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International Business School

How is information flow influenced by culture?

Cross-culture communication in supply chain management

---- A comparison between China and the West

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Abstract

Information flow is an important theme in supply chain management research. The purpose of the study was to explore how information flow is influenced by culture and the importance of cross-culture communication by a comparison between China and West. The study was based on the theory of Hofstede and a qualitative interview methodology was used. The findings show that Chinese culture is more collectivism and uncertainty avoidance while Western culture is more individualism and uncertainty tolerance, these differences have influences on decision-making, trusting building, resource distribution in information flow supply chain management. Therefore, cross-culture communication becomes an important bridge and lubricant to form cross-culture win-win situations. Organisations can use these findings to improve local management level in multi-national joint venture companies.

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1 Introduction

In this chapter, readers can get a panoramic view on supply chain management, culture introduction and culture in global business environment as well as an interesting topic upon which this thesis comes out.

1.1 Background

1.1.1 Supply chain management

The concept of supply chain management is not new. Back early to the year of 1982, Oliver and Webber (1982) conducted a study of firms in a variety of industries and they found that the traditional way to seek trade-offs among different kinds of conflicting objective of key functions, for instance, purchasing, production, distribution and sales, along the supply chain no longer worked very well, and a new perspective was therefore in an emergent need, following from it, supply-chain management as a new approach came out.

An earlier study of Vinod (2011) defined supply chain as a link connecting a set of companies, facilities, supply points, service providers as well as facilities and this chain also linked upstream suppliers to downstream customers with products flow, service, finance, information flow from a source to a customer.

Colin et al. (2011) claimed a functional view of supply chain management and this study stated that breaking down supply chain into functional processes can be a good way to understand it better while Vinod (2011) depicted the evolution of supply chain concept and it was argued that previously, supply chain management referred to the functions of logistics, purchasing, transportation as well as suppliers, whereas presently, supply chain goes into inventory visibility, process integration, channel coordination and cycle time reduction.

Now the phase of supply chain management is broadly used and supply chain management is definitely a strategic and systematic coordination of all business functions. It not only helps improve the longer-term performance of individual companies but also the whole supply chain. Furthermore, the main target of supply chain management is to serve consumers with excellent products as well as service at less cost. The primary purpose of supply chain management is absolutely to improve customer satisfaction.

1.1.2 Culture introduction

Culture is not a universally accepted notion, and there are a great many different ways to define it (Hofstede, 2002). Culture pertains to social world and it determines how groups of people structure their lives. In this book, national culture has been depicted as the name we give to that which distinguishes the people of one country from those of another. The essence of national culture is the rules of the social game that differ across borders.

Whether conscious or not, we bring our own cultural from of interpretation to any situation, and this leads to cross-culture discussion. Generally, there are five areas on cross-cultural communication barriers according to the instruction of (Hofstede, 2002). They are language differences, nonverbal communication, stereotypes, tendency to evaluate behaviors and level of stress. Language is much more than vocabulary and grammar, it includes cultural competence: knowing what to say and why, when, where, and how to say it. Nonverbal communication, for example, gestures, posture, and other ways we show what we feel and think without speaking considered to be influenced by our culture. It is crucial to notice that do not assume you understanding the meanings of nonverbal signals or behavior unless you are familiar with the culture. Third, stereotypes mean we try to fit people into patterns based on our previous experience. We see pretty much what we want or expect to see and reject the possible interpretations that don't fit with what we expect. The fourth barrier is about the tendency to evaluate behavior from the other culture as good or bad, to make a judgment based on our own cultural bias. The fifth barrier is the high level of stress that typically accompanies intercultural interactions. Same as every other unfamiliar experience, intercultural contact is likely to involve some stresses.

1.1.3 Culture in business environment

Previous researches have shown that culture plays an important role in the multinational cooperation. While, in the past, buyers' purchasing interests mainly focused on the quality and the price of purchased goods as well as purchasing risks and delivery conditions. In addition, suppliers' sustainability related conditions are also important (Busse et al., 2016) To achieve the sustainability, culture should be taken into account to build long-term and complete integration among the actors in supply chain. Recently, Chinese president Xi Jinping has proposed the concept of "Belt and Road". Over 2000 years ago, Chinese ancestors trekking across vast steppes and deserts opened the transcontinental passage connecting Asia and Europe, known today as the Silk Road. Pushing toward "Belt and Road" means development international business. Chinese government would support the cooperation on infrastructure, industrial capacity and financing. Therefore, culture adaption now getting great attention as president Xi Jinping said pursuing the Belt and Road plan we should ensure that when it comes to different civilizations, exchange will replace estrangement, mutual learning will replace clashes. Cultural adaption and mutual understanding are emphasized. There are not few examples of multinational companies failing to enter Chinese market or to achieve the targets because of the culture influence and adaption. For example, Mattel launched a new Barbie with a Chinese name "Ling", however they did not know that Chinese customers preferred Barbie with blonde hair and blue eyes. The second time they launched a blonde hair Barbie dressed in style but it still did not sell well. The reason might be that Chinese parents expect their children to be polite and in good manner rather than fashion-oriented. The essential feature of international project management is the culture diversity of and hence the importance of exercising cross-culture management (Zeng et al., 2009). In current global economy situation, it is important for companies to be aware of cultural differences, particularly in buy-seller interactions in a supply chain (Ribbink and Grimm, 2014).

1.2 Research Problem

Previous researches have significantly contributed to culture influence on supply chain management. An earlier study of (Dowty & Wallance, 2010) argued that many diverse organizational cultures can benefit the management of supply chain disruption by restoring service and ensuring resiliency. This study also clarified that a lack of understanding of cultural biases explains the poor management of supply chain disruption as well as demonstrated the benefit of organizational cultures for supply chain disruption. Whitfield and Landeros (2006) gave an illustration of how organizational culture impact on suppliers diversity by examining the relationship between organizational culture for diversity inventory and buyer behaviour. Mamillo(2014) investigated the influence of organizational culture and uncertainty in supply chain management with their research results showing that high levels of supply chain uncertainty did not consistently bring high involvement because culture with internal orientations limits the implementation of practical supply chain management.

Similar as organizational culture, national culture has also been investigated by previous researchers, herein, Johnson et al. (2010) and Heales et al. (2004) are two good illustrations. Johnson et al. (2010) claimed that individual preferences as well as the choice of coordination mechanisms are influenced by national culture on two contexts, one was the context of Sweden and China, and the other one was the context of market coordination mechanism and hierarchical coordination mechanism. This study defined the culture characters of market mechanism as high levels of performance orientation, power distance, low levels of institutional collectivism and uncertainty avoidance while the culture characters of hierarchical mechanism were rather opposite. This research also concluded that China is prone to market mechanism while Sweden has a tendency toward hierarchical mechanism. In addition, Heales et al. (2004) found that national cultural difference has an influence on organizational decision-making on the global information system project and therefore national dimensions can be considered as a useful means to improve organizational management.

A combination study of organizational culture and national culture has also been conducted and this study mainly focused on customer relationship management. Frygell et al. (2011) investigated how the customer relationship management system implemented in China by presenting a case study of how expectations in Sweden are clashed with China. This research emphasized the importance of understanding the difference between organizational culture where systems are developed as well as national culture where the systems were implemented.

The research topic on the relationship between information and culture can be exemplified in the work undertaken by Steinwachs (1999) and Stoica et al. (2004). Steinwachs (1999) presented the theoretical findings that culture has impact on the information systems including information producer, information content, information users, information channel and information intermediary. Stoica et al. (2004) examined the influence that culture categories of adhocracy, market-driven, clan and hierarchy has on the patterns of

information process including information formality, search scope, flexibility and organizational responsiveness, under an empirical study on Small and Medium sized firms. Furthermore, this study highlighted the importance of appropriate organizational culture maintenance and matching it with the external environment.

In terms of different research aspects in supply chain management, Omar et al. (2012) and Fu and Christine (2010) illustrated this point to a much broader extension. Omar et al. (2012) gave a global analysis on coordination, orientation and flexibility in supply chains. The study mentioned that cross border logistics management has become a necessity and competitive advantage in the dynamic global supply chain environment. The research investigated the dynamic buyer-supplier integration and provided an empirical evidence on the importance of operational coordination, orientation and flexibility. It also interpreted how manufacturing companies enhanced the flexibility of their global suppliers and how it influenced these companies' logistics operation and overall performance. Fu and Christine (2010) added cultural-relational dimension into supply chain risk management, by defining supply chain relational risk and explaining the culture difference between China and the west, they finally proposed cultural adaption as a solution to supply chain relational risk.

Information flow and information sharing are crucial in supply chain management. Notable examples have been researched by (Evelyne et al., 2009) and (Amelia & Hale (2007)). From a contingency aspect, Evelyne et al. (2009) provided a detailed insight into inter-firm information flow by presenting an empirical taxonomy of supply chain information flow with three different types of alliances (silent, communicative and IT intensive). Amelia and Hale (2007) conducted an empirical study of the relationships among communication methods, information sharing within a firm, information sharing between firms and supplier development, the main finding was that these relationships can significantly improve buyer's performance.

In addition to above categorized researches, some other researchers also have their own special contribution to the knowledge pool. (Ketkar et al., 2012) and (Lundgren, 2016) are two good examples. In 2012, Ketkar et al. (2012) published a study on the influence of individualism on buyer-supplier relationship norms, trust and market performance. By using a sample of Brazilian and U.S manufacturing firms, this study investigated how cultural dimension of individualism, face-to-face communication and relational norms impact on buyer firms' market performance and the primary findings indicated that individualism has a negative relation to the involvement of suppliers in manufacturing processes. Lundgren (2016) conducted a research on culture, institutions and long-term development. In the study, it was described that Sweden and China can be seen as representatives of two opposite paths of development from the perspectives of whether the cultural orientation was society or family oriented, in the development of balances and checks. The main finding of this study showed that cultural concordance can facilitate mutual learning and understanding.

So far, lots of efforts have been taken to prove the importance of information flow in supply chain management. In the meanwhile, culture is a hot topic to which researchers have greatly contributed. The researches have covered various stages of supply chain upon

which culture may play a key role. However, not so many researches have been conducted on the root cause why culture elements have such effects on the supply chain management, which factors of culture actually react on the process of management?

Furthermore, two camps of scholars appear to have different opinions on the relationship of culture and management. One of them stated that the biggest barriers of multinational management are caused by culture difference while the other believes the culture difference does not have a significant influence on the management process. In terms of these two paradoxical perspectives, this thesis is going to inquiry into the nature of culture by locating culture into the specific context of information flow in supply chain, by doing this, to explore how information flow is influenced by culture.

As described before, the concept of 'Belt and Road' indicated that China has made great efforts on the international cooperation. Fostering harmonious, friendly cultural environment and public opinion to seek mutual benefits is the purpose of Belt and Road. However, last decade has witnessed the failure of many multi-national companies in China. Doing business with another culture system could be difficult as well as knocking down the barriers and misconceptions. Understanding the culture difference and barriers are important for multi-national companies who are attempting to enter a new market especially Chinese market. It would be interesting to see how the culture differences cause the failure of the localization of these companies. Therefore, China and the West has been chosen as the research background with which culture elements in information flow in supply chains will be conducted.

1.3 Research Purpose

This thesis aims to explore how information flow is influenced by culture and the importance of cross-culture communication in supply chain management.

2 Theoretical Frame of Reference

This chapter logically serves readers a theoretical framework building process. Figures and table are also provided to visualize this process. At the end of this chapter, a clear research model is presented rightly targeting the research purpose of this thesis.

2.1 Supply chain information system

What is supply chain information system? The essential role of the information system is to bind the entire chain together as a single integrated unit (Juliana et al., 2015, p.101)

The underline framework is shown in Figure 2.1.

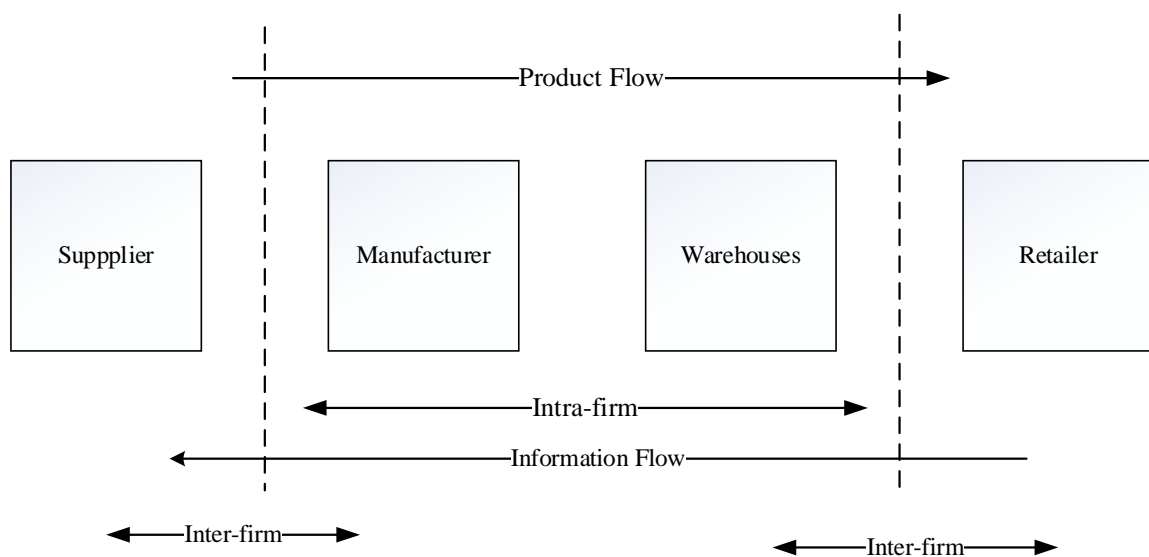


Figure 2.1 Different information flow levels within supply chain.

Source: Juliana et al. (2015, p. 102)

Intra-firm and inter-firm are two dimensions in this framework. Intra-firm is vertical while inter-firm is horizontal; intra-firm is hierarchical whereas inter-firm follows the transactional flow; inter-firm system is based on traditional supply chain setting while inter-firm follows modern supply chain orientation.

Traditional supply chain had barriers to information flow and a considerable reason is that there were only simple orders moving through suppliers, manufacturers, distributors and retailers, and this mode had an apparent flow which was lack of visibility and transparency, the direct consequence was the amplification of upstream order quantities, putting in another way, the real demand had been turned into distorted dependent demand. In contrast, modern supply chain system has significantly overcome these barriers. Not only timely and accurate information flow works well through suppliers, manufacturers, distributors and retailers but also real demand can be match to smooth continual product flow. Undoubtedly, modern supply chain system has significantly improved information flow visibility, timely and accuracy.

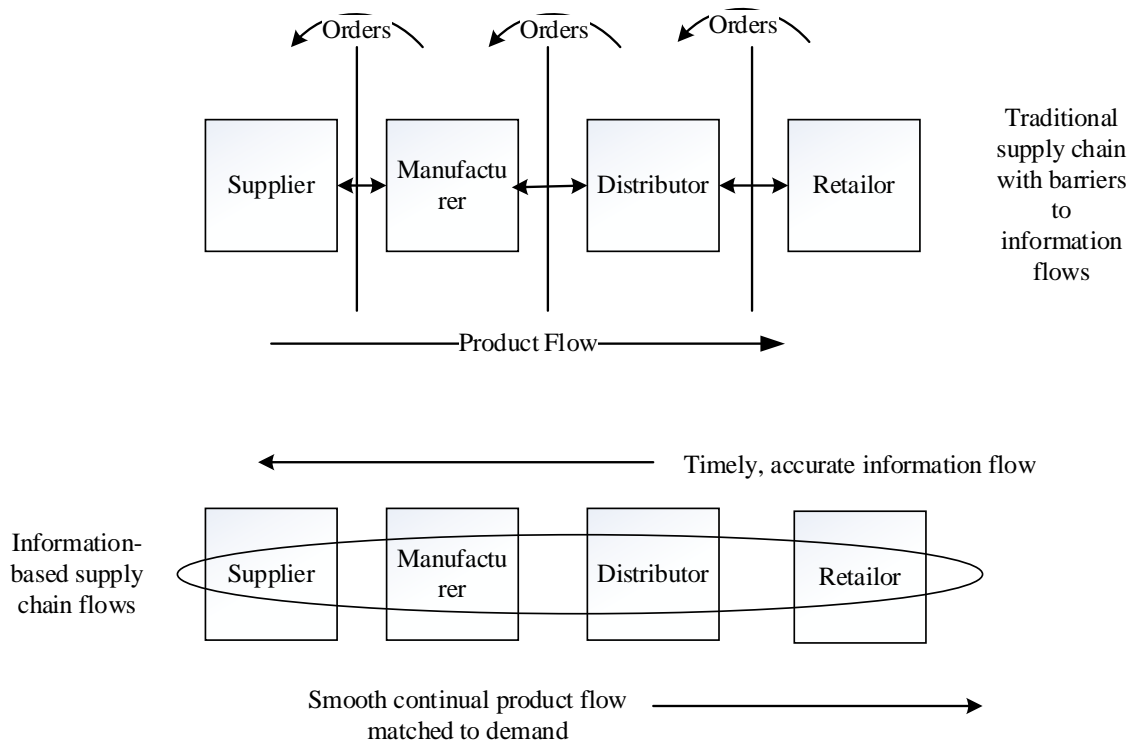


Figure 2.2 Information flow in traditional and modern supply chain settings.

Source: Juliana et al. (2015, p.100)

To sum up, information management is not only essential in supply chain management but also is important for planning, process and control in a whole supply chain. Information networks can help people reach those organizations that are not actually and directly involving with the product flow. IT is definitely the key part of information system and by remote-controlling, it brings visibility and accuracy to the whole chain.

2.2 Information flow

Before talking about information flow, a question on what is information process (Steinwachs, 1999) needs to be answered. No matter theoretically or practically, the concept of the information process is about senders transferring the information or data to receivers by using different types of mediums or either called channels. Putting in another way, senders, receivers, information contents and channels, these four key parts consist of the whole information process, and the context is definitely the central part of information process and the mainly reason is that context is actually the existing data and knowledge from which information comes in information process. Undoubtedly, information process can not only allow people to analyze these components within the system as well as relationships between them, but also pay attention to external situations that could have influences on this system.

There are also some key points that people should be aware of when using information. As (Steinwachs, 1999) stated, people need to think about where the data or information comes

from; who compile this data or information and for what purpose; which cultural values are producers likely to apply when compiling data or information. Besides, the information channel can also be distinguished by formal channel, e.g. book trade, publishing house, library, as well as informal ones such as conversation, meeting, letter and so on.

After better understanding what is information process, here comes the topic of information flow which is the main target in this sub-chapter. What is information flow then? As chapter 2.1 described, in traditional supply chain setting, information flow is the simple orders that were moving through suppliers, manufacturers, distributors and suppliers while in modern supply chain setting, information flow is more integrated among the business unites and it is more visible, accurate and timely. John et al.(2012, p.228) categorized information flow as one of the most important flows in supply chain management, it said that comparing to material and resource flows, information flow is more complex and multi-faceted. Herein, a good supplement is the study of (Juliana et al., 2015), it mentioned that knowledge is very crucial for the success of supply chain management, together with fund and materials and, information should readily flow across the supply chain to facilitate the key functions including planning, execution and evaluation. Furthermore, each participant in the whole supply chain also needs related information to forecast effectively and decide wisely.

2.3 Culture elements in information flow

Literature from numerous perspectives shows that there is an array of meaning in organizations: understanding is situational, cultural, and contextual (Bechky, 2003). The information exchanging is therefore a complex process involving the understanding of multiple communities. If an expression of knowledge means something different to the receiver than it does to the communicator, then it is not clear what knowledge is being transferred and this could happen because of the culture difference. Van Maanen and Barley (1984) suggest that individuals make sense of organizational events from within the occupational context of their work and, due to unique cultures, bring very different perspectives to their collaborative efforts. Culture affects interpersonal communication, influencing, for example, situational factors of communication, self-conception, verbal and nonverbal communication, and interpersonal relationships (Gudykunst, Matsumoto & Ting-Toomey, 1996). Culture has a pervasive influence, which underlies all facets of social behavior and interaction. It is embodied in the objects used in everyday life and in modes of communication in society (Craig & Douglas, 2006).

Sojka and Tansuhaj (1995) market culture into three major streams:

- 1) Abstract or intangible elements of culture such as values and belief system;
- 2) Material aspects of culture, such as artifacts, symbols and rites;
- 3) The language and communication links which bind and perpetuate a cultural system.

These three elements are closely intertwined. In this thesis, attention will be focused on values and belief system and language and communication links that are related to the information flow. Communication provides a means of transmitting the intangible aspects

of culture, such as values and beliefs from one person to another. This communication process is inherently dynamic and at the same time continually evolving (Craig & Douglas, 2006).

2.3.1 Values and belief

The most popular cultural theory that has been adopted in information systems research is Hofstede's model of national culture. He gave five cultural dimensions that are based on value orientations that are shared across cultures: power distance, individualism-collectivism, masculinity-femininity, uncertainty avoidance and Confucian dynamism (Hofstede, 2002). Among these five dimensions, we believe the cultural differences in the individualism-collectivism and uncertainty avoidance are most appropriate to be used to explain the potential difference in the majority influence by culture. Triandis (1989) suggested researching the relationship between culture and social behavior based on the individualism-collectivism of Hofstede's model. Individualism describes cultures in which the ties among individuals are loose, while collectivism describes cultures in which people are integrated into strong, cohesive groups that protect individuals in exchange for unquestioning loyalty. This dimension involves group cohesion, conflict resolution strategies, and the willingness to challenge different opinions (Zhang and Lowry, 2007). These elements directly influence how people communicate in a team. Therefore, we think it is suitable research dimension for our study. Furthermore, Hofstede presented the concept of 'identity' to describe individualism and collectivism. Identity is the relationship between the individual and the group, and it can be seen as a spectrum ranging from individual identity, or individualism, to group identity, or collectivism.

Table 2.1 Extreme individualism profile in five cross-culture communication

Extreme Individualism (Indiv)	
Language	Indivs are verbal and self-centered, using I and me a lot.
Nonverbal	Indivs make eye contact freely. When in groups, they are likely to stand out visually.
Stereotypes	Indivs are defensive and tend to be loners; they run from one appointment to the next.
Evaluation	Indivs use other people and measure the importance of others in terms of how useful they are.
Stress	Indivs are supposed to continually test their own ability. This can be stressful. They tend to take on stress physically.

Source: Hofstede (2002, pp.94-95)

Table 2.2 Extreme collectivism profile in five cross-culture communication

Extreme Collectivism (Collec)	
Language	Collec can be very silent, especially when alone among outgroup people. They use we instead of I. Silences may occur in conversations without creating tension.
Nonverbal	Collec are physically very close with ingroups, but reserved with outgroups.
Stereotypes	They are never on their own; they are not forthright.
Evaluation	Collec will go to great lengths for their friends and expect the same in return.
Stress	Collec internalize stress. They will suffer if they cannot avoid deviant behavior or if they are forced to be alone. If provoked, they can be collectively violent to outgroups.

Source: Hofstede (2002, pp.96-97)

For the uncertainty avoidances aspect, it is called ‘truth’ in Hofstede’s theory. The basic problem of truth is how people in a culture cope with the unpredictable and the ambiguous. It has to do with anxiety as a basic human feeling, or in other words with fear of the unknown. Many people in this kind of culture believe that what is different is dangerous. This aspect of a culture has been called uncertainty avoidance as opposed to uncertainty tolerance. Anxiety and the search for truth are closely related (Hofstede, 2002, P38). The fundamental issue of uncertainty avoidance is how a society deals with the fact that the future can never be known, should we try to control it or just let it happen (Hofstede, 2010)? Many scholars test Hofstede’s theory model, Scholtens and Dam (2007) find out that uncertainty avoidance are positively associated with a firm’s ethical policies while Dimitratos, Petrou, Plakoyiannaki and Johnson state that national culture specially countries with high uncertainty avoidance exercise high levels of control in relation to international decision-making through the implementation of formal rules guiding decision. Then, we believe that truth is a very important aspect of the culture value which will affect the information system so that to influence the business activities.

Table 2.3 Extreme uncertainty avoidance profile in five cross-culture communication

Extreme Uncertainty Avoidance (Uncavo)	
Language	Uncavos are very verbal and well organized, somewhat loud, and emotional.
Nonverbal	Uncavos are animated in using hands but are uncomfortable with physical contact.
Stereotypes	Uncavos have rigid beliefs and are obsessed with rules. They can be xenophobic. They argue all the time.
Evaluation	Uncavos quickly and sometimes prematurely judge a situation to establish right and wrong.
Stress	Uncavos are upright. They externalize stress and usually make others feel stressed.

Source: Hofstede (2002, pp.105-106)

Table 2.4 Extreme uncertainty tolerance profile in five cross-culture communication

Extreme Uncertainty Tolerance (Unctol)	
Language	Unctols are not loud. They can be imprecise. They ask open-ended questions.
Nonverbal	Unctols are unhurried, informal, and have no taboos.
Stereotypes	Unctols have no principles and talk nonsense.
Evaluation	Unctols judge in pragmatic, not moral, terms.
Stress	Unctols are relaxed and take each day as it comes.

Source: Hofstede (2002, pp.106-107)

2.3.2 Language and communication skills

Communication is a key element of culture as it provides a mechanism for transmitting and interpreting messages relating to the world. All these influence and condition how a communication is received (Craig & Douglas, 2006). Members of a culture share a common key for interpreting their social surroundings, which establishes rules for governing the interactions. Members of different cultures may not know how to interpret these signs, resulting in miscommunication. Language, of course, is a key aspect of culture. It is inherent in a specific culture and also an embodiment of it (Welch, 2008). By treating language as a separate variable, its influence on communication patterns and information and knowledge flows can be more readily identified (Piekkari, 2006). Welch (2008) illustrates that international teams comprised of members who speak different mother tongues, for such teams, the challenge is to recognize that although: “one audible and visible ‘surface’ language is being used to facilitate exchanges, members continue to use diverse expressive and interpretive mechanisms derived from their respective language systems”. Hence, language, while interacting with other cultural components such as values and belief has distinct influence of the international management teams. In our research, language element is set as a separate cultural variable to see if it will affect the information flow and how.

2.4 Culture characteristics of China and the West

The essential feature of international project management is the diversity of culture and therefore, it is important to exercise cross-cultural management. Cultural difference is the major factor affecting success or failure of projects (Zeng et al., 2009). No matter whether the difference is viewed as desirable or not, the fact is that cultural difference will exist (Tsui, Nifadkar & Ou, 2007). There are infinite numbers of ways to form a culture, and no culture is objectively better or worse, superior or inferior, to another (Hofstede, 2002). Culture is adaptation of people to the conditions of life. When these conditions change, as they have over the last centuries, cultures are put under pressure. Today we find different cultures not only on different continents, but also in different countries and even parts of countries. A culture can never be all things to all people; what is good to one observer may be bad to another. We cannot have one aspect of a culture that we like without having other aspects that we may not like so much.

There are some general culture characteristics of Chinese and Western. For example, Chinese people eat with chopsticks. Western people eat with knives and forks. Chinese always have good excuses for you to drink more at the dinner table; they are reluctant to say no even if a proposal is unacceptable; and so on. To present a long list of the differences in Chinese behavior, one does not need to know an overwhelming amount about China. However, to understand and cope with these differences, it is necessary to go beyond this superficial level (Yong et al., 2016). Traditional Chinese culture places a great emphasis on its association with a set of core values: virtue, moral consciousness, integrity, trustworthiness, the sense of shame and the fear of “loss of face” (Batonda & Perry, 2003). Here, “face” means reputation. To “give face” means to give praise to someone in an organization. To get someone to “lose face” is to denounce his status or reputation (Zeng et al., 2009).

Comparing Chinese and Western with Hofstede’s model especially with identity and truth aspects. Yong et al. (2016, p.163) gave a comparison on collectivism-individualism predetermined behavioral differences in response to problems, from the perspective of western managers and Chinese managers. This book describes that western managers focus on individualism, they can express personal feelings freely and they encourage independent thinking, while Chinese managers focus on collectivism and their compliance dominates personal feelings, further, they are in consensus with the majority. Jaw, Ling, Wang and Chang (2007) find out that instead of high masculinity and individualism, collectivism and Confucian dynamism are the main cultural value to foster self-enhancement and most work value of Chinese employees. In Hofstede’s 2010 edition of the book *Cultures and Organizations: Software of the mind*, scores of individualism of 76 countries are listed, China is defined as a highly collectivist culture where people act in the interests of group instead of themselves. Relationships with colleagues are cooperative for in-groups but cold or even hostile to out-groups (Hofstede, 2010).

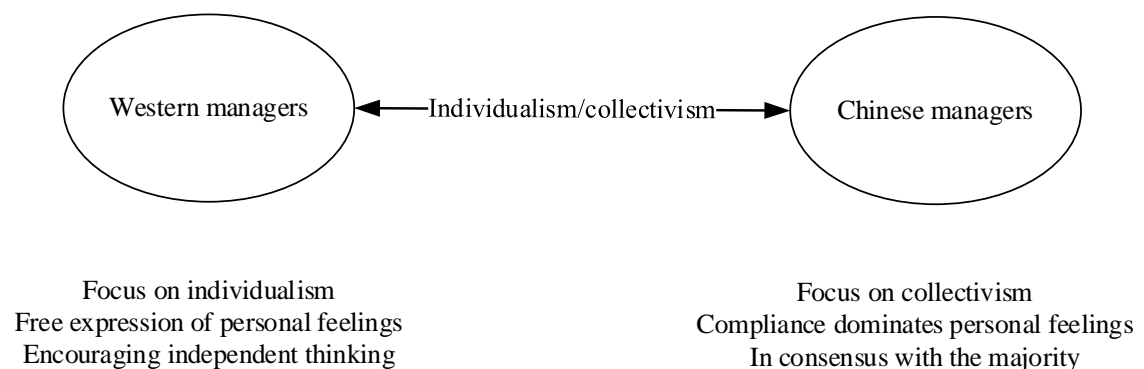


Figure2.3 Collectivism-individualism predetermined behavioral differences in response to problems. Source: Yong et al. (2016, p.163)

For the aspect of truth, two camps of viewpoints are found in the previous research. Hofstede (2002, p.38) describe that Russia and the countries of the Balkans have cultures of strong uncertainty avoidance, as do Japan, Korea, Mexico, Belgium, and France. Germanic countries are very uncomfortable with uncertainty. English-speaking countries and China tend to be more uncertainty tolerant. Chinese are flexible to bend and change

the rules to suit the actual situation and pragmatism and comfortable with ambiguity (Hofstede, 2010). However, Young et al. (2016) show a comparison in terms of the varied degree of uncertainty avoidance between Chinese and Western managers, and they depict that western managers are critical of status quo and they mostly show positive attitude toward exposure of problems and they incline and act for change, while Chinese managers are more complacent with status quo and they fear of exposure of problems and resist to potential threat of change (Yong et al., 2016, p.163). That means Chinese managers have a higher level of uncertainty avoidance than the western manager, and this phenomenon shows a contrary difference from Hofstede's theory. Furthermore, Kwon (2012) found the regional difference of values within China because of the economic development. Shifting from an agricultural to an industrial economy is positively correlated with uncertainty avoidance. Therefore, great difference of uncertainty avoidance level is identified in the different areas in China.

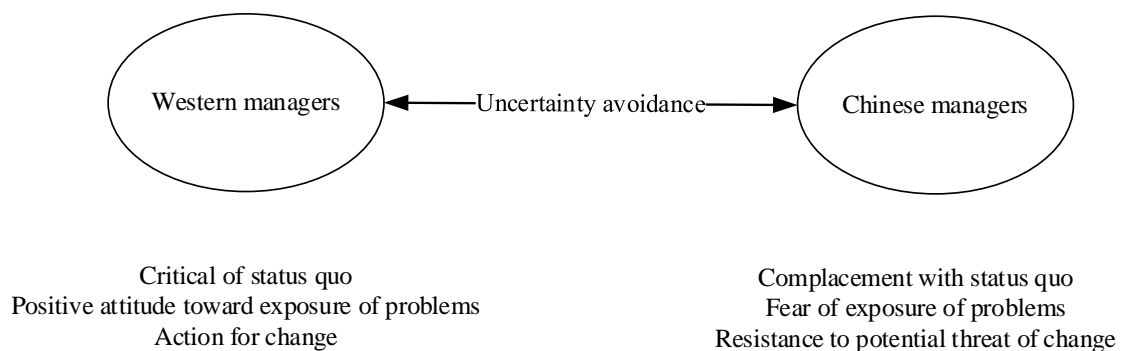


Figure 2.4 Uncertainty avoidance predetermined behavioral differences in response to problems.

Source: Yong et al. (2016, p.163)

2.5 Cross-culture communication in supply chain management

Effective cross-cultural communications requires knowledge, attitude and tactics. However, to understand and cope with these culture differences, it is necessary to go beyond this superficial level. As a matter of fact, behavior is only the tip of the iceberg. Behind differences in behavior lies attitude---attitudes towards oneself, time, the environment and the people around them. What are more profound and deeply embedded are different beliefs and values that are shaped by experience, history, tradition, family and society (Yong et al., 2016, p.151). Cultural collaborative mechanism should be established through effective cross-cultural communication. By identifying cultural similarities and differences and by respecting diverse cultures as well as values, then cross-cultural difference should be integrated (Zeng et al., 2009).

One would wonder whether differences in national culture have anything to do with language differences. It is understandable that each language has its own vocabulary and style, and it is very hard to translate books without losing the finer nuances of meaning. Every language has evolved along with the society using it, so language differences between countries usually point to differences in culture (Hofstede, 2002, p.43).

In today's economic globalization context, culture clashes can take many forms and it is impossible to produce an exhaustive list identifying all the sources of cultural clashes, because people interaction is a dynamic process. Table 2.5 summarizes the most common complaints by both westerners and the Chinese about the problems they face in cross-cultural communications (Yong et al.2016, pp.162-163).

Table 2.5 Cross-culture communication problems

Complaints from western managers	Complaints from Chinese managers
Marathon negotiations and decision-making	Lack of understanding of the unique local environment
Decisions reached by discussion instead of voting	Over-rigid in handling business affairs and lack of flexibility
Indirect expression of opinions	Impersonality and rule-orientation without giving
Great importance is given to 'face'	Lack of thrift in the use of corporate money
Dependent on Guanxi and personal emotions	Disregard for local management suggestions
Submissive nature and lack of creativity	Individualistic and arbitrary in decision-making
Ambiguity in policies, laws and regulations	Money-making is the top priority
Bureaucracy	Lack of respect and care for staff/employees
Excessive government intervention	Ignore the interests of Chinese partners
Complicated and closely-knit interpersonal relations	Arrogance and conceit

Source: Yong et al. (2016, p.163)

Culture is, in itself, a difference. Differences come from people. People can bridge differences. The effort to converge cultural differences can turn these differences into cross-cultural advantages (Yong et al., 2016, p.164)

In chapter 2.1, the supply chain information system has already been introduced in Figure 2.1. Herein, supply chain information system between supplier and enterprises has been selected for this thesis, please see Figure 2.5 for more details.

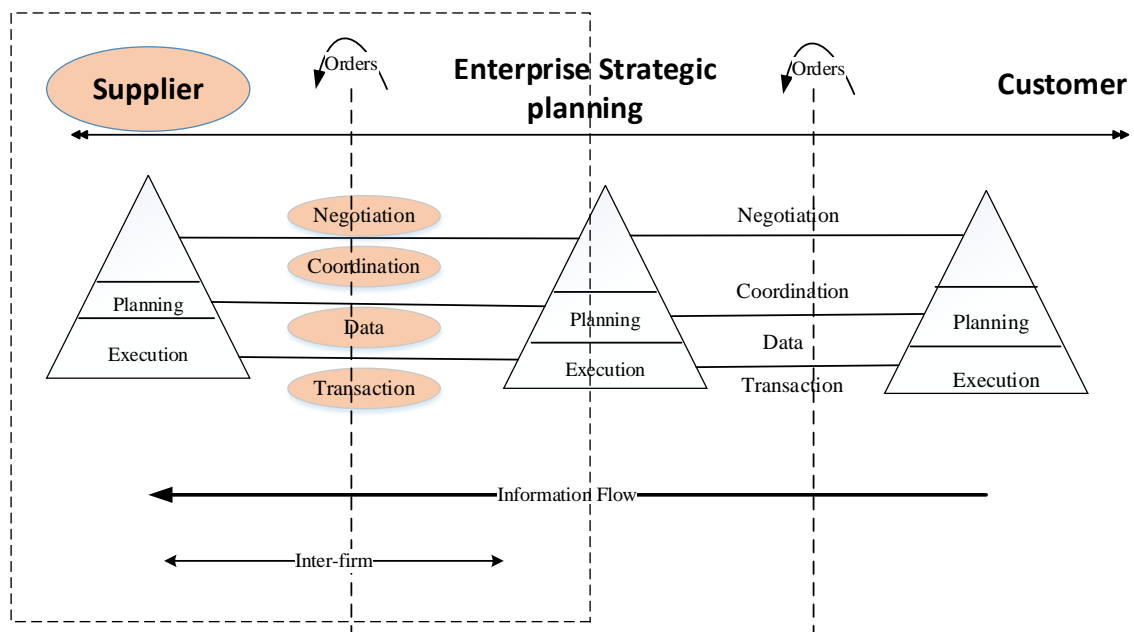


Figure 2.5 The inter-firm supply chain information system between supplier and enterprise
Source: Juliana et al. (2015, p.104)

In this figure, there are four components in inter-firm information flow which are negotiation, coordination, data and transaction. Negotiation, according to Yu et al. (2015), is very important in real life and it is quite common that in a negotiation, particularly in a situation that multi-attribute and multi-item are engagement simultaneously. There is also a vivid example given by this study and they described that a automobile manufactures needs to purchase screws, lamps or resistors and so on and in fact there are different types of lamps, for instance, with different size, color and other parameters, and these lamps can solely be provided by one supplier, it is therefore that a car company may negotiate multi-items by combining all lamps together at the same time with this specific lamp supplier, rather than specifically focus on the individual lamp, and by doing this, it can not only improve negotiation efficiency but also purchase price can be slightly lower than single-attribute and single-item procurement.

Coordination as the management of supply chain systems, processes and information flow, and the alignment of decisions between manufacturer and a global supplier allows for activities that make better performance and alignment with supply chain targets (Omar, Davis-Sramek, Myers and Mentzer, 2012). Data sharing is also a part of information flow in supply chain management (Juliana et al., 2015). Here data can be understood as both visual such as database system or software platform as well as non-visual data including personal thinking and understanding of data. Some software platforms such as EDI (Electronic data interchange), MRP (materials requirements planning), ERP (Enterprise Resource Planning) and so on and so forth, are very useful systems for data sharing and information quality improving. Transaction between suppliers and enterprises activate the supply chain (Juliana et al., 2015).

In addition, in the introduction part, it is stated that language, nonverbal, stereotypes, evaluation, stress are five barriers of cross-cultural communication. These five elements are used in the research process to identify the culture characters of the research groups. Figure 2.6 is the theoretical research model for this thesis using the combination of the culture theory of Hofstede (2002) and information flow theory of (Juliana et al., 2015).

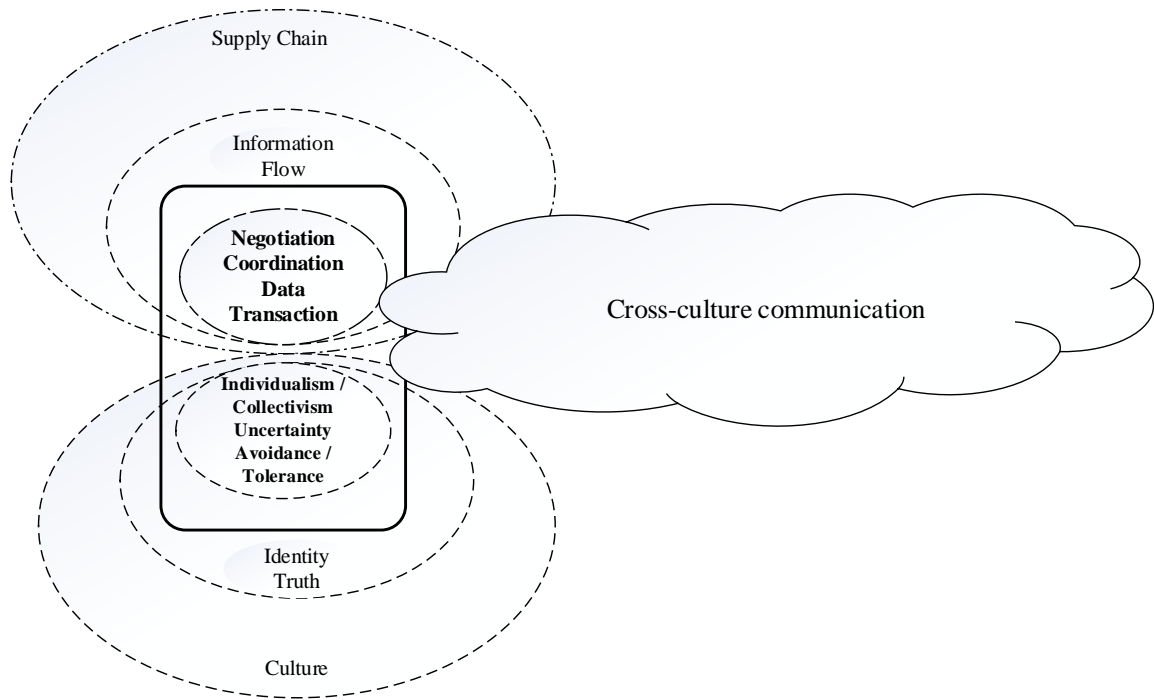


Figure 2.6 Research model --- How information flow is influenced by culture? --- Cross-culture communication in supply chain.

This research model is an illustration of the research purpose in this thesis which is how information flow is influenced by culture and the importance of cross-culture communication in supply chain. It can be seen from this model that negotiation, coordination, data and transaction are four central parts of information flow in global supply chain management while individualism or collectivism, and uncertainty avoidance or uncertainty tolerance are four elements we choose in terms of identity and truth in culture context.

Physical flow, information flow and resource flow (John et al., 2012) are considered to be three crucial parts in global supply chain management. Material flow is useful for freight delivery, resource flow including finance is thought to guarantee the payment for supply chain partners. Comparing to these two flows, information flow is more multi-faced and complicated and important. Herein, information flow's importance can be visualized by increasing the information quality, information visibility, information accuracy, timely, so on and so forth. Then, our problems come out that if these four stages in information flow would be influenced by culture elements? Previous studies give diverse answers to us.

How culture elements influence negotiation then? Theoretically and practically, individualism and collectivism have both proved as having influence on negotiation from the perspective of decision-making and sense making. Stephanie et al. (2016) as well as Anne and Kumar (2011) are actually two good examples in terms of this viewpoint. Stephanie et al. (2016) mentioned that culture influences people's preference so as to affect decision-making in negotiation. In terms of culture differences of individualism and collectivism, they illustrated that in independent culture environment, people tend to make decisions individually and by doing these, to show a characteristic of self-expression and

independent practicing, by contrast, people care more about others' opinions and prefer their decisions to be socially acceptable in the context of interdependent cultural contexts.

An earlier study of culture and negotiation researched by Anne and Kumar (2011) was also argued that sense-making is very crucial to task and culture related ambiguity in cross-culture negotiation. In addition, on the question of extent of agency, they described that Western countries considered individual person as the locus of responsibility and agency while East Asians people would claim their regret in a way that is not on the behalf of their responsibility but rather regret illustrated by the whole organizations and systems, which can be seen as the agencies. Therefore, individualism has an influence on decision-making by making decisions individually in order to show self-expression and independence as well as an impact on sense making that people consider individual persons as the locus of responsibility and agency. Whereas, collectivism has an impact on decision-making that people care more about others' opinions in order to make a socially acceptable decision as well as an influence on sense making by expressing regret on the agency of an organization or a system instead of on their own responsibilities. Furthermore, the cultural difference would facilitate misunderstandings and errors in judgment during interactions between the actors in supply chain. It can result in false readings of the partners' behavioral signals, which make negotiators faced with much more complexity (Ribbink and Grimm, 2014).

Lou, Li and Liu (2009) state that the problems of coordination are the main problems that lead to the failures of multinational cooperation which emphasizes the importance of coordination in supply chain management. National difference and culture are often examined in the process of cross-culture communication including the coordination process. Cheung, Myers and Mentzer (2010) state that multinational buyers and suppliers that have similar national cultures will have less disparity in the way they view the information and have stronger propensity to coordinate operations. That can create more integrated supply chain structures. Culture difference appears to prevent effective communication and leads to coordination difficulties (Lou et al., 2009). However, there is another viewpoint that the culture difference does not play a role in moderating the relationship of operational coordination. Previous study still appears to be controversial to this problem.

Steinwachs (1999) clarified that the information process is defined as the content transferred from the sender to the receiver through certain channels. She also claimed that people would unconsciously bring their own culture into data compilation because producer's knowledge could be affected by different culture dimensions. Here comes an interesting question on how culture elements of uncertainty avoidance and uncertainty tolerance affect on data sharing in information flow supply chain. And this question is also included in the research question of this thesis.

For transaction aspect, there are two different viewpoints can be identified as well. Culturists stated that culture plays important roles (Saeki and Horak, 2014) and rationalists believe culture is irrelevant in business transactions (Omar et al., 2012). Peterson (2016) uses theories of transaction costs to explain why countries boundaries are culturally significant. He said relationships between firms in similar cultural contexts could reduce the

transaction costs associated with managing uncertainties. Firms should understand the connection between cultural theories and transaction costs theories before starting an international business (Peterson, 2016). Moreover, eastern cultures place great emphasize on personal relationships. They are in relation-based cultures instead of contract-based or rule-based cultures (Saeki and Horak, 2014). Lau and Young (2013) conclude it is hard for China to completely change from relation-based system to rule-based system because of the culture background. Business between two different culture systems would affect the efficiency of transaction. Furthermore, learning the relation-specific skills and mutual understanding reduce the complexity of transaction (Saeki and Horak, 2014).

3 Research Methodology

This chapter tells readers about how this thesis has been conducted and what kind of research philosophies are used.

3.1 Research Approach

Ontology and epistemology are the most central debates among philosophers and the concept of ontology is about the nature of reality and existence while epistemology is about the theory of knowledge and helps researchers understand best ways of enquiring into the nature of the world (Mark & Richard, 2015, p.46).

The importance of epistemology in this thesis can be visualized in following fields. First of all, epistemology makes the authors of this thesis choose qualitative as research approach.

Qualitative research is about what do ‘things’ mean and how do ‘things’ work in context. In terms of what ‘things’ mean, chapter 1 gives a clear illustration. In this chapter, the background of supply chain management has been stated by doing this, readers can not only get a basic understanding of the meanings of supply chain management and the role of information flow in supply chain but also know more about the big context in supply chain management upon which this thesis has been conducted. Likewise, culture introduction part helps reader understand what culture is and how important is culture in terms of each individual, family, group, organization, institution, company, society and so on. On the other hand, in terms of how do ‘things’ work, as such, how do culture work in supply chain management, has also been claimed in this thesis. Through literature review, previous researches provide this thesis with a very thick foundation on how culture variously affect supply chain management in terms of different perspectives such as buyer-seller relationship, supply chain risk management, supply chain disruption and so on and so forth. In addition, culture itself has also been categorized as national culture or organizational culture and how they respectively influence supply chain management. Following this path, the research problem and research purpose of this thesis float out of the ‘water’ and thereafter become the central part of this thesis. Basing on the very thick knowledge foundation of previous researches, the thesis primarily focuses on specific culture elements (identity and truth) in information flow (negotiation, coordination, data and transaction) in supply chain management and the importance of cross-culture communication in supply chain management. To sum up, qualitative research approach helps people understand the meaning of things and how things work in a specific context.

The second importance of epistemology in this thesis is its contribution to help build up the theoretical research model, putting in another way, it helps this thesis vertically and horizontally go deeper into theories and thereafter form a very thick knowledge foundation for this thesis itself. If chapter 1 is called ‘appetite’, then chapter 2 can probably named ‘Staple food’ of thick knowledge foundation of this thesis. In the beginning of chapter 2, supply chain information system has been delineated as well as visualized by figures. By doing this, the questions of what is information flow, what is supply chain information

system, how information flow works in both traditional and modern supply chain settings, there any advantage and drawbacks and so on had all been clarified. The central part of chapter 2 is about culture elements in information flow. In this section, Hofstede's theory in terms of identity and truth have deeply been claimed as well as discussed with the supplementation of many other previous research findings. Identity and truth (Hofstede, 2002) are two key culture elements on which this thesis primarily inquiry. Four extreme profiles have been clearly stated in four tables to clarify identity and truth from five different perspectives: language, nonverbal, stereotype, evaluation and stress. In addition, two aspect researches in terms of values and belief, language and communication skills conducted by previous researchers give identity and truth a useful supplementation. Following above description, a big cultural context in terms of China and west has been presented and by doing this, to put identity and truth into specific Chinese and western cultural background, this is considered as necessary because a very thick description of specific context is very important in qualitative research approach in order for research external validity, generalizability and transferability.

3.2 Research Design

It is already clarified by many previous researchers that research design aims to give an overall roadmap to the logic of the study. The initial problem is the start-up of research design in this thesis. As stated in chapter 1, culture has influence on supply chain management and this have already been clarified by previous studies in terms of different dimensions, for instance, many diverse organizational cultures can benefit the management of supply chain disruption by restoring service and ensuring resiliency (Dowty & Wallance, 2010), organizational culture have an impact on suppliers diversity (Landeros, 2006) and so on. Basing on very thick knowledge foundations from previous researches as well as through literature review, the research purpose was clearly stated and also a theoretical research model has been built up in order to fulfil the research purpose.

In terms of methodology, qualitative was chosen as the research approach in account of research purpose and case study, in fact, interview study is the research method which is being used to exactly execute this study. In this study, six interviews have been conducted and the interview data have been presented clearly and neatly following the interview questions of negotiation, coordination, data and transaction these four central parts in supply chain management. By doing this, this thesis not only provide readers with a general picture of the whole interview process, how these data are displayed, are there any logic among these data, but also build a basic and important foundation for following data analysis. For data analysis and conclusion, the authors of thesis present their own thoughts as well as may structure them aligning with interview results. Herein, be critical of the interview results rather than authors themselves is very important to achieve an objective analysis. Conclusion is in fact an overall summary of analysis and evaluation of this study. Discussion section gives reader a panoramic view on what is the contribution of this thesis and how it differentiate from other authors, are there any limitations in this research and basing on these limitations, what kind of suggestions this thesis can provide for future research.

3.3 Research methods

As discussed in chapter 3.2, interview study is the exact research methods that is used in this thesis. How to develop interview questions, how cases are selected, how data are collected and analyzed are described in this section.

3.3.1 Development of questions and measures

Development of interview questions is one of characteristics of qualitative research approach. Since the research purpose of this thesis is to explore how information flow is influence by culture, the interview questions are divided by four information flow components which are negotiation, coordination, data and transaction, by doing this, this study can inquiry deeper into each component and therefore come out clear findings in terms of specific part in information flow supply chain management. Particularly, culture as a hot topic, is abstract and somewhat hard to visualize in interviews, therefore, this thesis uses language (verbal or non-verbal), behaviors (optimistic to or fear of exposure problems, emotional or non-emotional) and other aspects to give readers to vivid picture on how culture actually work or affect people's work in supply chain department. In addition, all interview questions are semi-structured in this study, by doing this, not only can provide interviewees a comfortable interview atmosphere so that they can better response to the interview questions but also help authors of this thesis to appropriately adapt and reflect to the interviewees.

3.3.2 Case selection

Case selection is necessary for qualitative research. In this thesis, supply chain as an organization is the exact case worth of further exploration. Ericsson, Jingshi Clothing Trading limited company and Yiluqi Trading limited company are three typical multi-national companies selected in this study. Undoubtedly, unexpected situations still exist when selecting case, for example, the authors of thesis initially decided to contact interviewees in Ericsson particularly, whereas, several key participants were unexpectedly unavailable at that time, and this is the reason why two other companies, Jingshi Clothing Trading limited company and Yiluqi Trading limited company, are included in this study.

3.3.3 Data collection

Together with clear divided interview questions discussed in chapter 3.3.1, interviews are conducted by Internet tool of Skype per each participant. During interviews, tape recorders are used with the allowance of interviewees. Some of the interviewees are very nice that they would like to offer extra help afterwards if the interview questions are not fully explored or answered. Thereafter, tape recorders are transcribed into texts and stored in an appropriate place for data display as well as further analysis.

3.3.4 Data analysis

Data analysis actually aims to identify patterns. In this study, the authors believe that culture elements of identity and truth do have influence on negotiation, coordination, data and transaction in information flow, for instance, in negotiation, Chinese participants care more about other colleagues' opinions when making decisions and the root reason lies in their typical collectivism culture that people stay together and have strong eager to be socially accepted. In fact, the interview data have been critically and objectively analyzed as possible as the authors can even though they are both from China and may have bias either toward China or west.

The data analysis is also a process that helps authors to answer questions on whether or not the research purpose has been fulfilled, whether or not the research findings are within expectations, if not, what can be further improved. In chapter 5, the detailed process of data analysis is visualized by four figures as well as well-written text, by doing this, readers can get a clear picture on how the data have been analyzed and in which way, how the theoretical model is used in this analysis and how the researching findings are supported by corresponding theories. Furthermore, summarizing these findings is a necessary way to achieve the conclusion.

3.4 Assessing the research quality

To guarantee the research quality in this research, the corresponding criteria in the literature on qualitative research including credibility, transferability, dependability and conformability (Guba & Lincoln, 1986) would be considered.

Firstly, credibility is the match between the empirical observations and the theoretical ideas that the researcher builds up. This criterion is in parallel with internal validity in quantitative research (Bryman & Bell 2007, p.410-411). It is the degree of "match" between the respondent's constructions and researchers' representation of these that determines credibility (Halldo et al., 2003). For credibility in qualitative research, it is important that the factors observed are actually capable of answering the research question. The results should be plausible for both the respondents and the study's readers (Miles and Huberman 1994, p.278). In this study, we aim to increase the credibility by interview, as we believe the culture difference and problem of information flow could be identified by interviews. Credibility of this study can be created by thick data.

Second, the criterion transferability is concerned with the possibility of generalizing the information gained from the inspected sample to a broader one. It parallels the criterion of external validity for quantitative research, generally described as a measure for generalisability (Guba & Lincoln, 1989). Shenton (2004) concludes that in positivist work, the concern often lies in demonstrating that the results of the work at hand can be applied to a wider population. However, since the findings of a qualitative study are specific to a small number of particular environments and individuals, it is hard to demonstrate that the findings and conclusions are applicable to other situations and populations. To increase the

transferability, a detailed and thick description of our specific context and purposeful sampling will be provided in this study. Data analysis decisions will be explained in detail.

Third, dependability is concerned with the consistency of the results and replicability at another point in time (Lincoln & Guba, 1986). In order to address the dependability issue more directly, the processes within the study should be reported in detail, thereby enabling a future researcher to repeat the work (Shenton, 2004). In this study, to increase dependability, the research design and its implementation will be provided in detail. External auditor is employed to assess the quality of the study.

Fourth, confirmability is seen as being parallel to the conventional view on objectivity, i.e. the findings represent the results of the inquiry and not the researcher's biases (Halldo et al., 2003). This is usually achieved by a confirmability audit, containing the process being used, thereby enabling an external actor to assert the results of the study. In this study, as mentioned, external auditor will be employed. Confirmability can be achieved through mutual checking and feedback from the supervisor and peer-review. Besides, traditional way of judging logistics research based on concepts such as validity, reliability and precision also need attention (Mentzer & Kahn, 1995). In the following, the trustworthiness of this study will be evaluated in order to facilitate the reader's assessment of the quality of this study.

Trustworthiness as a quality criterion is closer to the traditional way of thinking about quality and has been accepted by many researchers (Shenton, 2004). The views of trustworthiness possess more obvious implications regarding methods and techniques. They provide more useful directions for evaluating research quality (Halldo et al., 2003). Guba and Lincoln (1989) present a parallel to the four criteria of rigor used to evaluate the research quality. According trustworthiness is the combined qualities of Credibility, Transferability, Dependability and Confirmability.

To sum up, a qualitative study can hardly be objective and replicable as compared to a quantitative study. However, by providing a detailed and thoughtful dealing with research method, data and analysis, this study can fully fulfill the quality criteria and deliver contribution to the field.

3.5 Ethical considerations

Several researchers in social sciences emphasis the importance of being aware of and follow certain ethical principles throughout the research process (Bryman & Bell 2011; Saunders et al., 2012; Easterby-Smith et al., 2015). Bell and Bryman (2007) conducted a content analysis of the ethical principles of nine professional associations in the social sciences. They identified ten principles of ethical practice, which were defined by at least half of the associations. These principles are the main ethical consideration of this study. Essentially, the first six of these principles are about protecting the interests of the research subjects or informants; the last four are intended to protect the integrity of the research community, through ensuring accuracy and lack of bias in research results (Easterby-Smith et al., 2015).

In this study, several actions were taken at each stage to ensure that the research is conducted by adhering to all ethical principles. During the stage of designing and gaining access, research project will planed with the ethical consideration that not causing harm. Interviewees were informed in advance, via email, the nature of the study and their role in it will be informed. This is done so as to provide all the information to the participants to make an informed and freely formed decision to participate. No pressure is applied to participants to grant access.

During the interview process, the theme of the interview was informed in advance, any deception in any form is avoided to show respect for participant and research sites. To respect the privacy and confidentiality, we ensure that the data were not be used in any inappropriate way and the transcripts of the interview have not be published in any form. The interviewees decided if they need anonymity. The research was conducted with the consideration of ten ethical principles. At the reporting stage, fabrication and plagiarism were avoided.

4 Research Results

In this chapter, readers can not only get an interesting overview on each interviewees but also how the interview questions are answered and presented in a logical and coherent way.

4.1 Interview overview

As having been described in Chapter 3, the interviews are conducted via Skype and in total, six participants have attended the interviews. Table 4.1 is the detailed interviewee information. In addition, interview questions incorporate two parts, general questions and main questions. General questions are regarding how long the interviewees have been working in their current positions, which department are they in and what their titles are while the main questions are deeply targeting the research model. As claimed before, this thesis focus on culture elements in information flow in the large context of global supply chain management. Moreover, there are four key components in information flow which are negotiation, coordination, data and transaction, meanwhile culture elements include identity (individualism or collectivism) and truth (uncertainty avoidance or uncertainty tolerance), therefore, the main questions are accordingly divided into four parts in terms of negotiation, coordination, data and transaction, with each part inserted by culture elements of identity and truth.

Table 4.1 A list of interviewees' information

Name	Title	Department	Company	Years of Working
Joel Ståhl	Manager	Research&Development	Ericsson (Stockholm, Sweden)	13 years
			Ericsson (Nanjing, China)	3 years
Hayley Ding	Line Manager	Manufacturing (Operational Excellence)	Ericsson (Nanjing, China)	8 years
Ashley Zhang	Supply Chain Coordinator	Manufacturing (Quality Assurance)	Ericsson (Nanjing, China)	9 years
Angela Qu	General Manager	/	Jingshi Clothing Trading Co.,Ltd	10 years
Joe Chen	Quality manager	Quality Assurance	Groupe Rocher	12 years
Lynn Zhou	Purchasing Manager	Purchasing	Yiluoqi Trading Co.,Ltd	13 years

4.2 Interview data

4.2.1 Interview 1

Joel Ståhl is a manager in Research & Development department, Ericsson, Kista, Stockholm, Sweden. He joined Ericsson in 2001 and during his first two years in Ericsson, he started his career as mechanical engineer, and after that he realized that he was more interested in teaching and training, therefore he switched to management aspect and started the six sigma teaching and training all over Ericsson's site companies in China, Japan, U.S and Brazil. He focuses on using six sigma to scrutinize internal product samples so as to guarantee the whole products' high quality for supply chain. He is also responsible for

quality standard generation of various components provided by Ericsson's suppliers. So far he has been working in Ericsson for 16 years, including 13 years working in Kista, Stockholm, Sweden and 3 years site management in Nanjing Ericsson Panda Communication Limited Company. He has abundant experience in communication skills basing on eastern and western culture contexts and also he is good at management in a whole global background.

Ericsson is a large global multi-national company and even in one department, people are very common from different countries. Whether or not people are aware of their own culture background, they are culture carriers and they naturally bring culture into their everyday work and life. In the context of global supply chain department, culture diversity is probably more apparent since people need to deal with various suppliers all over the world. It is often very much necessary for people to negotiate when trade-offs. Joel thought that face-to-face negotiation was a good way to show the importance of negotiation.

"Negotiation is a very crucial part typically in supply chain department. I normally prefer face-to-face as it is a good way to show the importance of the negotiation."

The goal of negotiation was for conclusion and decision-making. Joel thought that marathon negotiation to be not only mentally fit but also was bad for making sound decisions and should be typically avoided. He gave an example that if the two parts really needed to find common ground, it was good to put them in a room and locked them there until they came to an agreement. In terms of negotiation decision-making, Joel said that he would pay more attention to the discussion with stakeholders, employees could voice their own opinion and eventually the managers made the final decisions with their own management style.

"Managers make the final decisions from their own management style."

He mentioned that the context mattered between strong and weak negotiation position, in addition, people building up their own strength of position before starting negotiation was crucial. Joel said that creative thinking in negotiation in order to satisfy stakeholders' needs was also important. In addition, encountering something uncertain during negotiation, Joel would analyze the complexity of the situation and also thought about how much time he had before deciding what and how to do.

"In terms of something uncertain, I will consider how complex the situation is and quickly adapt to how much time I have."

Besides negotiation, coordination also plays a vital role in cross-culture supply chain department. Apparently, language is one of factors which will influence coordination. He thought that different culture contexts affected people interpret meaning even people used many English words. At this point, he explained the importance of cross-culture understanding as well as the confidence between people's interacting for trust building. He also said that everyone was different and special, the behavior diversity created challenges and opportunities.

“Even people use many English words, but because of different culture contexts, they mean different things.”

When conflicts happening in coordination, it would be good that people can express themselves clearly and peacefully in this situation, however, bringing personal emotions to work still happens. Joel thought that people were all emotional beings. It was possible to offend others when he behaved clumsy. He considered himself to be a person not a robot even in a professional working environment.

“Even in a professional working atmosphere, I am still a person and I cannot treat myself as a robot. People are all emotional beings. Especially when I behave clumsy, it is possible to offend others.”

He thought that deviation did exist in usual work and he could actually learn from deviations, if something was wrong, he wanted to see, by doing this, he could then do some correction.

“Visualization is to see what is incorrect as I can learn from deviations. If something is wrong, I want to see it because I can then do some correction.”

Joel was also involved in sigma training in Brazil, Chinese Beijing, Shanghai and Nanjing, Japan and U.S. He gave a sufficient preparation before each seminar, in order to guarantee the quality of each training.

“I prepare a lot before each training.”

In his seminars, trainees were encouraged to ask questions and to join group discussions, in this way, he not only intended to evoke students’ thinking but also made the knowledge much clearer and more acceptable.

“Questions are always welcome in my class. I think knowledge should be transferred clearly and acceptably.”

Ericsson is a mature company, most rules, regulations, standards and items are rather clear and visualized in the form of documents from Joel’s perspective. It was unnecessary for employees to pay more attention and effort on transaction cost issues.

“Yes, but rules, budget, price, rules and costs are already generated by the company before each transaction, so I don’t have any information to share.”

When talking about team work during the interview, Joel thought that people need both individual work and team work. Joel also stated that team work was good for getting new ideas and also getting people along certain things to do, by doing this, people can have sufficient input which was beneficial for individual work. He also added that some people had some very public and collective work which required interacting, while others had more type of individual work, people tended to have different types of tasks, but also people were different, and what was also important is that there were facilities that can enable employees to work in a way they like.

“Team work is good for getting new ideas and getting people along certain things to do, by doing this, people have sufficient input which is beneficial for individual work.”

4.2.2 Interview 2

Hayley Ding has joined Nanjing Ericsson Panda Communication Limited Company since 2010. She holds both bachelor and master degree from Nanjing University with major in computer technology. Right now, she is a line manager in manufacturing department, operational excellence. Her everyday work refers to coordination among different departments, such as hardware, software, system, manufacturing, warehousing, and security and so on. So far, she has served Ericsson, Nanjing for 8 years and among this time range, she had frequent business traveling to Ireland, Sweden and Chinese Beijing for product quality learning and training.

Hayley said that negotiation can be conducted in different ways in order to target to different persons and adapt to different situations. She felt comfortable with different methods for negotiation in everyday whereas giving a high priority to face-to-face because it was a more effect and efficient way.

“We use different methods, video, face-to-face, telephone, email, but we use face-to-face most, due to it has best effect and it is efficient.”

After negotiation, decisions were needed to be made. Hayley said that she made decisions together with key persons who was related to this decision. In terms of the importance of context in negotiation and decision-making, she added that the context was essential and more information would support a better decision.

“Normally, I make decision together with key persons who is related to this decision.”

Encountering something uncertain is considered to be normal in negotiation. People can either quickly and prematurely judge a situation in order to establish right or wrong, or, judge in pragmatic. Herein, Hayley thought that targeting to the right key persons and collect sufficient information are ways to avoidance uncertain things.

“Decision should be made based on sufficient and correct information, with the right key persons, from the objective view. And the most important, win-win.”

Language is a very useful tool for normal communication and coordination in manufacturing department because it can help people better understand each other, while it can also be a barrier in cross-culture environment, Hayley agreed with this point as she thought that information correctly transferred from speaker to listener as well as emotion or thinking was very important because incorrect information could cause misunderstanding. She also mentioned the importance of trust in cross-culture coordination and she considered trust to be very crucial for cross culture coordination.

“Yes, first of all, if information is not correctly transferred from speaker to listener, then the response from receiver might get wrong. Second, if only information is transferred but emotion or the thinking behind language is not correctly transferred, it will introduce misunderstanding.”

Hayley also encountered some conflict situations when negotiation and coordination, and she considered conflict situations to be a fact of operational work and understanding the root cause, setting a common goal for different groups and coming out win-win solutions for them was thought to be a better way to adapt to these conflict situations. In addition, Hayley didn't think herself to be an emotional person in the department. She thought that it would be better to control emotion in order for better results.

“Conflict is a fact of operational work. I will guide these groups to come out a win-win agreement, emotion can be controlled. The better you control, the better the result is.”

Data sharing is considered to be essential in cross-department cooperation and coordination, especially basing on the big context of global supply chain management. Incorrect data could also come out in everyday working system and in terms of this issue, she preferred exposing problems and then took action for correction.

“Yeah, but, we will expose it and take action to correct.”

She also gave an example on data clash in real working environment. Several departments simultaneously shared one important software system and therefore caused server crash because of memory shortage.

Hayley said, naturally the culture value would be brought into information flow and she also gave an example that Chinese team treated responsibility equal to ownership while Swedish team would like to separate them. When talking about how team work executed in her department, Hayley said that team work was very important element for company's success as today's world was connected and people can easily contact with each other.

“Team work, in such connected world, people are somehow all connected, information is also connected. Without team work, no one and no company can succeed.”

4.2.3 Interview 3

Ashley Zhang is a supply chain coordinator in manufacturing department in Nanjing Ericsson Panda Communication Limited Company. She has been working in her current position for 9 years and her responsibility is to guarantee the quality of material-in and material-out. She also needs frequent travelling to Ericsson, Sweden for some knowledge transfer and issue discussion with Swedish co-workers.

Ashley said that some parameters of components, for example, resistors and capacitors, provided by various external suppliers, should fit both Ericsson's internal standard and international standards. If there were apparent deviation after sampling check, negotiation is imperative.

“For emergent negotiation, we normally using instant face-to-face talking with those suppliers as it is much needed.”

Having been working in Ericsson Nanjing for 9 years, Ashley has also encountered many uncertain situations, she chose to confront those issues by collecting more information or asking colleagues for help. She also gave a detailed example to show how she efficiently

dealt with uncertain situations and she stated that her department purchased some resistors from their usual suppliers according to manufacturing order ticket, however, in that month, customer demands increased unexpectedly and manufacturing department needed more resistor components from supplier, but this supplier cannot provide any more resistor, at this moment, Ashley instantly reported this issue to her manager and she also share her idea that she would like to attempt to contact other suppliers to ask for help, finally, she found a very good solution to solve this issues.

“Normally, I will try to know more information or find someone who maybe familiar with these uncertain things.”

When coordination, Ashley partly agreed that language is a barrier in coordination in global supply chain management because it is difficult to express herself clearly and to understand colleagues with different culture background, let alone building relationships with each other.

“For Chinese, it’s hard to express ourselves very clear and cannot get the exact point from colleagues with different culture. Hard to build the friendship and close relationship in department.”

She said that she would not express her personal feeling freely in work because she wanted to care about the whole team work environment. Ashley said that work needed professional attitude and she didn’t think people should bring emotion when they work.

“Just do professional things in work. Work is not all my life. Sometimes need to learn how to release pressure.”

There are different database systems and other software platforms for product structure breakdown, inventory management, data exchange, document generation and so on, these required rather high technology skills for employees. Ashley said that people in her department are normally holding engineering background, and they considered learning technology as a good way to improve their technical skills.

“Most people in our department hold engineering background, we like learning technology, because it is a good way to improve our technical skills.”

Furthermore, she also mentioned that there were some incorrect data in their database system and also some bugs in their software platform. Ashley had her own way to deal with these issues that she would double check these issues and firstly attempted to fix by herself, if some issues are really beyond her capability, she would also definitely report these issues to related persons seeking a better solutions.

“We will double check when meet these issues, after that, we will try to fix by ourselves, otherwise, we will definitely report to related persons for better solutions.”

Ashley also considered team work as very important factors in international company and as she told that team work can make work more interesting and people can also learn from each other.

“Team work, can make work more interesting and learn more from others.”

4.2.4 Interview 4

Angela Qu is a Chinese entrepreneur who set up her own company in 2010. As general manager, her works cover every aspects of the business. As she said, her main responsibility is to maintain the old customers and develop new customers and in the meantime manage and supervise the whole supply chain from production to delivery in the European market. In the beginning of the interview, she firstly agreed the statement that business relations are always, to some degree, personal relations.

“Absolutely agree, business is a kind of activity between people and people, there is no business exists without people, and so business is personal relation.”

Angela said negotiation is imperative in a business environment, she always conducts negotiation with foreign customers before signing a contract. She frankly told us that she is a candid person and she thought everything should be done as soon as possible and at the same time guarantee the quality. She does not like marathon negotiations and marathon decision-making.

“I usually conduct negotiations face-to-face or by Skype, I think they are more efficient than e-mail. I cannot tell you I am an efficient person, but I want to be.”

When it came to the cultural context in negotiation process and decision-making, Angela expressed it is very important in a business environment because people with different cultural background has different styles of doing things. She said language could be a challenge when conduct negotiation with non-native languages as well as in coordination process. However, she thought the biggest problem is the culture difference which could influence the ways people seeing things and perceiving things.

“For example, our German customers could ask you times in a day if a problem has not been settled. I think it is because of their rigorous personality.”

When dealing with uncertainty or conflicts, Angela once again told us she is very frank so that she would show her feeling and opinion and try her best to solve the conflicts and find out the best way of doing things. Teamwork is the way she prefers compared to work individually when making decisions.

“By group discussion, I can get the opinion and advice from my colleagues who are seasoned in their areas. Very often in the discussion leads to the conclusion, and then I can say yes or no.”

In a cross-cultural coordination, Angela thought language could be a challenge, but again she expressed cultural difference is the biggest problem. Angela has been exposed to the western culture for many years as she worked in Europe for years after graduating. She said she would try to understand the culture background of others and the understanding should be mutual.

“People have their specific ways of doing business, it takes time for us to being familiar with new customers. During the time, I think it is very important for trying to understand each other.”

Angela said she is not that patient, so sometimes she would bring the personal feelings and emotions to the work when she try to persuade others. Cultural value is the thing she said would certainly be brought into the information exchange and Angela said it could be perceived in a positive way.

“Cultural value is something deep-rooted in every human. For example Sun Zi’s Art of War and Strategy is always used in business environment, which will also be appreciated by the foreign.”

Furthermore, Angela emphasized the importance of the information visibility and accuracy as it is related to the integrity.

“For instance, the producing progress of supplier is slower than the schedule, this situation has to be known by us, and some factories may try to withhold the information, which seems as dishonesty.”

4.2.5 Interview 5

Joe Chen is the quality manager in quality assurance department in a French company. Her main responsibility is guarantee the quality of the goods before shipping. She usually works with suppliers and supervises the production schedule of them to keep the supply chain working on the track without any delay or quality problems. She also participates in the negotiation with the suppliers and takes part in the great decision of company. She agreed that business relations are always, to some degree personal relations but not totally agreed.

“Business is also a fair competition that is not related to the personal relations.”

When it came to the negotiation questions, Joe said she would invite the suppliers to the office to conduct face-to-face negotiation. She thought the context in negotiation and decision-making is crucial as well as the cultural background.

“The result could be different when you use different ways to negotiate. Face-to-face is more efficient and direct.”

Joe said she would argue for her position when there is conflict. If the conflicts cannot be solved, she would ask for help from the boss. When dealing with uncertainty, she would try to find out the truth with the help of colleagues.

“Argument is imperative, but the most important thing is to find out the truth and the root cause of the problems.”

Joe said she will not bring the personal emotions to work because it is not a professional business attitude. But when it came to the cultural values, she said she would bring it to the work. She said when cooperating with foreign business partner, culture will affect each other.

“Cultural value is something deep-rooted in every human. I will involuntarily bring it to work. I am often influenced by the cultural customs brought from the business partners through the communication.”

Joe preferred work individually comparing to team-work because she thought it more efficient and time-saving.

“The division of work should be clear, each person being charged with specific responsibilities.”

In the coordination with suppliers, Joe expressed the most challenge thing is language, as she said, her spoken English is not that good. When two speaker are neither non-native English speaker, the information exchanged might become unclear. She mentioned digital system used in her company to standardize the process and reduce the misunderstanding caused by language. Orders can be made on the system which can be seen to the suppliers at the first time. Then supplier can accept the order and upload the production schedule, quality requirement is also shown on the system.

“Sometimes manager of factories cannot speak English fluently, then I will go to the site to supervise the production.”

Joe thought it very important to build the trust and long-term relationship with suppliers and other business partners. Trust is an indispensable element in coordination, coordination unions rely on each partner's shared information to run the process. Joe thought it important to have the information invisibility with suppliers and she said trust is built with lots of reasons.

“Trust built with good relationship which including lots of elements for example, fair treatment, information transparency, low delay rate, friendly attitude, and honesty.”

Internal uncertainty within the coordination structure and results when firms are unable to assess their own future performance. This also includes behavioral uncertainty resulting from the possibility that informational mistakes. Joe stated everybody could make operational mistakes, information transparency and integrity are needed to have a plan for correcting the mistakes and reduce the losses.

“People are working to deal with the uncertainty, in another word transaction. Otherwise our jobs can be replaced by robots.”

4.2.6 Interview 6

Lynn Zhou is the procurement manager in a Chinese-French joint venture which mainly export small commodity to the European market. Her responsibilities are contacting with suppliers and negotiation with suppliers to achieve better condition, coordinating buying activities to achieve objectives of profit and monitoring product category performance in terms of pricing, assortment, product quality and product planning. Her works go through the whole supply chain with the quality team and marketing team. She agreed that business relations to some degree are personal relations. During the interview, she tried to use some Chinese common saying and Confucian thought to express her meaning, which showed her traditional model of thinking. It seems she was very proud of her culture background and was glad to share. She said culture elements will be brought into work unconsciously that affect how people thing and judging. Social network is very important to the business is how Lynn perceive ‘Business relations are to some degrees personal relations. Social

network is working whenever negotiations or developing new customers or suppliers as Lynn said.

“We have known many of our suppliers for years. We are familiar with each other. Usually we do negotiation face-to-face in our office.”

Marathon negotiations and decision-making sometimes happens when cooperation with foreign suppliers or customers. Lynn said the main problems could be the production capacity and price. It would become a marathon when e-mails back and forth with no results come out. To stop the marathon, a face-to-face meeting is necessary. Lynn mentioned language as a problem when communicating or negotiation with new business partners that you do not familiar with their business style and speech patterns. In that situation, an employee who is good at both English and for example French is necessary in the meeting. That employee work as a ‘broker’, coordinating the business. He or she should be familiar with both two cultures. Language barriers could be eliminated after long-term partnership. After building relationship and trust, you will know the meaning of each other more easily. For new business partner, it will takes time to fit together. If conflicts appears, Lynn said she would come to discuss with boss or colleagues to find out the root causes and find out the best way to solve the conflicts. She said conflicts will lead to negative emotions such as angry or anxiety which will be barriers to solve the problems. Emotional conflicts should be avoided in the business process.

“People’s relationship and emotions will affect the results of a discussion or negotiation.”

Group discussion is the way Lynn preferred to work and make decision. Lynn emphasized the importance of the team. As a team, we need to work together for company’ performance, everyone should be informed when something happened. Lynn had a good relationship with her team members. As she said, it is rather hard for her to build this kind of relationship with western suppliers or customers.

“Relationship can influence the information exchange. If we can build long-term good relationship with business partners. Then we can keep no secrets from each other.”

Lynn emphasized information transparency and accuracy during the information exchanging. Small mistakes may lead to huge loss in the supply chain. She mentioned the electronic data interchange in her company. It improve the efficiency of information exchange and it is convenient for filing the documents using the digital platform. It is also used by the third party service company such as auditing company. For the uncertainty transaction. Lynn stated that communication is the most important things. She said team members and business partners should pull together, confront the challenges and uncertainty. It seemed that Lynn has great enthusiasm to her work and she did not separate her work from life clearly. She brought her personality and culture values to work and perceive personal relations as the business relations.

5 Analysis and conclusion

Following the results in chapter four, this chapter is going to analyze these interview data using the research model as well as theories in chapter two. A more detailed account of how culture elements, including individualism or collectivism and uncertainty avoidance or uncertainty tolerance, influencing negotiation, coordination, data and transaction in supply chain management, is going to be analyzed and summarized.

5.1 Analysis

5.1.1 Culture elements in information flow negotiation

The section below gives a detailed analysis on culture elements of identity (individualism and collectivism) and truth (uncertainty avoidance and uncertainty tolerance) in information flow negotiation. Negotiation is considered as one of the central concerns between companies and their suppliers (Juliana et al., 2015). In addition, Hofstede (2002) defined that individuals of extreme individualism are verbal and self-centered, using I and me a lot, while collectivists in the profile of extreme collectivism can be very silent, especially when alone among outgroup people and they use we instead of I. During interviews, we asked a question on how they conduct negotiation in everyday work, by asking this question, we intended to verify whether interviewees are verbal or silent, whether they use I and me a lot or use we instead of I. From the interview, we found that Chinese participants, they used 'we' more than Swedish participant. In this specific context, Chinese culture is more collectivism and Western culture is more individualism.

How is information flow negotiation influenced by individualism and collectivism? First, individualism and collectivism influence decision-making in negotiation. Chinese participant Hayley said that she made decisions together with key persons who was related to this decision, in contrast, Swedish participant Joel told that eventually the managers made the final decisions with their own management style. Since Chinese culture is more collectivism, people care more about others' feelings and opinions, this culture element will let people make their decisions matching others. While Western culture is more individualism, people are more individual and they care more about their own feelings, this culture element will let people make their own independent decisions. Herein, an earlier study of Stephanie et al. (2016) is a good support for this point. They mentioned that culture influences people's preference so as to affect decision-making in negotiation. In terms of culture differences of individualism and collectivism, they illustrated that in independent culture environment, people tend to make decisions individually and by doing these, to show a characteristic of self-expression and independent practicing, by contrast, people care more about others' opinions and prefer their decisions to be socially acceptable in the context of interdependent cultural contexts.

Second, individualism and collectivism influence the balance of individual work and team work. Chinese participants Hayley and Ashley had different opinions and they preferred

team work because they thought team work was more interesting and was also a good way for people's connection although Chinese participant Joe preferred individual work as more efficient and time-saving. On the other hand, Swedish respondent Joel considered the importance of both individual and team work and he said team work was good for getting new ideas and getting people along certain things to do, by doing this, people had sufficient input which was beneficial for individual work. In accordance with Hofstede (2002), individualism can be clarified as people do not have very tight connection with others, including family members, friends, teams, organizations, companies or going further to country-wide. In contrast, collectivists prefer in-groups and have rather strong relationship with other people. Herein, Chinese collectivism culture is visualized somewhat by people's tendency to team work.

Hofstede (2002) also claimed that extreme uncertainty avoidances are somewhat loud, and emotional, while extreme uncertainty tolerances are not loud and can be imprecise. Conflicts are common in negotiation in global supply chain management, in this situation, people need to find a proper way to deal with the conflict situation. In terms of this situation, Chinese interviewees preferred to control their emotions in professional working environment and better emotion controlling, the better results while Swedish participant Joel had different viewpoint. He thought that even in a professional working atmosphere, he was still a person and he cannot treat himself as a robot, in addition, people are all emotional beings, especially when he behaved clumsy, it was possible to offend others. Regarding to uncertainty avoidance or uncertainty tolerance, Swedish interviewee Joel appears to be uncertainty tolerance by expressing his personal feelings freely even in professional environment such as negotiation while Chinese participants are more uncertainty avoidance and tended to control their true feeling in a professional environment.

How is information flow negotiation influenced by uncertainty avoidance and uncertainty tolerance? Uncertainty avoidance and uncertainty tolerance influence mutual communication and understanding. From above discussion, when encountering conflicts, Swedish interviewee Joel is more uncertainty tolerance by expressing his personal feelings freely even in professional environment, whereas Chinese participants are more uncertainty avoidance and tend to control their true feeling in a professional environment. In negotiation, or any other situation, people are encouraged to express their true feelings, by doing this, they can get instant and mutual reflection and therefore better understand each other. This point of view can be supported by (Craig & Douglas, 2006), as this study claimed, communication was a key element of culture because it provided a mechanism for transmitting and interpreting messages relation to the world. . Cultural difference within the dyad may result in false readings of the partners' behavioral signals. Negotiators in these situations are faced with greater complexity, which increase the level of uncertainty in the relationship (Ribbink and Grimm, 2014). It can be said the level of uncertainty avoidance can lead to difference behaviors or speaking styles in the negotiation including expression, talking speed or gestures. Data shows Swedish interviewee is more emotional and relaxed in the negotiation while Chinese interviewees appears to be more prudent, they speak and act cautiously. This would lead to different performance in the negotiation which could be

misunderstood by the partners. Furthermore, Joel said to deal with the uncertainty which may happen in the coming negotiation, he would consider how complex the situation is and quickly calculate how much time he need. This also shows the low preference of uncertainty avoidance that he try to make adequate preparation for the uncertainty instead of avoiding.

Figure 5.1.1 is the data structure of culture influence of negotiation in global supply chain management. The upper part of this figure is designed from the perspective of culture elements including elements of identity (individualism or collectivism) and truth (uncertainty avoidance or uncertainty tolerance) (Hofstede,2002), in particular, from the sub-categories of language and evaluation, then analyze how these two culture elements visualize in interviewees' business negotiation in the big context of supply chain management. The bottom part of this figure incorporates culture dimension data descriptions and information flow components of negotiation description, and they have been formatted in a much clearer way in the convenience of coding the quotation from different types of interviewees

From this figure, it can be seen that interview data both from Chinese participants and Swedish participants have been collected, typically the quotations of two Chinese participants and one Swedish participant. The quotations of two Chinese participants show that they used 'we' instead of I a lot in the interviews and they preferred team work while Swedish participant used 'I' a lot and he valued the importance of both individual work and team work. The interview data also presented that Chinese participants tended to control their personal feeling in a professional working environment while Swedish interviewee preferred freely express their personal feelings.

Data structure of negotiation

Components of information flow		Culture dimension			
Data Descriptions	Individualism	Collectivism	Uncertainty avoidance	Uncertainty tolerance	
<p>Quotations from Chinese participants</p> <p>"Negotiation can be done in different ways to target to different situations and different people." --- Hayley Ding</p> <p>"Decisions made by group discussion. Very often the discussion leads to the conclusion." --- Angela Qu</p> <p>"We use different methods, case-by-case." --- Joe Chen</p> <p>"We have known many of our suppliers for years. Usually we do negotiation face-to-face in our office" --- Lynn Zhou</p>					<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Use "we, our, us" instead of "I, mine, me"</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Prefer team work, make decisions with key colleagues</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">"Case by case, hard to say" Equivocal words</div>
<p>Quotation from Swedish participant</p> <p>"I normally prefer face-to-face as it is a good way to show the importance of the negotiation." ---Joel Ståhl</p> <p>"Managers make the final decisions with their own management style." ---Joel Ståhl</p> <p>"In terms of something uncertain, I will consider how complex the situation is And quickly adapt to how much time I have" ---Joel Ståhl</p>					<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Verbal, use "I, my"</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">"clearly", establish right or wrong</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Uncertainty is not threaten, analyze the complexity and learn from deviation</div>
Negotiation	<p>Questions including the way of doing negotiation, how to make decisions, how to deal with conflicts and uncertainty in negotiation, etc.</p> <p style="text-align: center;">?</p>	✓	✓	✓	<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Chinese participants</div> <div style="border: 1px solid black; padding: 2px;">Swedish participant</div>

Figure 5.1 Data structure of culture influence of negotiation.

5.1.2 Culture elements in information flow coordination

If culture difference has significant or insignificant impact on the coordination process has been controversial among the recent studies. Omar et al. (2012) conclude that culture difference does not play role in moderating the relationship of operational coordination. While Lou, Li and Liu (2009) and Sarker and Sahay (2002) state that the biggest barriers of dynamic and multinational of coordination are caused by culture difference, substantial cultural diversity can prevent effective communication and leads to coordination difficulties. Our research data support the latter's viewpoint that the culture values especially the aspects of individualism and uncertainty avoidance do has influence on the information flow of coordination.

Our research data also support Hofstede's culture definition of China and Sweden that Chinese are highly collectivistic and think as a group instead of individually while Sweden is an individualist society (Hofstede, 2002). Besides the language elements that Chinese interviewees were used to say "we" instead of "I" or "me". Interviewee Lynn treated her team as a family, she said all the team members should pull their efforts together to solve the problems and confront the challenges for the company's profit. This embodies the collectivism concepts in the high amount of in-groups and out-groups while the Swedish respondent did not mention it much. As mentioned in Chapter two, collectivist person will

be very close with in-groups and reversed with out-groups. This will makes it difficult for the Chinese employees to build trust with the business partners. As Lynn said she felt hard to make friends with the foreign business partners. That could be caused by her collectivism concept rooted in the culture. As Lou et al. (2009) stated that trust mechanism could reduce the complexity of coordination. Lack of trust may be caused by unfamiliarity between partners as well as “individual rationality”. “Individual rationality” here means wanting more benefits compared with other out-groups. How to build trust with business partners in a supply chain now seems a crux. Chinese interviewees expressed that trust can be built after you get familiar with each other, then you will keep no secret to each other. That would be rather difficult to realize in cooperation with western partners. Trust and commitment are more likely to reduce conflict and encourage long-term relationships, which will facilitate coordinated action and decision-making (Omar et al., 2012). Long-term relationship is mentioned several times by Chinese interviewees indicates that in the competitive market, long-term reliable and stable partnership is what they are looking for. Trust building is the element managers in multinational companies should pay more attention on which will be influenced by culture values and it carries substantial weight for realization of companies’ target. To increase the efficiency of communication in coordination, the behavior of participants and information exchanged should be regulated (Lou et al., 2009). Respondents mentioned EDI (Electronic Data Interchange) system used by their company, which could reduce the complexity of communication and standardize the actions of employees so that to simplify the coordination process.

For the uncertainty avoidance dimension, data mainly supports Hofstede’s definition that China is high uncertainty avoidance that has a lot of rules and regulations in place to avoid ambiguous or uncertain situations while Sweden has a very low preference for avoiding uncertainty. Swedish believes there should be no more rules than are necessary. Schedules are flexible and innovations are not threatens (Hofstede, 2010). Interviewee Joel stated that people are all emotional beings and when he behaves clumsy, it is possible to offend others while Chinese interviewees thought bringing emotions to work is not professional and they try to keep clam and unprejudiced. Joel said uncertainty and deviation did exist in daily work, he laid emphasis on what he can learn from the deviations. Chinese interviewees paid attention to the rules and principles of companies. The nature of innovation involving uncertainty and change, it requires freedom at the right levels. Decentralization enables faster reaction to innovation and facilitates innovation (Williams and Triest, 2009). Sweden as an innovation-oriented country has the corporate management culture rather to be decentralizing comparing with Chinese corporates. According to the data, when conflicts or debates come out, Chinese managers would like to discuss with boss and seek a settlement. The hierarchy in Chinese companies as a rigid rule could influence the efficiency of coordination. For example, when western purchasers try to contact their Chinese suppliers directly, bypassing the senior managers of suppliers. This could be regarded as disrespectful; the typical Chinese organizational information flow is top-down, meaning that operational information exchanging has to gain permission from top management (Busse et al., 2016). Neglecting the rules and principles of business partners could reduce the efficiency of coordination and become the barriers of trust building.

Furthermore, data shows language as a culture element could influence coordination. Interviewees agreed that language would influence the efficiency of communication in coordination. Joel thought different culture context affects people interpret meaning even people all used English. Joe prioritized language as the most challenge thing in coordination with suppliers. The Chinese language is very ambiguous. When Chinese speaks English, they would interpret Chinese into English cautiously, which makes the sentence well organized and ambiguous. This could be a reflection of the uncertainty avoidance according to chapter two. This is how culture values influence the information flow in coordination process.

However, in the present research of Hofstede, China has a lower score on uncertainty avoidance compared with Hofstede’s research years ago, which is very close to the score Sweden get (Hofstede, 2010). This could because of the globalization of Chinese company and business environment. Managers like Angela who is exposure to western culture and years and essentially influenced by western culture show uncertainty tolerance. They are innovation-oriented and would like to take challenges and learn from deviations. They can also break through the language barrier. It is foreseeable that in the future level of uncertainty avoidance will no more be the barrier of coordination or supply chain management between China and the West.

Data structure of Coordination

		Culture dimension			
Data Descriptions		Individualism	Collectivism	Uncertainty avoidance	Uncertainty tolerance
Quotations from Chinese participants	“Normally, i will try to know more information or find someone who maybe familiar with the uncertainty” --- Ashley Zhang				Seek help from colleagues
	“Bring the personal emotions to work is not a professional business attitude.” --- Angela Qu				Argument is normal, find out the truth. Do not bring emotions to work.
	“Argument is imperative, most important thing is to find out the truth.” --- Joe Chen				In-groups and Out-groups
	“If we can build long-term relationship with partners, Then we can keep no secrets from each other.” --- Lynn Zhou				Verbal, use “I, my”
	“Even people all use English, they may mean different things with the same sentence.” ---Joel Ståhl				brings emotions into work
	“I am still a person and i cannot treat myself as a robot. People are all emotional beings.” ---Joel Ståhl				Language barrier
Quotation from Swedish participant					
Coordination	Questions including how do you deal with uncertainty and conflicts in coodinaton? Will you bring your persnal emotions into work. Do you think language is a barrier in coordinaiton et	✓	✓	✓	Chinese participants Swedish participant

Figure 5.2 Data structure of culture influence of coordination

5.1.3 Culture elements in information flow data sharing

Having discussed culture elements in information flow coordination, let us now turn to culture elements in information flow data sharing. Data sharing is also a part of information flow in supply chain management (Juliana et al., 2015). Here data can be understood as both visual such as database system or software platform as well as non-visual data including personal thinking and understanding of data. Some software platforms such as EDI (Electronic data interchange), MRP (materials requirements planning), ERP (Enterprise Resource Planning) and so on and so forth, are very useful systems for data sharing and information quality improving.

In this subchapter, data in information flow related questions had used. Chinese interviewees still use “we” more than “I” while Swedish participant used “I” more than “we”. In this specific context, Chinese culture is characterized as more collectivism and Western culture is more individualism basing on theory of Hofstede (2002) as this book defined that individuals of extreme individualism are verbal and self-centered, using I and me a lot, while collectivists in the profile of extreme collectivism can be very silent, especially when alone among outgroup people and they use.

How is information flow data sharing influenced by individualism and collectivism? Culture element of collectivism can negatively affect software resource distribution in information flow. People holding the culture of collectivism tend to stay in-group and share resources together. Here, Chinese participant Hayley presented a clear example on data clash in real working environment. Several departments simultaneously shared one important software system and therefore caused server crash because of memory shortage. Steinwachs (1999) clarified that people would unconsciously bring their own culture into data compilation because producers’ knowledge can be affected by different culture dimensions. Trust is also related to the data exchanging as Lynn said good business partners she builds trust with would keep no secret from each other that indicates that the trust is related to the data transparency. Interviewees consider data visibility and accuracy are important in the information flow. Lynn's word suggests that the level of data transparency could be higher with the partners she trusts or in other words 'in-groups'. This could be caused by the high level of collectivism of Chinese culture that are intimate with in-groups and rather unconcerned to out-groups.

Hofstede (2002) also claimed that extreme uncertainty avoidances are about quickly and prematurely judge a situation to establish right or wrong while uncertainty tolerances are defined as judging in pragmatic, not moral, terms. Chinese participant Ashley said that most people in their department held engineering background and they liked learning technology because it was a good way to improve our technical skills in order to better deal with uncertain situations in data sharing. Swedish participant Joel had the similar viewpoint. He claimed that he prepared a lot before each training. In addition, he also encouraged employees asking questions and involving discussions. By doing these, he attempted to evoke employees’ thinking and made the knowledge clearer and more acceptable.

Therefore, regarding to uncertainty avoidance and uncertainty tolerance, Chinese are more uncertainty avoidance while Swedish participants are more uncertainty avoidance.

How is information flow data sharing influenced by uncertainty avoidance and uncertainty tolerance? Culture elements of uncertainty avoidance can improve data visibility. This can be illustrated by Both Swedish and Chinese participants. Swedish participant Joel thought that deviation did exist in usual work and he could actually learn from deviations, if something was wrong, he wanted to see and did some correction. In addition, Chinese participant Hayley preferred exposing problems and then took action for correction when encountering incorrect data in their software system. Chinese participant Ashley also said that she would double check these incorrect data issues or other bugs and then attempted to fix by herself, if some issues were really beyond her capability, she would also definitely report these issues to related persons seeking a better solutions.

Figure 5.1.3 is the data structure of culture influence of data sharing in global supply chain management. The upper part of this figure is designed from the perspective of culture elements (Hofstede,2002)including elements of identity (individualism or collectivism) and truth (uncertainty avoidance or uncertainty tolerance), in particular, from the sub-categories of language and evaluation, then analyze how these two culture elements visualize in interviewees' business negotiation in the big context of supply chain management. The bottom part of this figure incorporates culture dimension data descriptions and information flow components of data sharing description, and they have been formatted in a more understandable way for the readers.

In this figure, it can be seen that interview data from Chinese participants and Swedish participants have been collected, typically the quotations of one Chinese participant, Ashley Zhang, and one Swedish participant, Joel. From the quotation of Ashley Zhang, she still used 'we' instead of I a lot in the interview while from the quotations of Swedish participant Joel, the word 'I' has been used a lot. In addition, from the interview data of Ashley Zhang, she said that most people in their department held engineering background and they liked learning technology because it was a good way to improve our technical skills. This can be explained that they were interested in learning new technical skills and by doing this, they are more capable of avoiding uncertain situations. Swedish participant Joel claimed that he prepared a lot before training. In addition, he also encouraged employees asking questions and involving discussions. By doing these, he attempted to evoke employees' thinking and made the knowledge much clearer and more acceptable. These are good illustrations of culture element of uncertainty avoidance in evaluation in accordance with Hofstede (2002) that people quickly and prematurely judge a situation to establish right and wrong.

Data structure of data

	<p>“Most people in our department hold engineering background, we like learning technology, because it is a good way to improve our technical skills.” --- Ashley Zhang</p>	<p>Use “we, our, us” instead of “I, mine, me”</p>
Quotations from Chinese participants	<p>“For instance, the producing progress of supplier is slower than the schedule, this situation had to be known by us, and some factories may try to withhold the information, which is seem as dishonesty.” --- Angela Qu</p> <p>“We will expose the data problems and take action to correct.” --- Hayley Ding</p> <p>“Relationship can influence the information exchanged.” --- Lynn Zhou</p>	<p>“slower, withhold, dishonesty”, quickly and prematurely judge a situation to establish right or wrong</p> <p style="border: 1px solid black; padding: 2px;">Relation-based system</p>
Quotation from Swedish participant	<p>“Visualization is to see what is incorrect as i can learn from deviations. If something is wrong, i want to see it because i can then do some correction.” ---Joel Ståhl</p> <p>“Questions are always welcome in my class. I think knowledge should be transferred clearly and acceptably.” ---Joel Ståhl</p>	<p>Verbal, use “I, my”</p> <p style="border: 1px solid black; padding: 2px;">“clearly”, establish right or wrong</p> <p style="border: 1px solid black; padding: 2px;">Uncertainty is not threaten, data visibility is important to see the mistakes and correct it</p>

Data Descriptions		Culture dimension			
		Individualism	Collectivism	Uncertainty avoidance	Uncertainty tolerance
Data	Questions including How do you usually share data with other? How do you think about infomation visibility and accuracy? Is there any culture element in data sharing process, etc. ?	✓	✓	✓	Chinese participants
		✓		✓	Swedish participant

Figure 5.3 Data structure of culture influence of data

5.1.4 Culture elements in information flow transaction

Transaction cost including three broad categories that are search and information costs, bargaining costs and policing and enforcement costs. In supply chain management, transaction contains negotiation, coordination and data exchanging. Negotiation produces bargaining costs and coordination and data exchanging generates enforcement costs to monitor the supply chain process. In previous research about transaction, there are three themes, which are highlighted. Trust building, information symmetry and institutional frameworks. Our data supports the viewpoint that culture difference can affect the transaction in the supply chain and culture diversity may cause an increase in transaction complexity and costs (Saeki & Horak, 2014). Trust plays a key role as a foundation for effective collaboration that can speed negotiations and reduce transaction cost. It becomes important factor in determining the performance of company (Lou et al., 2009). Trust can lower the risk of business partner opportunism and transaction costs (Hodl & Puck, 2014). As mentioned, our data shows the trust building is not easy for Chinese companies and their Western partners. Interviewees Lynn said she felt hard for her to make friends with foreign business partners but friendship can be rather easier to make with native suppliers. This could be seen as a reflection of uncertainty avoidance that people with extreme uncertainty avoidance could be xenophobic. Differences are also identified by how

different interviewees perceive the culture difference in the work. Angela and Lynn list several different working styles between Chinese and partners from the west while Joel seem to get used to the multinational working environment since employees are from different countries in his department. That is not only related to the national culture difference but also related to the different organizational culture. Different ways of perceiving “trust” maybe a reason why it is hard for Chinese and Western partners to build trust. Swedish interviewee Joel said trust is built through good cooperation and complying with the contract while Chinese interviewees may perceive trust as a kind of friendly and intimate partnership that you keep no secret from each other and sitting on the same side of the table. This could be caused by the collectivism culture values of Chinese that clearly distinguish in-groups and out-groups. Lack of trust may cause uncertainty and low transaction frequency in the information flow (Lou, et al., 2009). If there is no trust, many details are required that make information exchange slowly therefore increase the communication transaction costs.

Information symmetry is another element to reduce the transaction costs. Cooperative relationship of supply chain partners require the sharing of information, which have to be enabled by the integration of disparate information systems across partners (Klein, Rai & Straub, 2007). Interviewees mentioned EDI system used in their companies to decrease the misunderstanding by language and standardize the daily operation. Angela said the information transparency is related to honesty for example, if producing progress of suppliers is slower than the schedule, this situation must be known by her. Some suppliers may try to withhold the information. Ashley said for Chinese it is hard to express very clear and cannot get the exact point from colleagues with different culture backgrounds. Joe said her English is not very good, if the foreign suppliers are either poor at English to explain the production problems, she might fight to the production site to check the situation. It seems little culture elements in that part except the language. Companies with advanced digital information system could achieve information symmetry better and reduce the communication and administration transaction costs. Because of the ambiguous characters of Chinese language, customizing EDI system is more needed for Chinese companies to achieve the competitiveness and efficiency of transaction as well.

Another factor in transaction is institutional framework. Scholars define Chinese governance system as relation-based system while Western countries employ a rule-based governance system. Relationships are comparatively more important in China than in the West (Lau & Young, 2013). Hofstede (2012) also mentions Chinese long-term orientation system which means relationships do matter a lot in China when in the Western countries. This is supported by our data that Chinese interviewees mentioned long-term relationship while Swedish interviewee did not. Chinese interviewee Lynn indicated she has built relationship with several suppliers for years and they have a long-term smooth cooperation and friendship. It seems getting familiar with business partners and building relationship is really important for her. And she also perceived business relations as personal relations. Abdi and Aulakh (2012) stated that culture difference leads to different institutional framework so that to influence the transaction-level governance arrangements. They also indicate the corporate institution and country-level institutional environment lays down a

set of fundamental political, social and legal ground rules and provides a structure within which its members can cooperate (Abdi & Aulakh, 2012). The root cause for the relation-based system could be the high collectivism level of China so that Chinese are very close to the in-group, which they have intimate relationship with, and be silent and reserved with out-groups. Culture dissimilarity would be a barrier for Chinese to build the relationship and trust. Lau and Young (2013) concluded that the Chinese governance system would not completely transit from relation-based to rule-based because it is rooted in Chinese heritage and value system. It influence how Chinese thinking and perceive things. Our interviewees admitted that they would automatically bring the culture value into work and try to persuade others with tradition concept system. For example, Master Sun's Art of War is usually used in business environment said by Joe. Relation-based governance system including the horizontal relationship that is a kind of social network and vertical inter-firm relationship, which means the hierarchy in the firm with the manager expected to be benevolent and the employees to be loyal and show respect to managers (Lau & Young, 2013). This vertical relationship in the firm is influenced by the tradition Confucian values. As Chinese interviewees said if a conflict happens, they will seek settlement and help from boss. That supports the vertical relationship that employees show respect to the higher authorities and the hierarchy is clearly defined in the firm. This is the way culture elements affect the institution so that to influence the transaction process and it could be difficult to change.

Data structure of transaction

	"We will double check when meet these issues. Otherwise, we will definitely report to related persons or better solutions" --- Ashley Zhang	Language barrier increase transaction complexity
Quotations from Chinese participants	"Sometimes manager of factories cannot speak english fluently, then i will go o the site to suprvice the production." --- Joe Chen	Bring culture values to work
	"Culture value is something deep-rooted in every human, i will involuntarily bring it to work.." --- Joe Chen	
	"It is hard to make friends with foreign partners, but it is much more easier to get familiar with local suppliers" --- Lynn Zhou	Seek better solution from related person
Quotation from Swedish participant	"Rules, budget, price, rules and costs are already generated by the company before each transaction, so i dont't have any information to share" ---Joel Ståhl	Verbal, use "I, my"
		"clearly", establish right or wrong

Data Descriptions		Culture dimension			
		Individualism	Collectivism	Uncertainty avoidance	Uncertainty tolerance
Transaction	Questions including how do you deal with conflicts in transaction, how do you build trust with partners to reduce transaction fee? Is there culture elements in this part etc. ?	✓	✓	✓	✓
					Chinese participants
					Swedish participant

Figure 5.4 Data structure of culture influence of transaction

5.2 Conclusion

In this study, the research purpose was fulfilled based on the analysis of the empirical data. The main findings was that Chinese culture is more collectivism and uncertainty avoidance while Western culture is more individualism and uncertainty tolerance, these differences have influences on decision-making, trusting building, resource distribution in information flow supply chain management. Therefore, cross-culture communication becomes an important bridge and lubricant to form cross-culture win-win situations.

Chinese people eat with chopsticks while westerns eat with knives and forks. Cross-culture communication can definitely help people better understand each other even though people bring their own culture into everyday work and life. Trust and mutual understanding play core roles in cross-culture communication. Building trust for cross-culture communication has been emphasized both by interviewees in this thesis as well as previous researchers. Trust is like lubricant that can effectively improve communication and cooperation skills for each company, particularly high level of culture diversified companies. Building trust and try to understand the culture background of each other is the way to increase the efficiency of information flow in global supply chain.

6 Discussion

In this chapter, the contribution of this thesis to the existing literatures will be presented followed by the considerations for future research and the limitations of this study.

This thesis investigates how culture elements influence information flow in the context of global supply chain management with empirical evidences from six interviewees. The culture elements of identity (individualism or collectivism) and truth (uncertainty avoidance or uncertainty tolerance) are claimed based on the theory of Hofstede (2002) while the specific four categories of information flow (negotiation, coordination, data and transaction) are stated in accordance with Juliana et al. (2015). The main finding of this research is that Chinese culture is more collectivism and uncertainty avoidance while Western culture is more individualism and uncertainty tolerance and these differences have influences on decision-making, trusting building, resource distribution in information flow supply chain management.

This thesis gives a contribution to the knowledge pool of how culture influences global supply chain management. In fact, previous researches have presented various findings and results in this field, for instance, Johnson et al. (2010) claim that national culture influences individual preferences so as to influence the choice of coordination mechanisms, these researches clarify the influence of either organizational culture or national culture has on the aspects of disruption, coordination mechanisms and relational risk in the context of global supply chain management. Similarly, this thesis targets the influence of culture elements have on the aspect of information flow in the big background of global supply chain management. The conclusion of this thesis fits in other authors' contribution.

There are several managerial implications in this study could be beneficial for the cross-culture supply chain management. First, as described above, Chinese culture is more collectivism and from the interviews of Chinese participants, Chinese employees incline more to team work, as such, the first managerial implication might be a proper balance between team work and individual work which could be benefit for local management in inter-national company. Second, the trainings inter-national companies are mostly given by trainers from headquarter companies and employees from subsidiaries or joint venture companies are more trainees. Therefore, managers and leaders are suggested giving more opportunities for employees from subsidiaries or joint venture companies and encouraging them speak up and effectively conduct knowledge transformation.

The apparent limitation in this research is the numbers of interviewees. In total, six participants have joined the interviews and the results collected as well as the analysis implemented are merely based on these six respondents. Using the phenomenon gathered from these six respondents to interpret the situation of a whole country or a few countries is definitely considered as a limitation. In terms of the limitation, future researchers are suggested that by involving more interviewees into study, the data collected will be more abundant and the results and analysis will be more persuasive. It is also suggested that

future researchers would investigate culture elements of gender, power distance and hierarchy in information flow of global supply chain management.

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Appendix

Interview guide

General questions:

1. Somebody says, more collectivist cultures tend to put great emphasis on the maintenance of harmony within the 'in-group, to avoid some critical disputes, while individualist cultures support individualism and encourage the speaking of one's own mind. Do you agree? What is your thinking then?
2. How do you think 'Business relations are always, to some degree, personal relations'?

Negotiation and decision making:

1. How do you usually conduct negotiation? Face-to-face, video, telephone, email or other ways?
2. Normally, how do you make decisions, individually or via group discussion or voting?
3. How do you think the importance of context in negotiation and decision making?
4. Are you an efficient person? How do you think marathon negotiations and decision-making?
5. When encountering something uncertain, how do you negotiate and make decisions? Quickly and prematurely judge a situation to establish right or wrong, or, judge in pragmatic, not moral, terms?
6. What is your viewpoint of conflicts? Is it common for you to argue anything? How do you normally deal with conflicts?
7. Are you an emotional person in work? How do you think about bringing emotion to work?
8. Do you prefer working individually or team work? Why?

Coordination:

1. Do you think language is a barrier when coordinating in a cross-cultural department? Why? (Clearly expressing, mutual understanding, etc.)
2. What is the most challenge thing in your coordination? What is your attitude toward it? (Avoidance, tolerance, or anything else?) How do you identify a challenge as a chance or not?
3. How do you think the importance of trust in cross-cultural coordination?

4. Can you express your personal feelings freely in work?
5. Is there anybody's behavior which you feel really impressive, such as embarrassing, upsetting, frustrating, etc.? What is that then? What is your thinking in terms of the 'root cause' behind that behavior? And what is your feelings now?
6. Encouraging independent thinking and in consensus with majority, which one do you incline more? Why?

Data Sharing:

1. What kind of platform do you usually use when sharing data/information with others? (IT-technology, face-to-face talk, text messages, emails) Why?
2. Do you think it is very important for information visibility? Why? Can you please give an example on some issues occur due to lack of information visibility? How does that happen and why happen?
3. Suppose you find some incorrect data in work, are you fear of exposure of these problems? What is your attitude towards these problems and what will you do then?
4. The components of the information system are: (1) the sender (producer) of the information; (2) the recipient (user) of the information; (3) the information itself (content); (4) the information channel. Will you bring your own cultural values when produce or compile data/information? Can you please give an example?

Transaction:

1. If you need to buy something for your company and do some transactions with suppliers, do you involve relationship to reduce transaction cost? Why?
2. How do you consider the importance of getting the first-hand information when transaction? Why? Please give an example?
3. Is there any culture element involved in transaction?
4. What would you do to reduce the transaction cost?