multiple competitive advantages, such risk and resource sharing.

## 6.5 Main conclusions of the research

*a. Risk management is not the top motivation in Supply Chain Collaborative Relationship building*

This research assumes the concern and requirement of supply chain risk management drives firms' motivation in SCCR building. Given SMEs' lack of organizational resources, the combination of supply chain partners' valued assets is



the most effective way to mediate the negative effects from supply chain uncertainties. However, this assumption was not supported by the quantitative results.

According to the discussion in section 5.2.2.3, the concern of supply chain risk has insignificant effect on either the interpersonal or inter-organizational relationship building. Meanwhile, these two constructs have significant influences on SCCR building. This phenomenon could be explained by the risk management NOT being the top requirement in SCCR building.

As the qualitative data indicate, the main purpose of SCCR building is to optimize the overall supply chain performance in transaction cost reduction, logistics, demand control, production, resource exchanging, etc. Risk management and uncertainty avoidance are part of many competitive advantages of SCCR. Strategic development is still the main focus for Chinese SMEs. But as a managerial approach, the building of SCCR is effective in supply chain risk management.

*b. Financial risk is the top uncertainty for Chinese SMEs*

The research findings demonstrate financial risk is the most significant uncertainty affecting SME operation. The tightening of critical resources is common for SMEs; the phenomenon of lack of resources might have negative influences on SMEs. But financial issues are much more important than others, as it is the factor that easily leads to the collapse of SMEs. Participants in the qualitative research define cash

flow as the blood of the SME that matters to firm sustainability.

Due to the application of outsourcing services, healthy cash flow is the basis of functional material supply, logistics, production, and distribution. These factors maintain SME performance in transactions. However, failure of transactions could also be caused by ineffective material supply, logistics, production and distribution. These phenomena lead to conflicts in transactions, and downstream partners might refuse to process payments. Shortage of cash flow has therefore happened. Hence, in order to maintain sustainable operation in SMEs, avoidance of financial risk is the top issue for any executives.

*c. Both interpersonal and inter-organizational level interactions are crucial for SCCR building*

This study argues functional, sustainable, and stable, long-term supply chain partnerships should be built depending on interdependence in both individual and organizational levels. Efforts in interpersonal and inter-organizational aspects that attempt to develop relationships are two important factors for SCCR establishment.

Discussions in section 2.4 highlight the theory of “Unconditional Trust”. This theory suggests unconditional trust is the status of maximum trustworthiness that allows the full range of resource access between individuals. Unconditional trust is built depending on conditional trust with continually positive interactions. Conditional trust indicates limited access to resources, and is produced depending on empirical

evidence. Repeated behavioral interaction is able to switch conditional trust into unconditional trust.

The theory of “unconditional trust” is applied to the rationale of SCCR building. This study argues SCCR should be built depending on either personal temporary trust between executives or organizational resource combinations between firms’ formal interactions. The theory of Transaction Cost Economics (TCE) is used as the basic theory for temporary trust development. For personal relationship is the specific asset for trust development which has positive influences on business transactions. The Resource-based View is used as the basic theory of organizational relationship building. This study assumed owning valued and critical assets has positive influences on partnership building.

Results have confirmed these assumptions, that the establishment of SCCR requires combined interpersonal and inter-organizational efforts. This phenomenon has two crucial underlying factors. First, executives have the prime authority of decision-making in SMEs. Qualitative results indicate the executives, normally the CEO or founder of the company, are the only decision-makers that are in charge of any decisions. This covers the decisions in operation, production, innovation, and strategic design. Executives’ perceptions have significant influences on company performance. Thus, the relationships between executives also has significant influences on partnership building. Second, survival is the priority necessity of SMEs. As mentioned in Chapter 1, due to the limitation of size and company resources,

SMEs are vulnerable in market competition. Companies that have critical resources or willingness to perform beneficial cooperation are the ideal partners for Chinese SMEs. This is the reason that the factors 'timely information sharing' and 'long-term business value' are supported in the hypothesis testing. Therefore, based on the research finding, the assumption about the rationale of SCCR building is proved.

*d. Consensual cognition is the top factor for interpersonal temporary trust building authority*

Research results present effective communication, executives' mutual experiences, and consensual cognition are the factors that have positive influences on interpersonal temporary trust building. Moreover, the qualitative results indicate consensual cognition is the most important factor for interpersonal trust and relationship building. Consensual cognition refers to personal values, beliefs, and perceptions in the managerial strategic approach that has potential impact on executives' and firms' behavior. Participants in the qualitative research mention that executives with consensual cognition are ideal partners in the supply chain. Therefore, consensual cognition is an important factor for trust development in collaboration.

*e. Productivity is the top factor for inter-organizational capacity building*

Research results demonstrate timely information sharing, long-term business value, and production quality are effective factors in developing inter-organizational

relationships. Qualitative results indicate production quality is the most important factor for organizational relationship building. As discussed before, survival is the priority necessity of SMEs. Partners with qualified production capacity provide insurance for success business transactions. Meanwhile, production quality can be considered as an entry requirement to a supply chain. A participant in the qualitative research even mentions that their consideration of partners selection will be placed on those potential partners with satisfactory production capacity. Thus, productivity tend to be a crucial factor for supply chain collaboration.

*f. SCCR has significant advantage in optimizing supply chain performance*

The results indicate the development of SCCR enables SMEs to access multiple competitive advantages, including transaction cost reduction, partners' predictable behavior, partners' willingness in exchanging critical resources and in-depth inter-organizational collaboration. The development of SCCR also increases the level of interdependence between two SMEs. There would much shared value and benefits brought into the collaboration. SCCR can therefore lead to long-term partnership.

*g. SCCR has significant influences on supporting risk management*

Research findings also demonstrate SCCR has significant influences on supply chain risk management. With the establishment of SCCR, focal firms will be benefited by risk sharing, collaborative decision-making, quick response, and resource sharing for

risk management from partners.

## 6.6 Reflection upon the literature

This study has re-demonstrated several existing literature results. The Resource-based View (RBV) and Transaction Cost Economics (TCE) are used as basic theory for the rationale of SCCR building. Both of them have proved effective for partnership building for Chinese SMEs. The exchanging of critical resources is the factor that drives long-term partnership. Moreover, tangible resources, like information sharing, and intangible resources, like long-term business value and production capacity, are all significant. Similarly, the concept of Asset Specialty in TCE argues the partner would provide specific investment in a particular transaction to lock in the relationship, in order to minimize the cost. It is also proved by results that the development of interpersonal relationship is also viewed as a kind of investment by research participants.

Definitions about supply chain risk management are multiple; recent scholars argue supply chain risk is in internal, chain-level, and environmental uncertainties. The findings confirm this viewpoint, while also demonstrating environmental risk is a type of uncertainties ignored by SMEs. This study demonstrates the establishment of SCCR enables partners to access several advantages, like high willingness for critical resource exchanging, inter-organizational collaboration, and transaction cost reduction. These advantages encourage partners' behavior in quick response,

decision-making, and risk and resource sharing for risk management.

## 6.7 Recommendations for SMEs

Based on the research findings, this study has several valuable perceptions to recommend to Chinese SMEs:

### *a. Building SCCR is essential for long-term strategic development*

Research findings indicate the building of effective, stable, and reciprocal partnerships maintains the long-term development of SMEs. The partnership which influences resource sharing, risk sharing, and behavioral cooperation can optimize overall supply chain performance.

Importantly, the establishment of SCCR shapes interdependence throughout the entire supply chain. It is the way to switch individual benefits to mutual benefits. Such attempts are able to strengthen the value chain of the supply chain system, which increases the sense of collectivism of supply chain partners. This is the main attainment of partnership building. Once the SCCR established, the requirements of risk avoidance and performance improvement become a mutual necessity for partners. The improvement of supply chain performance is therefore achieved.

### *b. The development of SCCR should depend on interpersonal and inter-organizational efforts*

Trust development is complex and difficult work in industry, which long-term

interaction is essential for partner selection. Attempting both interpersonal and inter-organizational level efforts is an effective way for partnership development. Temporary trust building at the personal level evolves reliable connection between executives. This step is crucial for qualitative results, demonstrating the importance of executives' perception in Chinese SMEs. Interpersonal relationship building helps to explore partners' perception of and value in strategic development. It can be used to examine managerial cognition to understand potential long-term cooperation in partnership. Meanwhile, resource combination building helps to explore partners' existing competitive assets and advantages, which support the investigation of current cooperative value for focal SMEs. Competitive assets and advantages, which are related to organizational capacity, are the foundation for collaboration. Qualified production capacity is even the insurance for mutual business benefits. Therefore, although trust management is a crucial yet difficult work for SMEs, the attempt in personal and organizational efforts tends to be the most effective approach for long-term reciprocal partnership building.

*c. The influences of Guanxi on partnership building*

The concept of Guanxi cannot be ignored in any Chinese-related studies in business field. The term Guanxi refers to a reciprocal relationship with emotional attachment and benefit relation, and it is the cultural concept always applied to explain interpersonal relationship in Chinese research topics.



As the discussion provided in section 2.4.2, recent scholars tend to divide Guanxi into three different dimensions, namely Gangqing (emotional attachment), Renqing (favor exchange), and Xinren (interpersonal trust), in order to explain the rationale of how Guanxi impacts partnership building. This study adopts this assumption, and argues the Gangqing base (emotional attachment), Favor exchange (Renqing), and Mutual experience (interpersonal trust) are the effective factors supporting interpersonal trust and relationship development.

However, research findings presenting these three hypotheses refer to the same objective, which is to earn the initial good will from partners that is always used at the beginning of trust development. The consensual cognition is the factor that motivates the long-term relation with great trustworthiness. Most importantly, this factor ensures reliable partner behavior in accordance with focal firms' expectations.

Despite the separation of GRX (Gangqing, Renqing, Xinren) into the sub-dimensions of Guanxi that can effectively explain the nature of Guanxi, the idea of consensual cognition is able to reach the essence of relationship building. Trust development is the process to link shared values, beliefs, perceptions, and benefits. People tend to believe those who own similar experiences and willingness to change critical resource are persons who share mutual values and beliefs. This is the reason that explains why GRX creates the initial good will for trust building.

But the exploration of consensual cognition is the approach enabling partners to

directly uncover others' values, beliefs, and principles. It is also significantly supports the prediction of others' further behavior. This is reason that consensual cognition has been viewed as the most important factor for partnership building by qualitative results. Therefore, consensual cognition can be considered as a sub-dimension of GRX. And the exploration of consensual cognition provides the direct, effective, and significant impact on trust development.

Based on the research findings, there are three effective recommendations for the exploration of consensual cognition of partners: first, conversations about their past experiences; second, conversations about their strategic planning throughout the firms' development; and third, conversations with alternative parties for potential partner evaluation.

## 6.8 Contributions and limitations of this thesis

### *a. Highlight of contributions of this study*

This study provides multiple contributions for the related field. In theoretical aspects, this is an incremental study that develops an improved approach for trust and partnership building that is based on existing academic findings. The approach of SCCR building, which it is suggested depends on both interpersonal and inter-organizational efforts, is not only applied to supply chain systems but any types of collaborations (*some justification might be required depending on different contexts*), for instance, collaboration between departments or subsidiaries in

multinational corporations (MNCs). Basically, this study demonstrates that sufficient conditional trustworthiness plus continually positive interactions are the ideal rationale for relationship development. The relationship produced by this approach is stable, functional, and effective for the motivation of resource exchanging and cooperative behaviors.

Meanwhile, the common supply chain risks identified by this study: Political, Financial, and Production risk are valuable for further studies in the field of Chinese SMEs. The relationship of political uncertainties to micro-environment uncertainties is an attractive topic for SME study in any nation. Besides, explorations about the importance of cash flow in SMEs is also beneficial for SME sustainability and performance research.

This research has also demonstrated the significance of consensual cognition and production capacity is the key for trust development. This finding can be applied to personal trust as well as organizational trust development.

This study also argues several competitive advantages are provided by the establishment of SCCR, while there is a related effect on risk management. Such findings support existing academic perceptions about the effectiveness of collaborative relationships.

In managerial aspects, the supply chain risks identified by this study provide practical indications for uncertainty avoidance for companies. This would be critical in

understanding the SMEs in the Chinese business environment. Importantly, the rationale for SCCR building suggested in this research is repeatable and imitable for any firm. It would not be affected or limited by environmental issues, as the approach suggests the essential factors in trust development. This approach has also involved Chinese culture-related factors with detailed explanation. It would be very valuable for foreign organizations not familiar with Chinese culture. For instance, those MNCs which need Chinese partners for material supply or production outsourcing.

Discussions about consensual cognition provide new ideas in inter-personal trust development of collaborative relationships. Traditionally, Guanxi has been viewed as the crucial factor to connect individuals in the Chinese context. Moreover, recent studies have also provided more in-depth argument which separates Guanxi into GRX. It would be effective in development of personal relations between decision-makers. This study argues consensual cognition is the factor that provides more, deeper influences beyond GRX. It does not mean GRX is insignificant; yet consensual cognition helps in detecting managerial principles which has the power to enlarge the effectiveness of GRX. Importantly, this research proves GRX shapes the favorable beginning of partnership development, and the consistency of managerial cognition is the factor that motivates long-term collaboration. Such findings help current executives in re-understanding the nature of Guanxi as well as organizational relationships. Moreover, the concept of consensual cognition is applicable in multiple

fields with necessary justification. For instance, the understanding of consumer cognition supports the motivations of customer loyalty, which can be applied in brand image management, advertising, and marketing fields.

*b. Critical Evaluation of the Research Methodology*

The research employs the mixed-method research approach for investigation. It is known as an exploratory sequential mixed-method research, which firstly conducts the qualitative research, followed by a quantitative survey. This approach allows an initial examination of a conceptual framework developed by a literature research and by qualitative interview. The in-depth qualitative data supports the improvement of the conceptual framework, which is a better option than other types of MMR that recommend doing quantitative research first, or conducting qualitative and quantitative research together.

The qualitative research uses semi-structured interview to collect empirical evidence from research participants. The researcher abandons such observations because the empirical evidence can be collected through one-time conversation, as long-term observation is not a method advanced for this study. The quantitative survey was conducted by online questionnaire, which is also a time-saving method for investigation. Thus, the research methodology designed for this research was effective.

*c. Limitations of the Research and recommendations for Future Research*

Although this research has uncovered the inner rationale and pattern of Chinese SMEs' SCCR building, some limitations of investigation still remain. The limitations mainly come from two different dimensions: first, the variety of the industries of the research participants. The participants (SMEs) in both the qualitative and quantitative research came from multiple industries. Such a broad and diverse sample has been adopted on purpose to develop a practical partnership building approach that is workable for major Chinese SMEs. However, the issue of industrial difference was also raised by the investigation. For instance, most of the qualitative research participants identified that cash flow uncertainty remained as the priority issue affecting SMEs' operation. But one participant, who operated as the medicine trader, viewed political risk as the major uncertainty (section 4.2.2.1.1). The distinction of supply chain risk identification might lead to different focal SMEs' behavior in partner selection, practice in partnership building, or the requirement to SCCR. Their practice of the implementation of SCCR in risk management might, therefore, have particular differences to others. Such an issue is worth further discussion and exploration. Second, according to the design of the research aim and objectives, this research has narrowed its interest to Chinese SMEs' practice of supply chain partnership building. However, the approach suggested by this study could vary due to companies of different nature. As mentioned before, the SME executives always act as the representative for the company because they own prior

authority in company operational decision-making and strategic development planning (section 4.2.2). The executives' interpersonal relationships will, therefore, determine influence on inter-organizational relationship building between Chinese SMEs. But the other kinds of firms, such as large enterprises, joint ventures, and subsidiaries of foreign organizations, might have different patterns of authority structure, and their rationale for SCCR development might be therefore different.

On the other hand, the researcher has three recommendations for further scholars. First, previous scholars suggest inter-firm resource sharing is a hierarchical activity that is consistent with degree of trust. The deeper trust remains between two organizations, the more critical resource sharing activities will be conducted. Qualitative results in this study have confirmed this phenomenon; however, it has been rejected by the quantitative results. The researcher finds it an interesting topic worth exploring. Second, is the financial (cash flow) risk really the most important issue that matters to Chinese SME operation? Both the qualitative and quantitative results indicate financial risk is the major supply chain risk for Chinese SMEs. And most of the research participants in the qualitative research evaluate the sustainability of cash flow as the most important issue to Chinese SMEs. However, one research participant, the medicine trader, considers financial risk is less harmful than political risk. The researcher believes such a phenomenon is generated from the difference between company operations. For participants who place financial risks first are production-oriented companies where the sustainability of cash flow matters

to their sustainable productivity. The medicine trader is a transaction-oriented company to which political issues are more harmful. This is another interesting topic worth exploring. Third, in qualitative research, participants claim partner selection is important within partnership building. The exploration of the personality of potential partners through consensual cognition identification is important, for it has significant influences on partner's behaviors within cooperation. Also, historical performance, record, reputation, and credit are involved as crucial elements in partner evaluation as well. These factors have direct influences on interpersonal trust among Chinese SME executives. However, the factor of partner selection and evaluation is excluded in the quantitative investigation because it irrelevant to the core focus and objective of this study. But it is an interesting topic worth further research. Thus, the researcher recommends following scholars, interested in the field of supply chain partnership building or implementation of supply chain partnership for supply chain risk management in the Chinese business environment, attempt more in-depth investigation by adjusting the results of this study, to uncover more valuable research findings in this field.

## 6.9 Conclusion to the thesis

In conclusion, this research aimed at investigating the influences of Supply Chain Collaborative Relationship (SCCR) on Chinese SMEs' risk management performance. The objectives of this research focus on the investigation of common supply chain risk (SCR), the rationale for SCCR building, the competitive advantage of SCCR, and



the influences on partners' support in risk management.

This is an incremental research that has developed based on existing academic findings. The research has re-demonstrated several existing literature findings, such as the studies on supply chain risk definitions, the Resource-based View, Transaction Cost Economics. Meanwhile, new findings of this study are also significant. This research proves the combined interpersonal and inter-organizational efforts are essential for SCCR development. While consensual cognition and production capacity have significant influences on trust and relationship development. Also, SCCR has been demonstrated to have significant impact on risk management. Thus, this research has completed and attained its objectives within the investigation.

This Ph.D. study has been a long journey with great pleasure. It is a process of developing completed academic research by independent effort. Within this journey, the researcher has had the opportunity to experience critical and independent thinking. Meanwhile, during the Ph.D. study, the researcher has been able to experience how to define appropriate research questions, develop appropriate research methodology and sufficient literature review, then design a correct investigation process to ensure the research findings are able to answer those research questions defined initially. This is a significant ability that benefits both my academic career and my life in the future. Finally, being a Ph.D candidate has been the most valuable experience for myself.

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## Appendix 1 – Semi-structured Interview Questionnaire

### ***The process of defining firms own potential risks affect the primary selections of potential partners in SCCR***

1. Are there any risks potentially remained will effect your company operation?
  - a) How could you classified these risks ?
  - b) Are there any difference among potential risks according to its source ?  
(Here I will mention those elements of risk source applied into the conceptual framework if its not been mentioned by interviewees.)
  - c) What kind of influence will sourced by these risks?
  
2. How could you notice these risks?
  - a) Will you treat these risks separately due to its source?
  
3. Will you use external support from your partners in risk reductions?
  - a) As risk may sourced from different factors, is there any difference in selecting partners' support?

### ***The management of SCCR in organizational level rely on the execution of SCCR management in individual level***

1. How do you think about collaborative relationship ?
  - a) How do you feel about the Guanxi in both interpersonal or interorganizational level?
  - b) How do you feel about the impact from the mature relationship network against to the incoming risks or uncertainties?

2. How could you organize your relationship network in both interpersonal or interorganizational network?

- a) Is there any distinctions between the management of relationship network in both interpersonal or interorganizational level?
- b) Are there any conflicts of the management between these two types relationship?

3. How did you develop collaborative relationship?

- a) Are there any different impacts in the CR development between experienced and non-experienced executives or company representatives?
- b) When developing company CR, which factor you will treat more seriously, the value of company or representatives personal talent?
- c) How do you think about the influence from a executives personal relationship network to the company CR development and management?

***There is trust endorsement exciting into SCCR represents organizational capacity of using collaborative relationship to reduce risks***

1. What is your principle in CR development?

- a) How do you feel about the impact of your value in CR development ?
- b) In what kind of situation you will apply relationships as external support?
- c) When will you start to build your relationship network?

2. What is your protocol in CR management with partners?

- a) How do you evaluate the capacity of your CR?
- b) How could you control the mutual engagement with your partners?

3. What do you think about TRUST in CR management?

- a) Do you think it is important to make your partner trust you before they

provide support?

- b) How do you think about mutual trust in a CR?
- c) Do you think there is advanced performance of the CR if you and your partner have mutual in-deep trust instead of a lip-deep business relationship?

***The evaluation of SCCR partner rely on its resource extendedness includes uncertainties handling, reputation, production capacity, organizational size, level of partner relationship network.***

1. How do you select partners?

- a) What kind of factor is crucial in partner selection?
- b) How could you know your partners own enough capacity to support you in risk reduction?
- c) Which factor is underlying your partner selection, the mutual trust or your demand?

***The Reaction from partners***

1. What do you expect for return when managing risks from a well-managed collaborative relationship?

- a) What do you expect in collaborative behavior aspect? Like information sharing, risk sharing, agility response on your request, etc.?
- b) What do you expect in material or intelligence sharing aspect? Like Raw material sharing, effective intelligence?
- c) What do you expect in business extendedness aspect? Like contact construction to powerful partner, valuable business partner, etc.?

2. How do you avoid opportunist?

***This question will asked before questions under Hypothesis 5 to 8***

1. How could you ensure your partner will help you in necessary situation?

***The non-substitute trust accumulated through long-term orientation has significant effect on trust endorsement construction***

1. How do you think about interpersonal and interorganizational trust with your partners?
  - a) What's the difference?
  - b) What's their connections?
  - c) What's their conflict?
  
2. What kind of factors do you think will make your partner determine to trust you?
  - a) Past mutual experience?
  - b) Reputation?
  - c) Reliable interaction?
  - d) Communication?
  - e) Cognition?

***The non-imitational competitive advantage in inter-firm level has significant effect on trust endorsement construction***

1. Do you think the capacity or resource your owned that could benefits your partners is the determinant of your CR construction and well-management?
  - a) What is the characteristic of these capacity or resource (Business synergy)
  - b) Do your think your partners will offer your a non-beneficial favor, if yes, please describe it?
  
2. How do you avoid opportunistic behavior from your partners when requiring external support?
  - a) Especially for temporal and emergency situation, do your think your partner will overrate the value of their support? (Commitment)

- b) Will you tend to build interdependence in CR in order to reduce the opportunistic behavior

***The organizational, tacit, strategic information sharing has significant effect on trust endorsement construction***

1. How do you think about information sharing in CR management?
  - a) Do you think timely and valued information reveal will help you in enhancing CR?
  - b) Will you act as a crucial informant to reveal all the essential information necessary for your partner?
  - c) Which one you think is more important, ex parte information sharing or mutual information exchange?
2. What kind of information shared to your partner will be effective for building trust?
  - a) The newly market and demand information?
  - b) Alternative partner evaluation?
  - c) Clue for both company further development?

***The specific investment in interpersonal relationship has significant effect on trust endorsement construction***

1. Except interorganizational relationship, will you tend to build great personal relationship among representatives from each company?
  - a) Do you think advanced interpersonal relationship among representatives will beneficial for CR performance ?
  - b) Is there any negative effect if you have personal conflict with partner representatives to CR performance?



2. How could you develop and manage interpersonal relationship?

- a) Will you tend to engage with representatives in both official and non-official aspect?
- b) Will you tend to provide external help in social life to your partners representative in order to enhance CR?
- c) Is that attractive for your partner representatives if you own more superior personal relationship network with alternative company or industry than other representatives, and beneficial to your CR management in interpersonal level?

## Appendix 2 – Main Survey Questionnaire

### *Survey questionnaire*

***Research topic: The management of collaborative relationship (CR) in SMEs in China***

#### ***Section 1 - Statement by the Researcher***

My name is Ma Jun. I am doing my Ph.D. research at the University of Bedfordshire. My Ph.D. research aims to study the determinants of collaborative relationships (CR) in the context of Chinese SMEs.

To achieve the aim of my research, I have prepared a questionnaire to understand the determinants of CR in your esteemed organization. I sincerely request you to complete this attached survey questionnaire and share your opinion/ comments. I would greatly appreciate your participation. The questionnaire will not take more than 30 minutes of your time.

I assure you that your responses will be treated anonymously and only aggregated results will be published. Only my supervisors and I will have access to your responses, and no one else will see the questionnaire completed by you. All of the data collected from this survey will be used for academic purpose only, and specific to this research. Response from participants will not be released.

I can provide the research outcome of this research to all participants in 2017. Please contact me using my email address (jun.ma@study.beds.ac.uk) if you do require a copy of the research thesis.

Any participants who have concerns or complaints can directly contact my supervision team:

***First supervisor: Dr Usha Ramanathan***

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**Section 2 - The questionnaire**

**(Please tick the appropriate box to indicate your attitude to each statement)**

<b>Organisational Risk</b>					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
OR1. My organization has risks in material transports in supply chain system (MacKinnon,2002).	1	2	3	4	5
OR2. My organization has risks raw material supply in upstream(Swierczek,A.2014)	1	2	3	4	5
OR3. My organization has risks for losing key employees(Massingham, 2008).	1	2	3	4	5
OR4. My organization has risks in internal operation (Simons,1999).	1	2	3	4	5
OR5. My organization has risks in legal concern in product legalization (Walker,2008).	1	2	3	4	5
OR6. My organization has risks in cash flow (Ritchie,2007).	1	2	3	4	5
OR7. My organization has risks in debt concern(Altman & Sabato, 2007)).	1	2	3	4	5
OR8. My organization will be vulnerable for overrating own production capacity (Singh,1998).	1	2	3	4	5
OR9. My organization doesn't need extra support for risk management, as we can deal with it by ourself (MacKinnon,2002).	1	2	3	4	5
<b>Temporary Trust</b>					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
CT1. The officially reciprocal mutual support with partners helps our conditional trust construction building (Chen et al., 2004).	1	2	3	4	5

CT2. The personal favor exchange doesn't equally work to every person (Fawcett,2012).	1	2	3	4	5
CT3. The family visit for partners during off-time is helpful for our conditional trust building (Tsang, 1998).	1	2	3	4	5
CT4. The effectiveness of communication with partners determines our conditional trust building(Park,2012).	1	2	3	4	5
CT5. The efficiency of communication determines our conditional trust building with partners(Valley et al, 1998).	1	2	3	4	5
CT6. The consensual cognition with partners determines our conditional trust building(McAllister,2014).	1	2	3	4	5
CT7. The common experience with my partners determines our conditional trust building (Fawcett,2012).	1	2	3	4	5
CT8. Me and partner's mutual requirement of conditional trust building will encourage us to identify our similarity which beneficial for it (Tsang,1998).	1	2	3	4	5
CT9. My past experience is helpful for guanxi construction (Fock & Woo, 1998)	1	2	3	4	5
<b>Resource Combination</b>					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
RC1. The Timely Information sharing with my partners will positively affect our resource sharing (Forsland,2007).	1	2	3	4	5
RC2. Frequent Information Sharing with my partners will positively affect our resource sharing (Fawcett et al, 2007).	1	2	3	4	5
RC3. The valued information sharing with my partners will positively affect our resource	1	2	3	4	5

sharing(Gunasekaran & Ngai, 2004).

RC4. Me and my partners will not exchange key information unless there is certain trust between us (Caves,1984). 1 2 3 4 5

RC5. The business synergy with my partners determines our resource sharing condition (Itami and Rochl,1987). 1 2 3 4 5

RC6. The business synergy causes the interdependence with my partners(Tanriverdi, 2006) 1 2 3 4 5

RC7. The non-substituted and qualified productiveness of my organization will positively affect our resource sharing with my partners(Caves,1984). 1 2 3 4 5

RC8. The advantage of productiveness may not work for every partners for partnership building (Caves,1984). 1 2 3 4 5

RC9. The predictable long-term business value of my organization encourages the resource sharing with partners (Cao,2011). 1 2 3 4 5

RC10. The raising value of cooperation with my organization increase the interest and deepness of partner’s resource sharing (Yilmaz et al,2005). 1 2 3 4 5

**Collaborative Partnership**

Strongly Disagree Neutral Agree Strongly Disagree Agree

UT1. The unconditional trust leads predictable partners’ support on my organization’s risk (Ireland and Webb,2007). 1 2 3 4 5

UT2. The unconditional trust leads the transaction cost reduction on raw material purchase(Ireland et al., 2005) 1 2 3 4 5

UT3. With the unconditional trust, my partners willing to expertized on technical support (Moorman et al., 1 2 3 4 5

1993)					
UT4. Under the unconditional trust, my partners willing to provide extra support on my organization's risk reduction (Moorman et al., 1993)	1	2	3	4	5
UT5. Under the unconditional trust, my partners will provide Inter-organisational <u>tangible resource</u> exchange for my organization's risk management (Daugherty et al,2006)	1	2	3	4	5
UT6. Under the unconditional trust, my partners will provide Inter-organisational <u>intangible resource</u> exchange for my organization's risk management (Daugherty et al,2006).	1	2	3	4	5
UT7. The financial support can be limited even under partners' unconditional trust(Ritchie,2007).	1	2	3	4	5
UT8. Under the unconditional trust, my partners will provide open-mind evaluation on my risk management solutions(Willmerding, 2007)	1	2	3	4	5
UT9. Under the Unconditional trust, my partners will provide open-mind evaluation on alternative partners (Willmerding, 2007)	1	2	3	4	5
<b>Partner's Support</b>					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
PS1. A well-managed partnership will bring information sharing to my organization(Bentsson,2000).	1	2	3	4	5
PS2. A well-managed relation network will bring raw material sharing to my organization(Bentsson,2000).	1	2	3	4	5
PS3. A well-managed partnership will bring financial support to my organization(Manuj & Mentzer, 2008).	1	2	3	4	5
PS4. A well-managed relation network will bring joint relational behavior with partners(Griffith,2005).	1	2	3	4	5

PS5. A well-managed partnership will bring collaborative decision-making with partners(Lee & Whang, 2000).	1	2	3	4	5
PS6. A well-managed partnership will bring risk transformation with partners(Manuj & Mentzer,2008)	1	2	3	4	5
PS7. A well-managed partnership will bring quickly response from partners(Faisal,2006).	1	2	3	4	5
PS8. A well-managed partnership will bring technical support from partners(Ritchie & Brindley, 2007)	1	2	3	4	5
PS9. A well-managed partnership will bring support for product legalization from partners(Manuj & Mentzer, 2008)	1	2	3	4	5

**Section 3 - Participants Details**

**Please give your details below. I again assure you that your responses will be treated anonymously.**

<b>Industry:</b>	
<b>Company</b>	
<b>Position:</b>	
<b>Years of your service in this company:</b>	
<b>Years of your service within the industry:</b>	



## Appendix 3 – Pilot Test Questionnaire

I am Ma Jun doing my PhD research with the University of Bedfordshire. Currently, I am working in the topic of collaborative relationship (CR) in the context of Chinese SMEs. To understand the actual practices of CR, I have conducted interviews with the Chinese companies. Based on the interview observations and literature review, I have developed a pilot questionnaire (given below). Before distributing this questionnaire to a wider group, I would like to get your opinion and comments. This will help me to improve the quality of this questionnaire and my research.

I request you to complete this attached survey questionnaire and share your opinion/ comments. I would greatly appreciate your participation.

***Topic: The management of collaborative relationship (CR) in SMEs in China***

This questionnaire aimed on investigating current practice of CR management within China business environment

The content of this investigation will be applied to academic purpose only

***Industry:***

***Organization (Optional):***

***Your role:***

***Years of your service in this company:***

***Years of your service within the industry:***

***Years or your company in Collaborative relationship:***

**1. The classification of organizational risk**

1). How important do the role of Financial Risk in organizational operation?

Low 1  2  3  4  5  6  7  Highly significant

2). How important do the role of Production Capacity risk in organizational operation?

Low 1  2  3  4  5  6  7  Highly significant

3). How important do the role of Operations Risk in organizational operation?

Low 1  2  3  4  5  6  7  Highly significant

4). How important do the role of Political Legislation Risk in organizational operation?

Low 1  2  3  4  5  6  7  Highly significant

5). How important do the role of Logistical Risk in organizational operation?

Low 1  2  3  4  5  6  7  Highly significant

6). Other organizational risk(s):.....

**2. The Non-Imitational competitive advantage in creating collaborative relationship**

1). How important do the role of Long-term beneficial Business value in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

2). How important do the role of Non-substitute production and service in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

3). How important do the role of Construction of Mutual Commitment in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

4).How important do the role of Organizational Mutual Interdependence in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

5). How important do the role of Business Synergy in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

6). Other factor(s):.....

**3. The Non-Substitute Trust in creating collaborative relationship**

1). How important do the role of the Construction of consensus in cognition in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

2). How important do the role of the Satisfaction from reliable behavior in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

3). How important do the role of Communication in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

4) How important do the role of the Quality of organizational interaction in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

5). How important do the role of Executive's past mutual experience in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

6). Other factor(s):.....

**4. The Information sharing in creating collaborative relationship**

1). How important do the role of Market Information in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

2). How important do the role of Frequently Information Sharing in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

3). How important do the role of Accuracy Information in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

4) How important do the role of the Quickly Information sharing in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

5). How important do the role of Timely Information sharing in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

6). Other factor(s):.....

**5. The Executives' Interpersonal Relationship in creating collaborative relationship**

1). How important do the role of Renqing in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

2).How important do the role of Emotional investment in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

3).How important do the role of Reciprocal favor exchange in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

4). How important do the role of the Identification and enhancing Guanxi base in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

5). How important do the role of External investment on relatives, target's hobby and gifts on special festival in creating collaborative relationship?

Low 1  2  3  4  5  6  7  Highly significant

6). Other factor(s):.....

**6. The classification about the Return from partners within collaborative relationship for Risk management**

1). How important do the role of Joint relational behavior from collaborative relationship in risk management?

Low 1  2  3  4  5  6  7  Highly significant

2). How important do the role of Risk transformation and sharing from collaborative relationship in risk management?

Low 1  2  3  4  5  6  7  Highly significant

3). How important do the role of Quick response from collaborative relationship in risk management?

Low 1  2  3  4  5  6  7  Highly significant

4). How important do the role of Resource Sharing from collaborative relationship in risk management?

Low 1  2  3  4  5  6  7  Highly significant

5). How important do the role of Collaborative decision-making from collaborative relationship in risk management?

Low 1  2  3  4  5  6  7  Highly significant

6). Other return(s):.....

## Appendix 4 – Basic Quantitative Description and Analysis

### **1. Measures**

The survey questionnaire is designed based on the conceptual framework which was revised according to qualitative research findings. There are five constructs of the new conceptual framework: 1. Organizational Risk; 2. Temporary Trust; 3. Resource Combination; 4. SCCR; 5. Partner's Support (*Qualitative research participants tend to describe SMEs uncertainties as "organizational risk" rather than the term "supply chain risk" adopted in this study, the researcher therefore adopted the "organizational risk" in quantitative survey for participants convenience*). Each construct contains five items (*please see figure 3.1 for the conceptual framework*). In survey question design, each item is associated with 1 to 3 questions which are designed through combining existing literature and theories with previous hypotheses. In the end, the researcher used a 5-point Likert scale (*from "Strongly Disagree"=1 to "Strongly Agree =5"; Neutral = 3*) equally towards 46 survey questions in total (*please see Appendix 2 for the survey questionnaire*). Meanwhile, in order to make quantitative results easier to applied to further statistical analysis, the researcher transformed all survey questions into numerical values. Each question is coded according to its "Acronyms" plus "question number" under their constructs, as follows:



**Table A4.1 The coding of survey questions (Full details of questions are available in Appendix 2)**

<b>Organizational Risk</b>	<b>Temporary Trust</b>	<b>Resource Combination</b>	<b>SCCR</b>	<b>Partner's Support</b>
<b>OR1</b>	<b>CT1</b>	<b>RC1</b>	<b>UT1</b>	<b>PS1</b>
<b>OR2</b>	<b>CT2</b>	<b>RC2</b>	<b>UT2</b>	<b>PS2</b>
<b>OR3</b>	<b>CT3</b>	<b>RC3</b>	<b>UT3</b>	<b>PS3</b>
<b>OR4</b>	<b>CT4</b>	<b>RC4</b>	<b>UT4</b>	<b>PS4</b>
<b>OR5</b>	<b>CT5</b>	<b>RC5</b>	<b>UT5</b>	<b>PS5</b>
<b>OR6</b>	<b>CT6</b>	<b>RC6</b>	<b>UT6</b>	<b>PS6</b>
<b>OR7</b>	<b>CT7</b>	<b>RC7</b>	<b>UT7</b>	<b>PS7</b>
<b>OR8</b>	<b>CT8</b>	<b>RC8</b>	<b>UT8</b>	<b>PS8</b>
<b>OR9</b>	<b>CT9</b>	<b>RC9</b>	<b>UT9</b>	<b>PS9</b>
		<b>RC10</b>		

(The construct "Temporary Trust" used to named as "Conditional Trust", so its Acronyms was CT; "SCCR" used to named as "Unconditional Trust", and its Acronyms was UT).

## **2. Data cleaning**

Data cleaning is the first step of quantitative data analysis, which was completed in order to increase the level of data validity by removing incorrect and inaccurate data. As mentioned in the research methodology chapter, the quantitative research launches an application on smart devices supported by third-party services. By using this application, the researcher can design a specific program by setting related rules

about the survey. Participants are therefore unable to complete the questionnaire more than once and must answer the questions in the given range. The major concern in data cleaning is the issue of accuracy. The data cleaning was completed using Microsoft Excel, to remove all data filled with invalid answers. For instance, the researcher might find some participants completed the whole questionnaire by selecting one option only to reduce their time spent on the survey. This kind of invalid answer would have negative influences on the results of data analysis, so it is considered as the main issue of the data cleaning process. At the end, the total amount of valid responses had decreased to 196.

### ***3. Descriptive statistic and Validity and Reliability Testing***

Descriptive Statistic (DS) is the most crucial stage in quantitative data analysis before proceeding with the further analysis. Theoretically, DS is viewed as the most important instrument in reporting the systematical summary about data collected (Houser, 2014). It contributes to displaying the general features of the data set in a visible way (Goodwin, 2009). The results indicate the main attributes of a data set as mean value, range, variance, standard deviation, etc., as follows:

**Table A4.2 Descriptive Statistics**

	<i>Mean</i>	<i>Mini</i>	<i>Max</i>	<i>Range</i>	<i>Variance</i>	<i>Std. Deviation</i> <i>(Scale Statistic)</i>
<b>Means</b>	3.573	2.503	4.046	1.544	.093	13.51
<b>Variances</b>	.661	.298	1.253	.955	.052	

Within the 196 responses, the mean value of overall answers is 3.573; the minimum mean is 2.503 (OR9) while the maximum mean is 4.046 (UT7). The standard deviation value, in general, is 13.51; that item with minimum standfard deviation is PS1 at .574, and the maximum item is OR6 at 1.12. Most importantly, the Cronbach’s Alpha test allowed the researcher to examine the validity and reliability of the data set. It is crucial in helping the researcher to detect the consistency and accuracy of the data obtained (Andrew et al., 2011). Through the DS, the value Cronbach’s Alpha is shown as follows:

**Table A4.3 Cronbach’s Alpha**

<i>Cronbach’s Alpha</i>	<i>Cronbach’s Alpha Based on Standardized Items</i>	<i>N of items</i>
.852	.869	46

As the results indicate, the quantitative data set achieves .852 in the Cronbach’s Alpha test, with .869 based on standardized Items. The data set is therefore reliable, as each result is greater than the standard minimum value of 0.7 (Osborne, 2008). The quantitative data is reliable and valid.