

IMPACT OF SOCIAL CAPITAL ON BUYER SUPPLIER RELATIONS IN A MULTI-
CULTURAL CONTEXT

by

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Presented to the Faculty of the Graduate School of
The University of Texas at Arlington in Partial Fulfillment
of the Requirements
for the Degree of

DOCTOR OF PHILOSOPHY

THE UNIVERSITY OF TEXAS AT ARLINGTON

May 2010

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DEDICATION

This work is dedicated to the memories of my husband, Jerry Avery, and my mom and dad, Betty and Carl Miller. They are the source of my inspiration. They began this journey with me. They could not be here for the end, but I know they are celebrating in Heaven.

ACKNOWLEDGEMENTS

I want to begin by thanking my children, Ben and Kim, their families, and my sister Jan. Thank you for your encouragement and being patient when school work came before family time. You are my best cheerleaders. I love each and every one of you and we will take that family vacation now.

There are two professors who have been especially helpful to me throughout the entire program: Drs. Edmund Prater and Patricia Swafford. They have been with me through some very challenging times and encouraged me to never give up. Over these years, they have been my mentors and become my friends. I could not have completed the program without them.

There are many people that have helped me through my Ph.D. program, including faculty from the College of Business, fellow students, friends, family, church family, and countless prayer warriors. I am unable to list each and everyone, but please know that I am sincerely grateful for all your help.

Most of all I thank God for His grace and mercy. He provided strength, peace of mind, and ultimately joy through all the challenges of the last few years. My life verse is from Psalm: 20:7. *'Some trust in chariots and some in horses, but we trust in the name of the LORD our God.'* God is good!

March 29, 2010

ABSTRACT

IMPACT OF SOCIAL CAPITAL ON BUYER SUPPLIER RELATIONSHIPS

IN A MULTI-CULTURAL CONTEXT

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Both manufacturers and service companies rely heavily on their suppliers to provide quality products and services. The management of these suppliers can be critical to the success of an organization. In this research study, the relationship between buying firms and their suppliers is examined and how it contributes to the overall performance of the buying firm. Prior research has confirmed that a strong buyer supplier relationship can have a positive impact on the buying firm's performance. However, these studies primarily examined relationships within the context of a western country. This study examines the similarities and differences in business practices that contribute to a strong buyer supplier relationship in both a western culture (United States) and an eastern

culture (China.) This is done utilizing theories from three different disciplines to study the relationship and its impact on performance: buyer supplier relationship from operations management, social capital from management, and cultural impact from international business.

The survey data was collected from United States and Chinese executives. The data was analyzed and compared using a variety of techniques including linear regression, confirmatory factor analysis, and structural equation modeling. Similar to studies performed in various western countries, the relationship between a buying firm and their supplier was found to improve the buying firm's performance in both the United States and China. However, the activities that contribute to a successful relationship vary by country. Cultural differences between the United States and China help explain the differences in business practices that are most advantageous in each specific country.

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CHAPTER 1
INTRODUCTION

1.1 Buyer Supplier Relationship

Both manufacturer and supplier organizations rely heavily on their network of suppliers to provide quality products and services (Buhman, Kekre et al. 2005). Therefore, the management of these networks of suppliers can be essential to the overall success of an organization. This success can be based on several factors. First, the relationship between buying firms and suppliers is widely recognized by both practitioners and academics as a critical component to the overall success of a supply chain (Langfield-Smith and Greenwood 1998; Cousins, Handfield et al. 2006; Krause, Handfield et al. 2007; Lawson, Tyler et al. 2008). In addition, a collaborative and successful relationship can result in a competitive advantage (Langfield-Smith and Greenwood 1998). Because of this, the buyer supplier relationship has been a focus of research studies with increasing popularity from the 1980s to the present (Terpend, Tyler et al. 2008). This coincides with the focus on supply chain management in Operations Management (OM) research which occurred as a response to the changes in the business environment in which organizations have increased their reliance on their supply chain network (Buhman, Kekre et al. 2005; Terpend, Tyler et al. 2008).

The relationship between buyers and suppliers can be broken down into two major categories: transactional and relational. Transactional exchanges are typically short-term, conducted at arm's length, and governed by contracts (Powell 1990), whereas a relational exchange can take the form of a strategic alliance or partnership between firms. These types of relationships often result in a long-term commitment between partners and are governed more by trust than contracts. This study focuses on the collaborative, strategic relationships between a buying firm and key suppliers which are complex and difficult to manage.

1.2 Social Capital

In this paper the buyer and supplier relationship is examined using the theoretical lens of social capital. Social capital is the “aggregate of resources embedded within, available through, and derived from the network of relationships possessed by an individual or organization” (Nahapiet and Ghoshal 1998). Social capital theory recognizes that relationships can be a source of both physical and informational resources. Research has shown that the use of these resources can help an individual or firm achieve a variety of positive outcomes, such as finding jobs, decreasing high school dropout rates, and improving firm performance (Jacobs 1965; Bourdieu 1985; Coleman 1988; Burt 1997; Krause, Handfield et al. 2007).

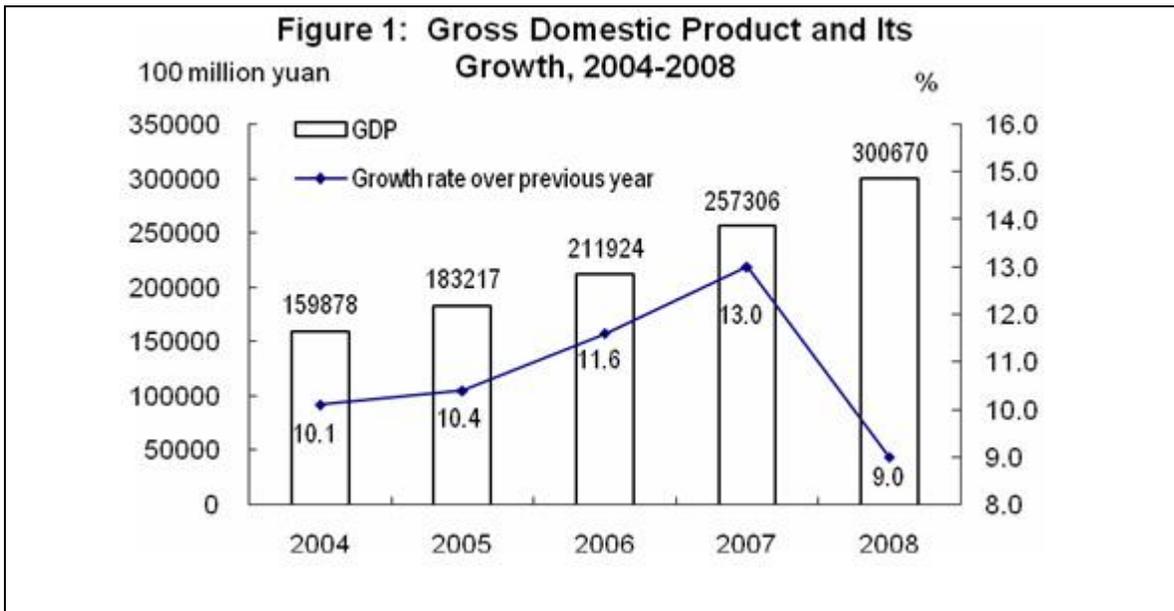
Nahapiet and Ghoshal (1998) developed the theory that social capital is in fact made up of three dimensions: structural, relational, and cognitive. The structural dimension encompasses the properties of the network including personal linkages and the

overall pattern of connections. This aspect of social capital has been described as “who you reach and how you reach them” (Burt 1992). The relational dimension represents the ongoing personal relations based on a history of interactions, respect, friendship, personal, and emotional attachment. This dimension is strengthened through trust and norms and includes obligations and expectations. The cognitive dimension includes shared representations, interpretations, shared language, shared codes, and systems of meaning among parties (Nahapiet and Ghoshal 1998). As might be expected, the three dimensions of social capital are highly interrelated (Nahapiet and Ghoshal 1998). For example, the existence of network ties (representing the structural dimension) must be in place before an individual can develop a personal relationship. Repeated interactions can strengthen the network tie but also strengthen the relationship due to the building of trust based on historical activities. On the other hand, cognitive social capital can enhance the relationship aspect by providing a common ground of understanding, just as the relationship aspect can provide a deeper knowledge of the other party which can improve the common ground of understanding. All three of the dimensions of social capital will be used in this study to examine buyer supplier relationships in both eastern and western cultures.

1.3 International Business

In this research study, the buyer supplier relationships in an international setting will be reviewed in order to determine which practices can cross international boundaries and identify new practices that should be considered when operating in a global environment. The majority of the research on buyer supplier relationships has been

conducted in a western culture, such as the United States. This is the first study, to our knowledge, to examine buyer seller practices across cultures using the theoretical foundation of social capital. In this research paper, the buyer-supplier relationship will be reviewed within the context of the United States and China as representatives of western and eastern cultures, respectively. China was chosen because of its increasing importance to the global market, since China is the largest emerging economy in the world with exports of \$428.6 billion (Zhao, Flynn et al. 2007). Figure 1 illustrates the continued growth of China's GDP. China also has the largest population in the world at 1.3 billion compared to 303 million in the United States (Worldbank and United States Census). Many United States firms are looking to China for suppliers (Handfield and McCormack 2005). Therefore, the study of China and United States inter-firm relationships is timely and will provide practical as well as academic relevance.



Source is the National Bureau of Statistic of China (www.stats.gov.cn).

Figure 1 China Gross Domestic Product (GDP)

Significant differences exist in culture and business practices between China and western countries. Because of cultural differences, business logic is different in China than western countries (Park and Luo 2001; Park and Luo 2001; Jiang and Prater 2002). Culture is the “collective programming of the mind which distinguishes the members of one group or category of people from another” (Hofstede 2007). Thus, culture influences perceptions which influence decision making. Another way to state this is: What works in one country may not work in another (Hofstede 2007). The Chinese have a strong national culture dating back 5,000 years to the time of Confucius. An understanding of Chinese culture and its impact on business practices is essential to conducting business in China.

1.4 Research Goal

In this research study, the relationship between buying firms and their suppliers and the impact of the relationship on the overall performance of the buyer will be examined. Prior research has confirmed that a strong buyer supplier relationship can have a positive impact on the buying firm’s performance (Langfield-Smith and Greenwood 1998; Cousins, Handfield et al. 2006; Krause, Handfield et al. 2007; Lawson, Tyler et al. 2008). However, these studies examine relationships within the context of a western country. This study seeks to study the similarities and differences in business practices that contribute to a strong buyer supplier relationship in both a western culture (United States) and an eastern culture (China). Specifically, it seeks to answer two main research questions:

- (1) Does a good relationship between a buying firm and their suppliers improve the performance of the buying firm in both eastern and western cultures?
- (2) What activities improve the relationship between a buying firm and their suppliers in both eastern and western cultures?

1.5 Research Approach

A multi-discipline approach will be used to seek answers to these questions: operations management, international business, and management theory. Operations management literature will be reviewed to develop the theoretical framework for the buyer supplier dyad. International business literature will be reviewed to understand differences between cultures and the impact on business practices. Finally, social capital theory will be used to examine the relational aspects of the buyer supplier dyad. Social capital provides a strong theoretical foundation to explore the long-term, collaborative form of relationships which is the focus of this study. Social capital has been used to examine various levels, from the individual to the organization. This study will use social capital theory to examine inter-organizational relationships.

A two-step approach will be used to answer the research questions. (1) An existing study on social capital in buyer and supplier relationships will be duplicated and (2) then the conceptual model of the existing study will be expanded. Krause, Handfield et al. 2007 conducted a study in the United States using social capital to examine the impact of supplier development activities on buying firms' performance. This study is replicated and expanding using data gathered from United States and China managers. This allows the researcher to benchmark the data as well as dealing with some validity

issues that were present in the initial Krause (2007) study. This will also provide further validation that social capital has a positive impact on performance in western cultures and that it also impacts performance in eastern cultures. Replication of prior studies provides further confidence in the findings and enhances external validity which provides additional relevance to practitioners (Meredith 1993).

Based on these findings, the existing model is expanded to include constructs specifically related to cultural differences. A survey instrument and scales were developed to gather the needed data. This expanded model was then tested using data from managers in both the United States and China.

Additionally, different analytical techniques from prior studies are used to test the expanded model. The use of social capital theory in an operations management context is a new phenomenon to operations management research. Using the triangulation methods of multiple data sources and techniques helps improve the accuracy and application of this emerging theory within the operations management field (McCutcheon and Meredith 1993; Lewis 1998). Comparing constructs across research studies will help refine the constructs as social capital theory is applied in an Operations Management setting.

1.6 Contributions

This research study will provide several contributions to both practice and research. (1) The buyer supplier dyad has not been researched across cultures. Most of the research has focused on western cultures, with isolated studies in eastern cultures. This study will simultaneously examine business practices between the United States and

China. Two elite journals in the operations management field have recognized the need for social and operations management research in Asia through recent calls for papers. (2) China continues to emerge as a major player in today's market. Many United States companies look to China as a source of key suppliers. There are significant differences between eastern and western cultures that impact business practices. This study can help United States managers understand the cultural differences that supply chain and purchasing managers face when doing business in China. (3) Social capital theory is relatively new to the operations management field. Beginning in 2006, Operations Management research was published that used social capital in exploring the buyer supplier dyad. These studies have just begun to develop the constructs that measure social capital activities. This study will further develop existing constructs. (4) Finally, there is minimal literature that addresses the impact of culture on social capital theory.

In summary, this research effort provides a multi-disciplinary approach to studying this key relationship by combining the organizational behavior, sociology, and management literature on social capital, supply chain and the buyer-supplier relationship using operations management literature and finally a multi-culture perspective using international business literature. It is believed that this approach is unique and will offer insight to both academics and practitioners on conducting business in a global environment.

CHAPTER 2

LITERATURE REVIEW

2.1 Buyer Supplier Relations

2.1.1 Introductions

The Council of Supply Chain Management Professionals defines supply chain management as the “planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies” (<http://cscmp.org/aboutcscmp/definitions.asp>). The supplier network is becoming increasingly important to the ongoing success and profitability of both manufacturing and service organizations (Buhman, Kekre et al. 2005).

2.1.2 Types of Relationships

The relationship between buyers and their suppliers can be characterized as transactional (non-cooperative) or relational (cooperative) (Baker 1990; Langfield-Smith and Greenwood 1998). Transactional exchanges are typically short-term, conducted at arm’s length, market controlled, and governed mainly by contracts (Powell 1990). This method includes many exchange partners and provides the benefit of reduced dependency

on a sole-provider. Suppliers are often selected based on price and availability of product.

A relational exchange can take the form of a strategic alliance or partnership between firms which represent a commitment between partners and are governed more by trust than contracts. In this type of exchange, corporations rely on a small number of key suppliers and typically result in a long-term agreement. Management of these relationships goes beyond a contractual obligation. In a long-term relationship, it is impossible to contractually allow for every contingency. Therefore, the relationship between the parties becomes the primary tool to address non-contractual issues. Most firms use a combination of short-term contractual suppliers and long-term strategic suppliers (Baker 1990; Lawson, Tyler et al. 2008).

This study focuses on the long-term strategic relationships between a buying firm and key suppliers. This type of buyer-supplier relationship is a long-term cooperative relationship where organizations maintain control over their own resources; problems are resolved through discussion; and rules and norms of reciprocity ensure cooperation (Powell 1990; Uzzi 1997; Brass, Galaskiewicz et al. 2004). These types of relationships can be a source of competitive advantage resulting in the improved performance of cost, quality, delivery, or flexibility (Krause, Handfield et al. 2007). Management of these relationships goes beyond traditional supplier control techniques such as certification or ratings. Supplier relationship management (SRM) is a term used by the Council of Supply Chain Management Professionals to describe an “approach to managing interactions between a company and the organizations that supply the goods and services

it uses.” It includes a focus on continuous improvement, personal communication and relationships at various levels of both firms, and sharing of business practices and information (Ganster 2009).

2.1.3 Research

Uzzi 1997 conducted one of the first studies that examined the impact of strong inter-firm relationships. He studied the New York City garment industry and found that strong relationships had a significant impact on performance. Up until that time, the majority of the research focused on arms-length transactional relationships. Since that time, researchers in both the fields of management and operations management have examined inter-firm relationships. Several theories have been used to examine the behavior of inter-firm relationships:

- agency theory (Eisenhardt 1989)
- transaction cost theory (Williamson 2008)
- resource-dependence (Pfeffer and Salancik 1987)

Agency theory views these relationships as contractual and requires governance mechanisms to ensure that agents properly fulfill the requirements of the principal. Transaction cost theory bases decisions on minimizing transaction costs, such as the cost of governance, and is often used to analyze “make or buy” decisions. The resource dependence theory is based on power. If a buyer has several suppliers then it reduces dependence on a sole supplier. These theories tend to focus on the economic side of the transactions and assume all actors act in their own self-interest. Interorganizational relations are in fact a form of social structure; therefore the type of social interaction

could have a significant impact on the performance of both firms. Therefore the researcher chose social capital theory to examine the social aspect of long-term strategic alliances between buyers and suppliers. Social capital is a relatively new approach to viewing buyer supplier relationships in operations management research (Krause, Handfield et al. 2007). Examples of operations management research studies using social capital theory include studies by Cousins et al. (2006), Krause, Handfield et al. (2007), and Lawson et al. (2008). These studies will be discussed further in both the literature review (section 2.3) and construct development (chapter 3). The theory of social capital is discussed in the next section (2.2).

2.2 Social Capital

2.2.1 Introduction

Social capital theory is based on the premise that a network of relationships provides access to valuable resources which can be used to achieve a variety of positive outcomes (Jacobs 1965; Bourdieu 1985; Coleman 1988; Burt 1992). The discipline of sociology has long recognized that involvement and participation in groups can have positive consequences for both the individual and the community (Portes 1988). Pierre Bourdieu (1985) conducted the first contemporary analysis of social capital in which he defined social capital as “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition or, in other words, membership in a group.” This definition recognizes two important elements of social capital: social relationship

between actors and resources made available through that relationship. Actors can be the donor or recipient of the resource. Coleman is another pioneer of the modern concept of social capital and is credited with highlighting its importance in American sociology (Portes 1988). Coleman defined social capital as a function: “a variety of entities with two elements in common: they all consist of some aspect of social structures and they facilitate certain action of actors within the structure” (Coleman 1988). This definition brings up an additional element of social concept: Action is required by the actors involved to actually use the resources available. In summary, social capital is comprised of a social network of relationships, actors (both donors and recipients), resources available through the social network, and action on the part of the actors.

Sociology and economics have two very different views of the firm. Sociologists focus on the social aspects of the people that comprise a firm without consideration of economic influences while economists focus on the economic pursuits of the firm without considering the social aspects. Social capital theory reconciles these conflicting views by recognizing that tangible, financial benefits can be obtained through networks of personal relationships. Social capital theory also recognizes additional benefits to individuals and firms. Social capital addresses the possibility to achieve ends that would be impossible without it or could be achieved only at extra costs (Coleman 1988; Nahapiet and Ghoshal 1998). Benefits include privileged access to knowledge and information, preferential opportunities for new business, enhanced reputation, influence, and understanding of network norms (Inkpen and Tsang 2005). There are three key benefits of social capital. (1) Social capital provides information through access to broader sources of information

and improves information's quality, relevance, and timeliness. (2) Influence, control, and power results due to the exchange of resources. Individuals in position of power can influence social networks norms. (3) Strong social norms and belief provide solidarity which encourages compliance with the norms of the network and reduces the need for formal contracts (Adler and Kwon 2002). Social capital can increase the efficiency of action through minimizing redundancy. Given its benefits, one can easily see the importance of understanding the nature in which social capital can be built and tapped within a firm.

There are a variety of definitions of social capital in academic literature. For example, social capital is "a resource that actors derive from specific social structures and then use to pursue their interests: it is created by changes in the relationship among actors" (Baker 1990). Another definition of social capital is "friends, colleagues, and more general contacts through which you receive opportunities to use your financial and human capital" (Burt 1992). Nahapiet and Ghoshal (1998) believe that the various definitions result from the failure to recognize that social capital includes several dimensions which will be discussed later in the paper. Nahapiet and Ghoshal defined social capital as "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit." Nahapiet and Ghoshal's definition of social capital will be used since it encompasses the various dimensions of social capital that will be examined in this research paper.

2.2.2 Dimensions of Social Capital

Nahapiet and Ghoshal (1998) developed the theory that social capital is in fact made up of three dimensions: structural, relational, and cognitive. These dimensions expand on Granovetter's work that discussed structural and relational embeddedness (Granovetter 1992). The structural dimension encompasses the properties of the network including personal linkages and the overall pattern of connections. This dimension has been described as "who you reach and how you reach them" (Burt 1992). The relational dimension is the ongoing personal relationship based on a history of interactions, respect, friendship, personal, and emotional attachment. This dimension is strengthened through trust and norms and includes obligations and expectations. It also includes identification with the group. Nahapiet and Ghoshal (1998) introduced the cognitive dimension of social capital which includes shared representations, interpretations, shared language, shared codes, and systems of meaning among parties (Nahapiet and Ghoshal 1998). Language provides the mechanism for exchange, influences perceptions, and makes it easier to transact business. The three dimensions of social capital are highly interrelated. For example, structural or the existence of network ties must be in place before an individual can develop a personal relationship. Repeated interactions can strengthen the network tie but also strengthen the relationship due to the building of trust based on historical activities (Nahapiet and Ghoshal 1998). Their original conceptual model is shown as figure 2. This model posits that the three dimensions of social capital facilitate the exchange of intellectual information between social actors which results in the creation of new intellectual capital.

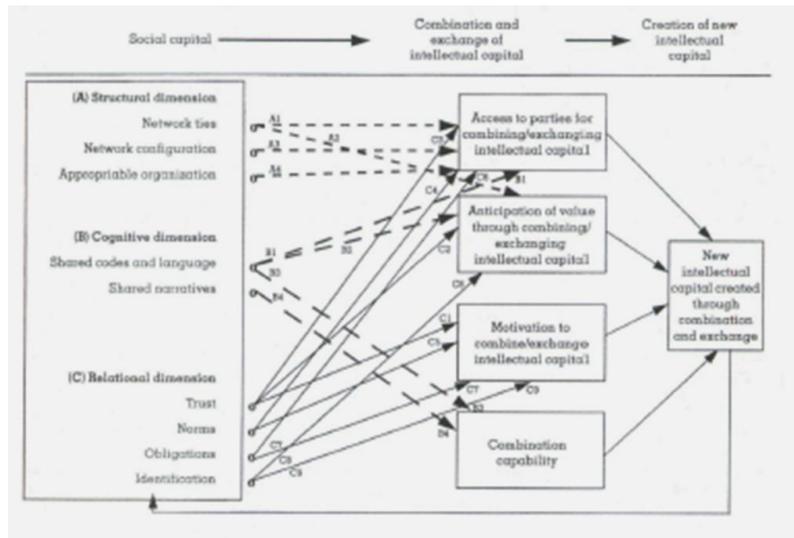


Figure 2 Nahapiet and Ghoshal Model (1998)

The basic framework of this model (see figure 3) has been used in literature many times. Various constructs have been developed to describe the different dimensions of social capital in a number of settings and their impact on a number of different outcomes. For example, Lee conducted an empirical study that tested the impact of social capital dimensions in the form of network ties, informational relationships and shared expectations on research and development outcomes (Lee 2007). They found that social capital has a significant impact on the number of projects completed, product/process improvements, and the number of products brought to market. A study of new biotechnology firms found that all three dimensions of social capital had a positive impact on firm performance (Maurer and Ebers 2006). The use of this model to study buyer supplier relationships will be discussed in section 2.3 of this paper.

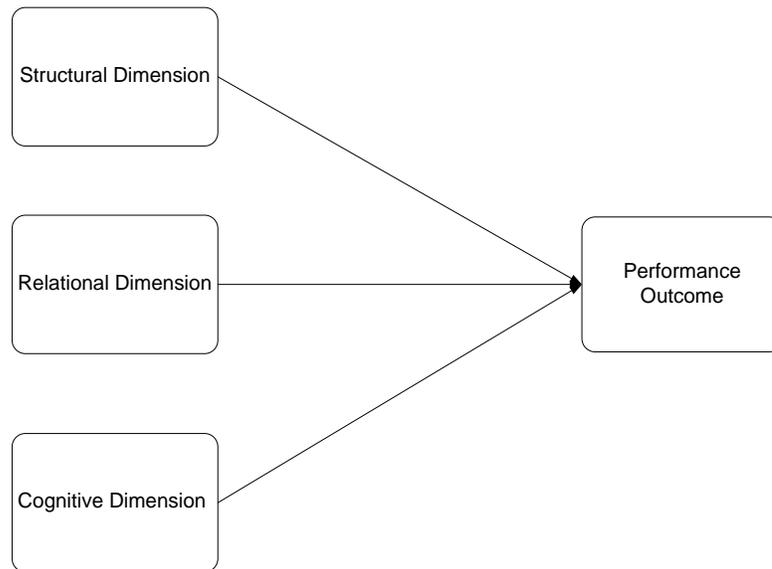


Figure 3 Social Capital Model

2.2.3 Characteristics of Social Capital

Social capital has characteristics common to tangible capital, such as physical or financial capital, and intangible capital such as human or intellectual capital. It is built on relationships which have intangible value but can result in tangible gain, such as a new job or business opportunity. Adler and Kwon (2002) identified a number of characteristics of social capital. First, just as people invest in new plant equipment with the expectation of future returns such as cost saving, they can also invest in relationships with the expectation of future returns such as favors or goodwill. In both cases, these investments have a long life with future benefits lasting several years. Second, social capital can be used for more than one purpose. Often relationships made in a private setting yielding individual benefits can also be used in a business setting to provide professional opportunities. Thirdly, social capital can be converted to an economic

advantage as a substitute for or complement to other assets, which helps make up for the lack of financial resources or human capital. Just as physical plant equipment, it also needs maintenance given that relationships between actors have to be maintained through continued interaction. Finally, social capital differs from other assets in that no one person has exclusive ownership rights. Social capital is owned jointly by the parties in a relationship (Burt 1992).

In this research study, activities will be identified required to ‘maintain’ the social capital asset in terms of buyer supplier relationships, such as trust or socialization. A detailed description of these activities is included in section 3.4 of the paper.

2.2.4 Downside of Social Capital

Social capital is not always beneficial. Strong norms may stifle creativity and limit openness to new information or alternative processes (Nahapiet and Ghoshal 1998). Portes (1988) discussed four negative results of social capital. (1) *Exclusion of outsiders*– Strong ties that benefit members of a group can also restrict access to outsiders. The traditional monopoly of Jewish merchants over the New York diamond trade is one example of groups that exclude outsiders. (2) *Excessive claims on group members*– Successful members may be called upon to aid other group members to the detriment of their own wellbeing. (3) *Restrictions on individual freedoms*–Close ties within a group may result in the restriction of individual freedom and demands for conformity. (4) *Downward leveling norms*–Sometimes groups are formed due to a common experience of adversity and opposition to mainstream society. This can result in negative or counter-productive behavior. High solidarity (degree of closure in a group) encourages

compliance with the group rules and norms, while at the same time resulting in inertia and fewer novel ideas (Adler and Kwon 2002). Maurer and Ebers (2005) found that strong social capital in new firms could result in both relational and cognitive lock in with partners which may limit a firm's ability to adapt to changing requirements as firms mature. Additionally, maintaining relationships can result in a substantial investment in time to maintain a relationship. One of the downsides of social capital will be addressed in this research study. It will be determined if a strong relationship with a supplier has a negative impact on other suppliers. This is discussed under the construct *appropriability* in section 3.3.4.

2.2.5 Research on Social Capital

Social capital has been studied at a variety of levels, including individual, business unit, organizational, communities, and nations. The study of social networks began in the sociology discipline where studies of communities originally focused on the importance of a social network. Studies found that networks of strong personal relationships developed over time based on trust, cooperation, and collective action will strengthen communities (Jacobs 1965). Coleman (1988) examined the impact of social capital on the dropout rates in local high schools and found that close family and community support decreased the dropout rates. Porter (1988) cited several examples where social capital positively influenced academic performance, children's intellectual development, job opportunities, and juvenile delinquency. Social capital has also been studied in the context of communities and nation (Putnam 2000). Working together is

easier in a community with a significant amount of social capital which is often evidenced by membership in voluntary associations such as the PTA.

The strategic management and organizational behavior disciplines have used social capital and social network theory in a number of research studies since the 1980s (Nahapiet and Ghoshal 1998; Tsai and Ghoshal 1998; McFadyen and Cannella Jr. 2004; Inkpen and Tsang 2005). Adler and Kwon (2002) conducted a review of social capital research in organizational settings in which they cited several studies that showed social capital having a positive impact in a number of job related situations including career success, finding jobs, inter-unit resource exchange, product innovation, increased intellectual capital, reduced turnover rates, and stronger supplier relations. A study of a large multinational electronics company found that the structural dimension of social capital improved inter-unit resource exchange which in turn improved product innovation (Tsai and Ghoshal 1998). The relational dimension of social capital has been found to facilitate the creation of new knowledge (McFadyen and Cannella Jr. 2004). Many studies of entrepreneurship are based on network and social capital theory. For example, a study of new firms in a small county in the state of Indiana found that the owners' informal networks of family, friends and acquaintances were the source of suppliers, equipment, and orders (Birley 1985). Jarillo (1989) conducted a study of new firms across a number of industries. He found that new firms that obtained resources from their informal network of personal relationships grew faster than their competitors. Also, network and social capital theory research is emerging in the information technology discipline (Balijepally, Nerur et al. 2007). Even marketing academics have used social

capital theory as an explanation of firm performance. For example, a study of Chinese businesses found that social capital with both government and business partners has a positive impact on firm performance (Luo Xueming, Griffith et al. 2004).

2.3 Social Capital Impact on Supplier Relationship Management

A supply chain is a network of relationships, both formal and informal. Social capital theory's emphasis on relationships provides interesting insights into studying the relationships between buying firms and their suppliers. Using social capital theory to study the buyer supplier relationship is a relatively new phenomenon in operations management research. There have been four recent operations management studies, beginning in 2006, that examine buyer supplier relationships using social capital theory. A study of manufacturing companies in the United Kingdom examined the impact of formal and informal socialization processes on the relational dimension of social capital. (Cousins, Handfield et al. 2006). They found that informal socialization activities had a greater impact on relational capital than formal socialization activities. Also, relational capital had a positive impact on buyer performance. The impact of social capital on product development was examined using survey data from United States manufacturing firms. The authors found that a close relationship with suppliers and a limited supplier base improved product innovation and external quality (Koufteros, Cheng et al. 2007). Survey data was collected from United States firms to study the impact of supplier development and commitment on buying firm performance (Krause, Handfield et al. 2007). This study included all three dimensions of social capital. (1) The structural dimension of social capital was measured by the level of information sharing, supplier

evaluation and supplier development activities. (2) The cognitive dimension of social capital was measured by the level of common goals and values. (3) The relational dimension of social capital was measured by the length of the relationship representing a commitment to the supplier and buyer and supplier dependency on each other. The study found that all three dimensions had a positive impact on buying firms performance. A recent study examined the impact on buyer performance of the relational and structural dimensions of social capital. A survey of United Kingdom purchasing executives found that both dimensions had a positive impact on buyer performance (Lawson, Tyler et al. 2008). These studies were used as a starting point to develop the model and supporting constructs for this research project.

2.4 Eastern and Western Cultures

2.4.1 China

China is a major player in today's global market. China became a member of the World Trade Organization (WTO) in 2001 which facilitated economic exchange with international trading partners (Hopkins, Nie et al. 2004; Zhao, Flynn et al. 2007). China is considered an emerging economy because of its rapid growth and its transition from a central government controlled economy to a market-based economy. China is the largest emerging economy in the world with exports of \$428.6 billion (Zhao, Flynn et al. 2007). A.T. Kearney (2007) developed a global retail development index which showed China with an 11% growth in GDP in 2006 and a 13% growth in 2007. China also has the largest population in the world at 1.3 billion compared to 303 million in the United States (Worldbank and United States Census).

International firms have chosen China as a base for manufacturing activities to capitalize on their cheap labor costs. In fact, many companies are now using Chinese manufacturers as their first tier suppliers (Handfield and McCormack 2005). China represents an attractive retail market due to the size of its population and growing per capita income. As more and more companies expand into China, it is critical to understand how to do business in China. There are significant differences in culture and business practices between China and western countries. Even simple things like charts portraying business data can be a source of confusion. For example, the color red represents a shortfall in the United States; while in China red represents prosperity.

Because of cultural differences, business logic is different in China than western countries (Park and Luo 2001; Park and Luo 2001; Jiang and Prater 2002). “Manufacturing in China does not always work the way Westerners expect” (Zhao, Flynn et al. 2007). What works in one country may not work in another country (Hofstede 2007). The Chinese have a strong national culture dating back 5,000 years to the time of Confucius. An understanding of Chinese culture is essential to conducting business in China. Cultural heritage influences perception which also impacts decision making (Zhao, Flynn et al. 2007). Culture is the “collective programming of the mind which distinguishes the members of one group or category of people from another” (Hofstede 2007). Values are an important part of a society’s culture. Values are preferences for “certain states of affairs over another;” for example, good versus bad, dirty versus clean, morality over immorality (Hofstede 2007). An additional complication is that the definition of these values, such as good and bad, can vary significantly across cultures.

Values influence the relationships between people in a society. There is not one universal human value system; values vary by country or region. Values do not change due to technology; practices may change, but the underlying values do not change (Hofstede 2007). Values remain relatively stable over time. Even though China is changing very rapidly, its cultural foundation remains intact. The rise in affluence due to the changing economic conditions in China may reduce cultural differences between China and the United States, but it will never eliminate the cultural difference (Hofstede 2007).

2.4.2 Cultural differences between the United States and China

There are five dimensions of culture: individualism versus collectivism, power distance, uncertainty avoidance, masculinity versus femininity, and long-term versus short-term orientation (Hofstede and Bond 1988). Hofstede and Bond surveyed individuals from 22 countries including the United States and China to test differences between the dimensions of culture. Except for the masculinity dimension, the United States and China scored very differently. For example, the United States scores high on *individualism* which focuses on the individual and China scores high on *collectivism* which focuses on the group. Chinese become members of strong cohesive groups beginning at birth which continue throughout their lifetimes (Hofstede 2007). Members of the group support each other, have high levels of trust, and work to promote harmony within the group. Non-group members are looked upon with suspicion and a lack of trust (Hofstede 1980). In an individualistic society, the focus is on the individual which results in an emphasis on personal freedoms, looking after oneself and pursuing personal rather

than group goals. As China becomes more affluent the Chinese may become more individualistic which will reduce the gap between United States and China, but never eliminate the gap (Hofstede 2007).

Power distance is the degree that members of a society accept that power is distributed unequally (Hofstede 1984, Freeman 2004). Inequality is accepted by both the followers and leaders of a society. Less powerful members expect and accept that power is distributed unequally. Cultures with a large power distance highly respect authority and culture. China has a strong hierarchical structure and scores high on large power distance. The United States prizes equality for all individuals and thus scores high on small power distance.

Uncertainty avoidance is the degree to which members of a society feel uncomfortable with uncertainty and ambiguity. This leads them to support institutions that protect conformity. China scores high on uncertainty avoidance while the United States scores low on uncertainty avoidance. Because of the Chinese preferences to avoid uncertainty, the Chinese tend to support hierarchical institutions. The United States society tends to be comfortable with risks and respects individual initiatives (Hofstede 1997, Freeman 2004). *Masculinity* coincides with achievement, heroism, assertiveness, and material success (Hofstede 1984). Respondents from China and the United States had similar scores on this dimension of culture (Hofstede 1984, Freeman 2004).

The fifth cultural dimension deals with the time orientation of a society and is also referred to as the “Confucius dynamism.” China scores high on long-term orientation while the United States scores high on short-term orientation. Societies with a long-term

orientation value stability, persistence, thrift, and hierarchical relationships (Hofstede and Bond 1988; Freeman 2004).

These cultural differences result in different business goals between United States and Chinese managers. Hofstede conducted a survey of MBA students from various countries in which students were asked to rank the importance of fifteen business goals (Hofstede, Van Deusen et al. 2002). In China, MBA students stated that respecting ethical norms, patriotism and national pride, honor, face and reputation, power, responsibility towards society, and profits ten years from now are the most important goals. In the United States, MBA students ranked growth of the business, this year's profits, personal wealth, power, staying within the law, and respecting ethical norms. It is interesting to note that only ethics and power were ranked highly by both groups of students.

An example of a unique cultural activity in China is the practice of guanxi. Guanxi is an ancient system which is based on a network of personal relationships. It is doing business on the basis of personal relationships which includes exchange of favors. It was originally based on family relationships, but has been expanded to acquaintances which facilitate business dealings. It represents "friendship with implications of continued exchange of favors" (Pye 1992; Lovett 1999; Jiang and Prater 2002). It is a system of personal relationships that carry long-term social obligations and play a major role in business relationships. It provides entrance into Chinese society and is essential for doing business in China, especially supply chain management (Jiang and Prater 2002; Handfield and McCormack 2005; Zhao, Flynn et al. 2007). Negotiations are based on

suggestion and innuendo, not direct or outright requests (Lovett 1999). The more relationships one has, the more opportunities for connections. Networks can be expanded with the help of an intermediary who introduces a newcomer to a stranger and implicitly vouches for the newcomer's reliability. The introduction is often accompanied by the giving of gifts (Yang, 1994; Lovett 1999). The trust and long-term relationships built through guanxi help compensate for uncertainty and a weak legal environment within China (Millington, Eberhardt et al. 2005). Guanxi serves as a form of governance mechanism. Guanxi illustrates a key difference in business practices between the United States' because of the United States preference for legal contracts and the Chinese preference for trust and relationships.

The emphasis on trust, relationships, and reciprocity makes guanxi very similar to the concept of social capital. Guanxi and social capital differ in that guanxi must exist before a business relationship can begin. Social capital can be developed after the business relationship is formed. Another interesting aspect of guanxi is that the timing and type of repayment impacts the length of the relationship. For example, a delay in receiving a favor in exchange for another favor lengthens the relationship. Also paying back the favor with a larger favor or gift creates an unequal exchange which results in a longer relationship (Lovett 1999). Just as in social capital, there are negative aspects to guanxi. Obligations can extend to friends of friends throughout the entire network. Therefore, Chinese business people carefully choose who they want to include in their network of relationships.

2.4.3 Summary

Many United States companies are looking to China for suppliers. In addition China is investing heavily internationally which could result in United States companies becoming suppliers of Chinese firms (Zhao, Flynn et al. 2007). It is essential that United States' firms understand how business is conducted in China. Relationships with suppliers are important regardless of the cultural setting. However, practices that work in the United States to strengthen relationships and ultimately improve performance may not work in China. Table 1 summarizes cultural differences between the United States and China which could lead to differences in business practices.

Table 1 Cultural Differences between United States and China

Cultural Dimension	Description	United States	China
Individualism versus collectivism	Degree to which individuals are integrated into groups	Individualistic, everyone looks after themselves	Group orientation, members of a group look after each other
Power distance	Members of a society accept and expect that power will be distributed unequally	Stresses equality for all individuals	High acceptance of inequality
Uncertainty avoidance	Degree to which members of a society feel uncomfortable with uncertainty and ambiguity	Comfortable with uncertainty	Seeks to avoid uncertainty
Masculinity versus femininity	Focus on achievement, heroism, assertiveness	Similar	Similar
Long-term versus short-term orientation	Time orientation of a society	Short-term orientation, values immediate results	Long-term orientation, valuing thrift and persistence

(Hofstede and Bond 1984; Hofstede 1986; Hofstede and Bond 1988; Hofstede 1997; Hofstede, Van Deussen et al. 2002; Hofstede 2004; Hofstede 2007)

Chinese managers are often better at managing relationships than western managers (Sull 2005). Zhao et al. 2007 noted there is a need for research in buyer supplier relationships in emerging markets such as China. The authors noted several interesting areas of study including the impact of guanxi, power distance, collectivism, and long-term orientation. The impact of guanxi, trust, and relationships can be viewed through the theoretical lens of social capital. This paper will examine the impact of social capital on buyer supplier relationships in both China and the United States. We

expect to find that relationships are important in both countries, but how relationships are built and maintained vary by country.

CHAPTER 3

MODEL AND CONSTRUCT DEVELOPMENT

3.1 Model Development

In this portion of the paper, the conceptual model is presented for studying the impact of social capital in a multi-cultural context on buyer-supplier relationships which should ultimately lead to improved buyer performance outcomes. There is precedent for studying social capital in a multicultural setting. Koka and Prescott (2002) studied the impact of social capital using the constructs of information volume, information diversity, and information richness in the global steel industry in America, Japan, and European countries. They found that the importance of these constructs vary by country. For example, they found that the volume of information improved firm performance in Japan and America but had little impact in the European countries (Koka and Prescott 2002). They did not specifically address the cultural differences between the countries, but this study provides evidence that the constructs of social capital can vary by country.

This study expands on the previous research conducted by Krause, Handfield et al. 2007 that used the three dimensions of social capital to study one aspect of buyer-supplier relationship management, specifically supplier performance improvement. This study was based on the Nahapiet and Ghoshal model which introduced the three

dimensions of social capital: structural, relational, and cognitive (Nahapiet and Ghoshal 1998). Krause, Handfield et al. (2007) used buyer dependence and supplier dependence to define the relational dimension of social capital. They used performance evaluation, supplier development, information sharing, and buyer commitment to define the structural dimension and shared/values and vision to define the cognitive dimension of social capital. This paper was based on survey data obtained from a number of executives from the United States. They found that all three dimensions had a positive impact on cost, quality, speed, and timeliness. A formal model was not drawn in the article; however the researcher developed an interpretation of their model based on the article shown as figure 4.

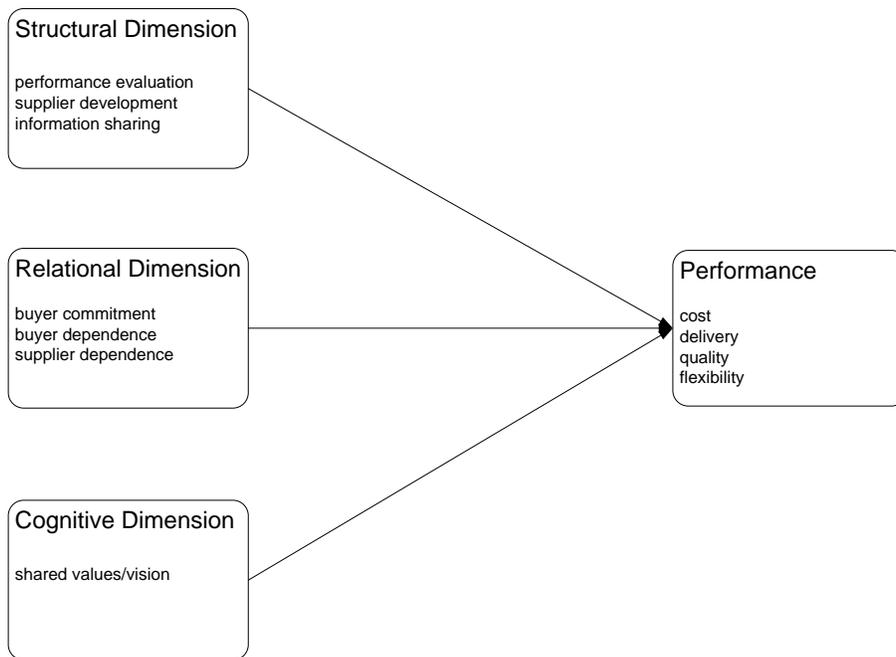


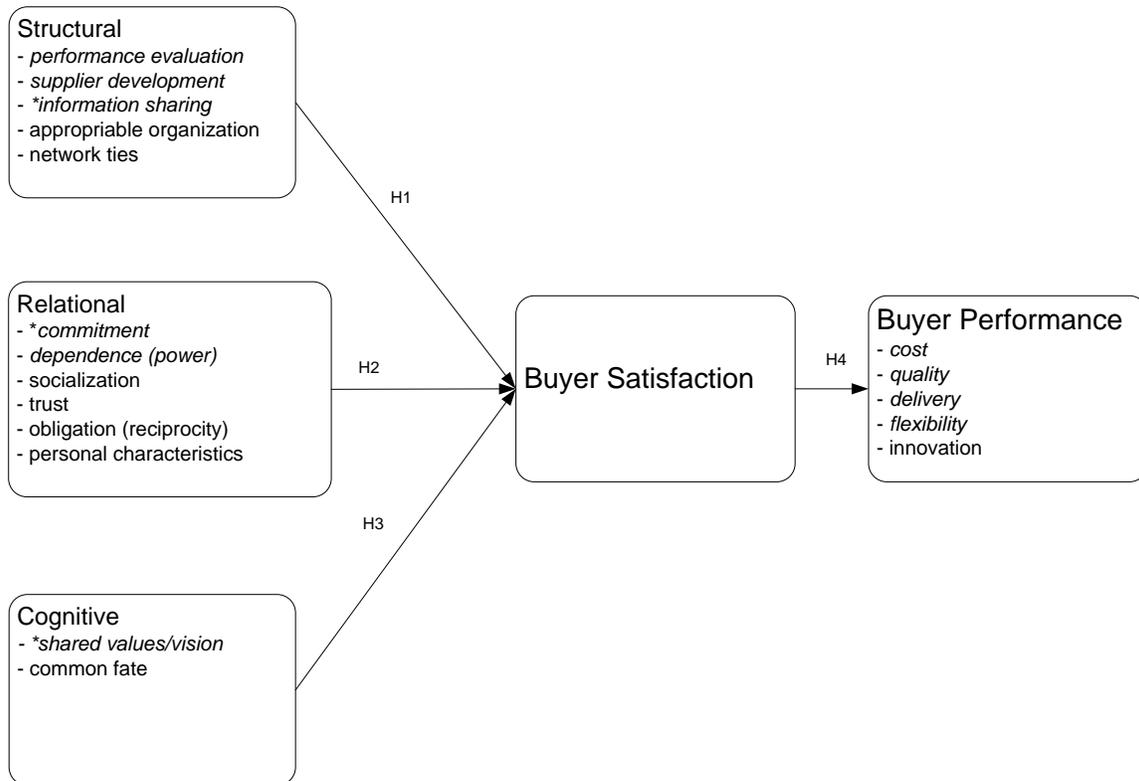
Figure 4 Krause, Handfield et al. 2007 Model

Krause, Handfield et al. (2007) suggested that future research is needed to further define the measures of the three dimensions of social capital and that innovation should

be included as a key performance indicator. This study expanded on their model by developing additional item measures for the three dimensions of social capital beyond supplier development and incorporating innovation as a performance outcome. Various articles from management, operations management, and international management were reviewed to identify additional constructs and item measures that would impact the three dimensions of social capture. Table 2 provides an overview of the constructs used in the model. The completed model is shown in figure 5 and is followed by the hypotheses. The constructs and hypotheses are developed and discussed in detail in the following sections.

Table 2 Constructs

Constructs	Prior Study Measures	Measures Added in Current Study
Structural	Performance evaluation Supplier development Information sharing	Network ties Appropriability
Relational	Commitment Dependence	Socialization Trust Obligation/reciprocity Personal characteristics
Cognitive	Shared values/vision	Common fate
Performance	Cost Quality Speed Timeliness	Innovation
Buyer Satisfaction		Buyer Satisfaction



Constructs from U.K. Study (Krause, Handfield et al. 2007)

**Constructs from U.K. Study (Krause, Handfield et al. 2007) with additional item measures*

Figure 5 Conceptual Model Current Study

H1: The structural dimension of social capital has a positive impact on the buyer's satisfaction with their supplier.

H2: The relational dimension of social capital has a positive impact on the buyer's satisfaction with their supplier.

H3: The cognitive dimension of social capital has a positive impact on the buyer's satisfaction with their supplier.

H4: The buyer's satisfaction with their supplier has a positive impact on the performance of the buying firm.

3.2 Buyer Performance

Numerous studies have been conducted that analyze the impact a good relationship with a supplier can have on buyer performance. A team of researchers identified 151 articles in the years from 1986 to 2005 that studied various aspects of the buyer supplier relationship (Terpend, Tyler et al. 2008). Overwhelming support was found for a connection between the buyer supplier relationship and positive outcomes. Traditionally firms follow four key strategies to gain competitive advantage: cost, quality, delivery time and reliability, and flexibility (Ward, McCreery et al. 1998). Ward (1998) tested the validity of various item measures for constructs on a sample of manufacturers in the United States. Based on a factor analysis, he found that each of the four competitive priorities can be captured reasonably in a single dimension (Ward, McCreery et al. 1998). Single item measures for cost, quality, delivery, and flexibility will be used in this research study. Krause, Handfield et al. (2007) suggested that innovation be added as a key competitive priority in future research efforts. Because innovation is a new construct, multiple items will be used to measure innovation. In this study performance outcomes are operationalized as: (1) cost, (2) quality, (3) delivery, (4) flexibility, and (5) innovation.

3.2.1 Cost

Cost is the total cost of the product or service including production costs, productivity, capacity utilization, and inventory reduction (Krause, Handfield et al. 2007). The purchase price of an item can have a significant impact on the total cost. Cost is impacted by efficiencies gained from process design (Cousins, Handfield et al. 2006) and inventory reduction (Krause, Handfield et al. 2007). Suppliers can impact cost through purchase price, assisting with inventory reduction through a just-in-time strategy, or improving efficiencies by providing parts that support production. A single item that captures the overall cost of the product will be used to measure cost.

3.2.2 Quality

There is a strong correlation between the quality of the inputs from suppliers and quality of the final product or service (Krause, Handfield et al. 2007). Quality means different things to different people and is often based solely on perceptions. Garvin (1987) developed the eight dimensions of quality to help clarify the different points of view for quality (Ward, McCreery et al. 1998). These include performance, features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality (Garvin 1987). Koufteros defined quality as providing products to customers that are reliable, durable, high performance and meets or exceeds customer demands (Koufteros, Cheng et al. 2007). For this study a single item measure is used to measure quality that focuses on the buyer's overall perception of product quality.

3.2.3 Delivery

Delivery is defined as reliability of delivery and delivery speed (Wheelwright 1984). On-time delivery is the ability of the supplier to deliver when promised (Garvin 1987). Delivery speed is how fast the supplier can get the product to the buyer. Improvement in delivery includes shortening delivery times or increasing the reliability of delivery times which can be passed on to the buyer's customers. For this construct a single item measure was used that focuses on delivery reliability.

3.2.4 Flexibility

Flexibility provides the ability to respond to the changing needs of customers. Flexibility can be looked at in terms of customized product or service or fluctuations in volume (Krause, Handfield et al. 2007). Ward defined flexibility in terms of product mix, volume, changeover, and modification (Ward, McCreery et al. 1998). The flexibility of the supplier has a direct impact on the flexibility of the buyer. For example, a manufacturing firm cannot meet a large volume request or request for a customized product from a customer without the necessary components from its suppliers. In this study one item will be used to measure overall flexibility.

3.2.5 Innovation

Innovation is the ability to bring new product or services to market, develop new product or service features, or implement process improvements. In today's rapidly changing environment, it is difficult for one firm to develop new products or services on its own (Koufteros, Cheng et al. 2007). A study of United States manufacturing firms

found that a close relationship with suppliers can improve product development for the buying firm. Three items taken from this study will be used to measure product innovation. These items focus on (1) capability to offer new product and features, (2) shortened product development time, and (3) improving process designs.

3.2.6 Item Measures of Buyer Performance

The following table describes the item measures and source of these measures used to identify the outcomes of delivery, innovation, quality, and flexibility. Item measures for cost, quality, delivery, and flexibility were taken from the Krause, Handfield et al. (2007) article. Item measures for flexibility were taken from a study completed by Koufteros (2007).

Table 3 Buyer Performance Item Measures

	Item Measures	Source
Cost	<ul style="list-style-type: none"> Helped lower the total cost of our products 	(Krause, Handfield et al. 2007)
Quality	<ul style="list-style-type: none"> Helped improve our product quality 	(Krause, Handfield et al. 2007)
Delivery	<ul style="list-style-type: none"> Helped increase the reliability of our product delivery times 	(Krause, Handfield et al. 2007)
Flexibility	<ul style="list-style-type: none"> Helped improve our manufacturing flexibility 	(Krause, Handfield et al. 2007)
Innovation	<ul style="list-style-type: none"> Helped improve our capability of developing new products and features Helped shorten our new product development life cycles Helped improve process design. 	Koufteros 2007

3.7 Buyer Satisfaction

In this model the author measures the impact of the three dimensions of social capital on the buyer's overall satisfaction with their relationship with the supplier. Prior studies measured the impact of each dimension of social capital on buyer performance (Krause, Handfield et al. 2007). Cousins (2006) studied the impact of the relational dimension on the supplier relationship outcome (Cousins, Handfield et al. 2006). Item measures were obtained from two existing surveys (Cousins, Handfield et al. 2006; Krause, Handfield et al. 2007).

Table 4 Buyer Satisfaction Item Measures

	Item measures	Source
Buyer Satisfaction	<ul style="list-style-type: none"> • Considering all the aspects of this relationship, this supplier supports our objectives. • At one point we came close to terminating our relationship with this supplier (reverse coded). • We have had more than the usual amount of ups and downs in our dealings with this supplier (reverse coded). • This relationship has performed poorly (reverse coded). • This relationship has fulfilled our expectations. • This supplier has exceeded our expectations. • There is close, personal interaction between the supply partners at multiple levels. • The relationship is characterized by mutual trust between the firms. • The relationship is characterized by mutual respect between the firms. 	<p>(Krause, Handfield et al. 2007)</p> <p>Cousins 2006</p>

3.3 Structural Capital

The structural dimension of social capital describes the properties of the network. It encompasses the tools or methods of how connections are made; for example, through weekly meetings with suppliers or trade associations. There are many constructs in literature that explain this dimension. Krause, Handfield et al. (2007) used the constructs of performance evaluation, supplier development, and information sharing to describe the structural aspect of social capital in relationship to buyer-supplier relationships. Performance evaluation, supplier development, and information sharing are directed at enabling suppliers to improve their performance which should result in an improvement to the buyer's performance; for example, through cost savings or improved quality on material. Network ties and appropriability will be added as two additional constructs in this research model to further examine the structural component of social capital.

3.3.1 Performance Evaluation

Performance evaluation provides feedback to suppliers so they can improve their performance. Based on their survey of United States purchasing managers, Krause, Handfield et al. (2007) identified three item measures of performance evaluation that impacted buyer performance: formal evaluation, feedback of the evaluation results, and supplier certification (Krause, Handfield et al. 2007). These three item measures will be used to measure performance evaluation in this study. In addition, a fourth item measure dealing with informal evaluation of performance that was not significant in the previous survey will be included in this study. Because of the importance of informal

relationships conceptualized as *guanxi*, it is expected that informal feedback will be important in the Chinese culture.

3.3.2 Supplier Development

Item measures were based on the supplier development activities that focus on the dedication of the buying firm's personnel to improve the supplier's skills. Supplier development activities include site visits, training, and a dedicated supplier team. Supplier development was found to improve the quality, delivery, and flexibility of the buying firm's performance (Krause, Handfield et al. 2007). No evidence was found in the literature that indicated that the Chinese culture would impact this construct. It is expected that supplier development will be important in both China and the United States. Therefore the same item measures used in the Krause, Handfield et al. (2007) study will be used in this study. However we may find that supplier development occurs less in China due its status as an emerging economy. Firms may be at the development stage where they only have resources to focus internally on improvements and not externally on supplier firms.

3.3.2 Information Sharing

Information sharing is the exchange of information that can help both the buyer and supplier activities (Heide and Miner 1992). This includes the general information sharing of codified information to the sharing of tacit knowledge. Codified information can be easily transferred, often without interpersonal interaction. Tacit knowledge is not written down, therefore must be shared through interpersonal contact (McFadyen 2004).

In a collaborative relationship, it is expected that information will be shared freely in a noncompetitive atmosphere (Inkpen and Tsang 2005). A study of the New York apparel industry found that information exchanges between collaborate partners were detailed, intricate, and proprietary (Uzzi 1997). In a study of purchasing executives from the United Kingdom, managerial communication and technical exchange facilitated the buyer performance improvement effort (Lawson, Tyler et al. 2008). Managerial communication is the formal corporate communication along with face-to-face meetings. Technical exchange describes the process of information exchange, including the level, quality, frequency and type of information exchange (Lawson 2008). Managerial communication was measured using two items: high corporate level communication and face-to-face planning. Because of the importance of status and face-to-face dialogue in the Chinese culture, this study included these measures in the study. Additionally, three items from the Krause, Handfield et al. (2007) study of United States manufacturers were included in this study including frequency of exchange of information, exchange of information when helpful to the other party, and keeping the other party informed about events that impact the other party. In a study of job shop manufacturers in the United States, it was found that trust and information sharing between buyers and suppliers result in the acquisition of competitive capabilities which should improve the performance of both parties (McEvily and Marcus 2005). The McEvily and Marcus study identified three significant item measures for information sharing including warning of events that impact the other party, sharing plans for the futures, and sharing of proprietary and sensitive information. The first measure, warning of events, was similar to an item

measure used by Krause, Handfield et al. (2007). Therefore, this item measure was not used. The two item measures dealing with future plans and proprietary and sensitive information provided the final two of the seven items used to measure information sharing. Because of the influences of the communist regime, sharing of proprietary or sensitive information may not be considered acceptable in China.

3.3.4 Network Ties

Network ties deal with the specific ways that actors connect and are fundamental to the concept of social capital (Nahapiet and Ghosal 1998, Inkpen and Tsang 2005). Network ties provide the vehicle to access and exchange resources and can be based on either social or business relations. Luo et al. (2004) studied the impact of social capital on customer relationships. They found that the firm's managers used personal relationships to gain access to managers of supplier firms and government officials. Guanxi establishes network ties between individuals. Two items from Luo's study were used to measure the impact of personal relationships, like guanxi, that facilitate connection between individuals.

3.3.5 Appropriability

Appropriability means that social capital developed in one setting may be used in another setting (Nahapiet and Ghoshal, 1998). The Krause, Handfield, et al. (2007) article used item measures dealing with the impact of a firm's close relationship with a supplier on other suppliers. They did not find any significant impact in the prior survey. Due to the importance of personal networks within the Chinese cultures, it is expected

that these ties will have a significant impact on performance. However, earlier the author identified that both social capital and guanxi can have negative impacts.

Constructs include items to measure the negative impact of a close relationship with a supplier on other suppliers.

3.3.6 Item Measures of the Structural Dimension of Social Capital

The following table outlines the item measures and source of item measures used to measure the various components of structural capital.

Table 5 Structural Dimension Item Measures

Performance Evaluation	<ul style="list-style-type: none"> • Assessment of supplier's performance through formal evaluation, using established guidelines. • Provide supplier with feedback about the results of its evaluation. • Use of a supplier certification program to certify supplier's quality. • Assessment of supplier's performance through informal evaluation, which takes place on an ad-hoc basis. 	Krause, Handfield et al. (2007)
Supplier development	<ul style="list-style-type: none"> • Allocation of your personnel to improve supplier's technical skill base. • Regular visits by your personnel to supplier's facilities. • Dedicated supplier development team. 	Krause, Handfield et al. (2007)

Table 5 - continued

Information Sharing	<ul style="list-style-type: none"> • Exchange of information in this relationship takes place frequently • It is expected that the parties will provide information if it can help the other party. • It is expected that we keep each other informed about events or changes that may affect the other. • Exchange of information in this relationship takes place informally. • The supplier shares its plans for the future with us. • The supplier shares proprietary and sensitive information with us. • There is high corporate level communication on important issues with this supplier. • We have very frequent face to face planning sessions with this supplier. 	Krause, Handfield et al. (2007)
Network Ties	<ul style="list-style-type: none"> • Extent to which managers at your firms have utilized personal guanxi, networks, and connections with managers at supplier firms. • Extent to which managers at your firms have utilized personal guanxi, networks, and connections with political leaders in various levels of the government. 	Luo (2004)
Appropriability	<ul style="list-style-type: none"> • By working closely with this supplier, our firm becomes more attractive to our other suppliers. • Our way of doing business with this supplier has positive effects on our activities with other suppliers. • Too close a relationship with this particular supplier may destroy the balance amount our firm's other suppliers. (reverse coded) • Collaborating with this specific supplier may be rewarding in some ways, but harmful to our reputation with certain other firms. • Although working closely together with this supplier will likely provide some benefits, important other suppliers may not be happy about this. 	Krause, Handfield et al. (2007)

3.4 Relational Dimension

The relational dimension identifies the importance of personal relationships in social capital. These relationships develop over time based on a history of interactions and trust (Granovetter 1992; Nahapiet and Ghoshal 1998). The structural dimension provides a means for actors to connect. The relational dimension builds on those connections to form personal bonds of friendship. The relational dimension has been characterized by a number of constructs including buyer commitment, power, dependence, socialization, trust, obligation, personal characteristics, identification, and norms.

3.4.1 Buyer Commitment

Buyer commitment to the supplier is often characterized by the length of the relationship. It represents the belief by both parties that the relationship will continue into the future (Heide and Miner 1992). Suppliers should be more willing to work cooperatively with buyers who have shown a commitment to the relationship. In fact, buyer commitment to the supplier was shown to improve buyer performance in terms of cost, quality, delivery, and flexibility (Krause, Handfield et al. 2007). The Krause, Handfield et al. (2007) study used three items to measure buyer commitment: long-term relationship, loyalty and working with supplier in the future. In a study of United States' manufacturers, Koufterous (2007) found that long-term relationships with suppliers increased the capability of offering new products (Koufteros, Cheng et al. 2007). This study uses one item measure from the Koufterous (2007) study: cooperative relationship

with its suppliers. The three other measures taken from the Krause, Handfield et al. (2007) study were similar to the Koufterous (2007) study.

3.4.2 Dependence

Buyer dependence can be identified by how hard it is to replace the supplier and availability of alternate suppliers (Heide and Miner 1992). In a study of United States purchasing executives, the buyer's dependence on the supplier was found to impact the buying firms total cost (Krause, Handfield et al. 2007). Supplier dependence is identified by the extent that the supplier relies on the buying firms business (Krause, Handfield et al. 2007). In the Krause, Handfield et al. (2007) study of United States manufacturers, eight items were used to measure dependence. All of these eight measures were used in this study. There is an interesting relationship between dependence and power.

Dependence is the extent of need for resources that are held by another organization (Zhao, Flynn et al. 2007) and, conversely, power is the control that one organization has over another. As dependence on an organization increases, the power over the organization increases. A key dimension of Chinese culture is that the Chinese are very comfortable with the uneven distribution of power (Hofstede 2007). In fact they seek out powerful partners in the hopes that their power can be extended to other guanxi relationships.

3.4.3 Socialization

Socialization is the amount of interaction and communication between firms (Gupta and Govindarajan 2000; Cousins, Handfield et al. 2006). Socialization serves as a

mechanism to exchange knowledge about social values and norms (Van Maanen and Schein 1979; Cousins, Handfield et al. 2006). Socialization is posited as a best practice that enables firms to learn each other's culture, identify mutually beneficial practices, and provide opportunities to adjust behavior(Cousins, Handfield et al. 2006). Formal socialization is the structure in place for two parties to exchange information and knowledge (Cousins, Handfield et al. 2006). These could include regularly scheduled meetings, cross functional teams, or even co-location of suppliers within buying firm's facilities. Informal socialization is the social activity that occurs outside of the work place, such as dining or golfing. Cousins (2006) compared the impact of the formal and informal socialization on inter-firm relationships in United Kingdom manufacturers and found that only informal socialization activities had an impact on the overall buyer-supplier relationship. Because of the guanxi focus on relationships, it is expected that informal socialization is also important in China. This agrees with the assessment by Cousins et al. (2006) that Asian cultures tend to focus more on socialization as part of business than western cultures.

3.4.4 Reciprocity

Obligations are a commitment to perform an activity in the future (Nahapiet and Ghoshal 1998) It is expected that reciprocity is important in both eastern and western cultures, with a stronger emphasis in China. Norms are the standards or code of conducts that the group has agreed upon, either formally or informally (Coleman 1988; Nahapiet and Ghoshal 1998). In China, guanxi defines the social norms for relationships such as the process for building ties and the exchange of favors. The exchange of favors is an

important part of guanxi which is an important part of Chinese culture. Item measures are taken from Lee (2005), Krause, Handfield et al. (2007), and Lawson (2008). The Lee (2005) study measured the impact of reciprocal favors performed by the salesperson on buyer-supplier relationships. The Krause, Handfield et al. (2007) survey items measured the impact of awards and sharing cost savings with suppliers on buyer performance. Awards and cost sharing are a form of reciprocity. The Lawson (2008) study included items that measure the supplier's willingness to help out the buyer, which is another form of reciprocity.

3.4.5 Trust

Trust is probably the most important foundation for building relationships. If actors trust each other, they are more willing to engage in cooperative activities. If results are beneficial, additional trust is generated (Coleman 1988; Nahapiet and Ghoshal 1998; Tsai and Ghoshal 1998; Putnam 2000; Inkpen and Tsang 2005). Trust increases as the length of the relationship increases (Krause, Handfield et al. 2007). The Krause, Handfield et al. (2007) study did not specifically measure trust, so this study adapted item measures from two other research studies. In a study of United States manufacturers, McEvily and Marcus (2005) found that trust between buyers and sellers helped facilitate the acquisition of competitive capabilities. They used three items to measure trust: negotiate fairly, do not mislead, and keeps one's word. All three items are used in this study. In a study of purchasing managers from the United States, Perrone (2003) measured trust based on even handed negotiations and overall trustworthiness. Trust can be used to mitigate the need for contracts. In fact, in China there is a greater reliance on

trust formed through personal connections rather than legal contracts favored in the United States. Because of the rapidly changing business environment in China, a contract cannot cover every contingency. Therefore, the trust within the relationship becomes an important governance mechanism (Liu, Luo et al. 2009).

3.4.6 Personal Characteristics

In China, the relationships between the buyer and supplier are focused on the individual that represents the company rather than the company itself. In China, the expertise, integrity, status, and reputation of the individual representing the company builds trust. Affect, expertise, status, and face impact the level of trust in a relationship in China (Lee and Dawes 2005). Affect reflects an emotional attachment and indicates how important one party is to another. Expertise is indicated by a business or university degree. Face refers to a person’s positive image in a relational context and is usually governed by following social norms (Lee and Dawes 2005). In the United States, the focus is on the corporate relationship rather than the individual representing the company. Item measures from the Lee and Dawes (2005) study will be used to measure personal characteristics. It is expected that the Chinese respondents will rate these items higher than their United States counterparts.

Table 6 Relational Dimension Item Measures

Buyer commitment	<ul style="list-style-type: none"> • We expect to be working with this supplier for the foreseeable future. • Our relationship with this supplier is long-term in nature. • We have a strong sense of loyalty to this supplier. • Our firm has a cooperative relationship with this supplier. 	Krause, Handfield et al. (2007)
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Table 6 - continued

<p>Socialization</p>	<ul style="list-style-type: none"> • Our supplier visits our place of business frequently • Our supplier spends time getting to know our people • Our supplier contacts us by phone, e-mails, letters, and/or fax frequently. • Our supplier's representative often contacts us after office hours. • Our supplier's representative usually meets us in a relaxed environment (e.g. dining out) • Our supplier's representative usually gets together with us primarily to have fun. 	<p>Lee (2005)</p>
<p>Reciprocity / favors</p>	<ul style="list-style-type: none"> • We will do the supplier a favor if he did one for us before. • The supplier will do us a favor if we did one for him before. • We recognize supplier's performance improvements with awards. • Cost savings are shared with this supplier. • This supplier is flexible in response to requests we make. • This supplier makes an effort to help us out during emergencies. • We work together to solve problems. 	<p>Lee (2005)</p> <p>(Krause, Handfield et al. 2007) Lawson 08</p>
<p>Trust</p>	<ul style="list-style-type: none"> • This supplier does not mislead us • This supplier keeps its word. • This supplier has always been evenhanded in its negotiations with us. • This supplier is trustworthy 	<p>McIlvey 05</p> <p>Perrone 03</p>

3.5 Cognitive Dimension

3.5.1 Shared Values

The cognitive dimension represents the shared understanding and meanings which include shared values or vision, codes or language and narratives (Nahapiet and Ghoshal 1998). Shared values represent working towards a common goal. Shared values and visions have been found to positively impact business relationships (Hofstede and Bond 1988; Tsai and Ghoshal 1998; Krause, Handfield et al. 2007). Hult (2004) found that shared meanings between strategic supply chain partners decreased cycle times (Hult, Ketchen Jr et al. 2004). Language provides a tool to exchange, influences perceptions, and makes it easier to transact business and share information. It also influences the ability to gain access to people (Nahapiet and Ghoshal 1998). Shared narratives are the myths, stories and metaphors used to exchange and preserve meanings (Nahapiet and Ghoshal 1998). Guanxi is an example of a unique cultural aspect of China, not shared in other societies and often not understood by the non-Chinese. Krause, Handfield et al. (2007) found that when buyers and suppliers share values and goals, buyer's performance is improved in terms of cost, quality, delivery, and flexibility. Item measures are based on the Krause, Handfield et al. (2007) and the Tsai and Ghoshal (1998) studies.

3.5.2 Common Fate

Common fate extends the concept of shared values and meanings. In this case, there is a common destiny between the two firms. The success of one firm directly impacts the success of the other firm. A study of United States purchasing managers in the electronic industry found that a common fate improved the relationship between

buyers and suppliers (Perrone, Zaheer et al. 2003). Three item measures from this study are used to identify a common fate between buyer and supplier. McEvily and Marcus (2005) studied the impact of embedded ties on the acquisition of competitive capabilities. They found that joint problem-solving was important from both the buyer and supplier perspective. The author included two item measures dealing with joint problem solving from their study.

3.5.3 Item Measures

Table 7 Cognitive Dimension Item Measures

	Item Measures	Source
Shared values	<ul style="list-style-type: none"> • Both firms share the same business values • The parties often agree on what is in the best interest of the relationship. • This supplier shares our goals for this business • Our company is enthusiastic about pursuing collective goals and missions with this supplier 	(Krause, Handfield et al. 2007) Tsai and Ghoshal 98
Common Fate	<ul style="list-style-type: none"> • A problem solved by this supplier means a problem solved for our company • We view this supplier as our ally against competition • We see our success as directly dependent upon the success of this supplier • This supplier works with us to overcome difficulties • We are jointly responsible with this supplier for getting things done. • We work with this supplier to help solve each other's problems. 	Perrone 03 McIlvey 05

3.6 Summary

In this section of the paper, the author presented the conceptual model, constructs that will be used to test the model and items that will be used to measure the constructs.

In the next section, the data collection process will be described along with the processes used to validate the data.

CHAPTER 4
REPLICATION OF KRAUSE, HANDFIELD, ET AL. 2007 STUDY

4.1 Overview

The study conducted by Krause, Handfield et al. (2007) examined the relationship between structural capital (supplier evaluation, supplier development, and information sharing), relational capital (buyer and supplier dependency) and cognitive capital (goals and values) on buying firm performance (cost, quality, delivery, and flexibility). The relationship was empirically tested using a survey distributed to United States manufacturers. This study provided the impetus point for our study into the impact of social capital on buying firm performance across cultures. Therefore, the analysis begins with comparing the United States and China populations with the prior study conducted in the U.K. The analysis process used in the prior study was duplicated which included a factor analysis of the constructs, development of summated scales, and then a regression analysis to test the relationships. Additional tests were performed that were not conducted in the prior study to address validity and distribution concerns.

4.2 Survey Validity

All the items from the Krause, Handfield, et al. 2007 study were included in the survey instrument developed for this research project. Theoretical support for the variables and model to ensure content validity was provided in the prior study. Because

the prior study was expanded to China, the items were pretested with Chinese Ph.D. students, faculty, and executives and then pilot tested with Chinese executives.

4.3 Data Collection

The survey was distributed to United States and Chinese executive MBA students from the University of Texas at Arlington during class sessions in which participation was voluntary. The survey was distributed to professionals participating in MBA programs. This enabled us to limit the survey to respondents with significant practical experience and a relatively senior position in their firms. Each respondent was asked to identify a key supplier for their company, and then answer questions about that key supplier. Survey items were reviewed for missing data, outliers, and any obvious miscoding. Our final population consisted of 142 responses from United States executives and 112 responses from China executives.

4.4 Measurement Model

4.4.1 Confirmatory Factor Analysis

All of the item measures and constructs from the prior study were included in this research project. A confirmatory factor analysis (CFA) based on the constructs defined in the prior study was conducted on these constructs. Table 7 provides the Cronbach's alpha used to examine the reliability of the constructs. The United States populations had constructs with a Cronbach's alpha of at least .70 which is the generally agreed upon lower limit for reliability (Hair, Black et al. 2006). In the China population, there were two constructs with a Cronbach's alpha of less than .70; information sharing and supplier

performance evaluation. The information sharing construct had a Cronbach's alpha of only .37. This is specifically related to one item measure dealing with sharing of proprietary information which had a factor loading of 0.30. This is probably related to the influences of the Communist regime in which sharing of information was discouraged. Additionally, the supplier performance evaluation construct had a Cronbach's alpha of .62. A threshold of .60 is often considered acceptable for exploratory research (Hair, Black et al. 2006). There were two items that had negative factor loadings—formal evaluation of suppliers and feedback to suppliers. Because China is an emerging economy, this suggests that the concentration is on the buyer's performance and they have not evolved to the point where they have the resources to also work with the supplier on their performance.

Table 8 Cronbach's Alpha

Construct	United States (07)	United States (09)	China (09)
Buyer commitment	.84	.91	.80
Buyer dependence	.81	.80	.84
Supplier dependence	.74	.81	.82
Information Sharing	.72	.71	.37
Supplier Performance	.77	.84	.62
Supplier Development	.75	.80	.76
Shared Values	.84	.88	.87

4.4.2 Pairwise Comparisons

Pairwise comparisons were conducted of factor loadings for United States (2007) and United States (2009), United States (2007) and China (2009); and China (2009) and the United States (2009) to identify statistically significant differences between the items. Results of this analysis are documented in Table 8. Most of the items contained a

statistical difference between the factor loadings. Item measures for buyer commitment and buyer dependence were considered important in all three countries with only variations in importance. For information sharing, the item measure dealing with the sharing of proprietary information was actually negative for China. As discussed previously, this could be due to the influence of the old Communist regime. For supplier dependence, three of the items had a negative loading for China. This appears to indicate that supplier dependence on the buyer is does not significantly influence the relationships. This could be due to the influence of guanxi. The relationship exists because of personal connections rather than the existence of other buyers. As discussed previously two items measures from the performance evaluation construct had negative factor loadings for China. Because of China's emerging market status, this could be influenced by the age or maturity of the firms. Newer firms tend to focus their resources internally. The most surprising differences were the item measures for supplier development. The United States had negative factor loadings which were significantly different from China. This could be a result of the individualist nature of the United States. United States firms may value independence and the ability to take care of their own business. Even though supplier development is an accepted business practice, there could be some hidden resentment within the United States.

Table 9 Factor Loadings and Pair Wise Comparisons

	Factor Loadings			Pairwise Comparison		
	United States (07)	United States (09)	China (09)	U.S (07) to U.S. (09)	U.S. (07) to China (09)	U.S. (09) to China (09)
Buyer Commitment						
We expect to be working with this supplier for the foreseeable future	.94	.96	.96	none	none	none
Our relationship with this supplier is long-term in nature	.88	.96	.95	**	**	none
Buyer Dependence						
There are many competitive suppliers for this components	0.81	0.70	0.74	**	**	none
Our production system can be easily adapted to test components from a new supplier	0.82	0.85	0.90	**	**	*
Dealing with a new supplier would only require a limited redesign and development effort on our part	0.71	0.79	0.86	***	***	**
If we decided to stop purchasing from this supplier, we could easily replace their volume with purchases from other suppliers	0.81	0.82	0.76	none	none	*
Supplier Dependence						
If we stopped buying from this supplier, they could easily replace our volume with sales to some other buyer	0.78	0.82	-0.27	none	***	***
It would be relatively easy for this supplier to find another buy for these components	0.83	0.83	-0.05	none	***	***
Finding new buyers for these components would not have a negative impact on the price this supplier can charge	0.68	0.82	0.60	***	none	***
If the relationship with our company was terminated, it would not hurt this supplier's operations	0.69	0.68	-0.35	none	***	***

Table 9 - continued

Information Sharing						
Exchange of information in this relationship takes place frequently.	0.61	0.87	0.91	***	***	none
It is expected that we keep each other informed about events or changes that may affect the other party	0.68	0.87	0.76	***	**	***
It is expected that the parties will provide proprietary information if it can help the other party	0.84	0.64	-0.30	***	***	***
Performance Evaluation						
Assessment of supplier's performance through formal evaluation, using established guidelines and procedures	0.91	0.71	-0.04	***	***	***
Provide supplier with feedback about the results of its evaluation	0.87	0.67	-0.11	***	***	***
Use of a supplier certification program to certify supplier's quality, thus making incoming inspection unnecessary	0.69	0.99	0.88	***	***	***
Supplier Development						
Allocation of your personnel to improve supplier's technical skill based	0.83	-0.38	0.84	***	none	***
Regular visits by your engineering personnel to supplier's facilities	0.85	-0.93	0.71	***	***	***
Dedicated supplier development team	0.73	-0.23	0.91	***	***	***
Supplier Development						
Both firms share the same business values	0.89	0.85	0.92	*	none	**
The parties often agree on what is in the best interest of the relationship	0.85	0.93	0.83	**	none	***
This supplier shares our goals for this business	0.80	0.91	0.90	***	**	

*p<.10

**p<.05

***p<.01

4.4.3 Common Method Bias

The same items from the prior study were used to develop summated scales for the United States and China populations used in the current study.. Summated scale items were used to test for the existence of common method bias. A common method factor was added to the model which enabled us to analyze the impact of the common method factor on the model. Results are documented in Table 9. The average substantively explained variance of the indicator is 0.61 which is greater than the average common method factor variance of 0.13. Therefore, there is no evidence to suggest that common method bias is a serious problem.

Table 10 Common Method Bias

Construct	Indicator	Substantive Factor Loading (R1)	R1 ²	Method Factor Loading (R2)	R2 ²
Structural	SEVAL	0.89	0.80	0.12	0.01
	SDEV	0.90	0.81	0.18	0.03
	INFSHR	-0.27	0.07	0.39	0.15
Relational	BCOM	0.50	0.25	0.34	0.11
	SDEP	0.81	0.66	-0.53	0.28
	BDEP	0.95	0.90	-0.38	0.14
Cognitive	SV	0.88	0.78	0.09	0.01
Buyer performance	COST	0.14	0.02	0.66	0.43
	QUAL	0.57	0.32	0.34	0.12
	TIME	0.52	0.27	0.38	0.14
	FLEX	0.85	0.72	-0.05	0.00
Average			0.51		0.13

4.5 Structural Model

Based on the Krause, Handfield et al. 2007 study, item measures were used to develop summated scales. Independent variables included buyer commitment, shared values, information sharing, supplier evaluation, supplier development, buyer dependence and supplier dependence. The Krause, Handfield et al. (2007) study used two separate dependent variables: cost and a combination of quality/delivery/flexibility items. For consistency, the same two dependent variables were used in the present study. Separate linear regressions were performed on each of the dependent variables and compared to the prior study. The F value for each model and population was significant at $p < .001$ with R^2 ranging from .182 to .341. The results of the regression on cost are included in table 10 and the results of the composite quality/delivery/flexibility outcome are in table 11. Pairwise comparisons were conducted of the path coefficients for items that significantly impacted the outcomes in two or more of the countries. These results are documented in table 12 through 14.

For the United State (2007), cost was positively impacted by buyer commitment, shared values, and buyer dependence. For the United States (2009), cost was positively impacted by shared values and buyer dependence. For China (2009), cost was positively impacted by buyer commitment, shared values, supplier development, and supplier dependence. The shared values variable was the only variable that was significant in all three populations.

For the United States (2007), the composite performance outcome of quality, delivery, and flexibility were positively impacted by buyer commitment, shared values,

and supplier development. For the United States (2009), the performance outcome was positively impacted by buyer commitment and shared values. For China (2009), the performance outcome was positively impacted only by buyer commitment. Buyer commitment was the only variable that was significant for all three populations.

In comparing the eastern culture of China and the western culture of the United States, buyer commitment impacted cost in China, but not in the United States. In the United States there are typically two types of relationships with suppliers; short term and long-term. The short-term relationship is often based on cost with many exchange partners (Baker 1990). Therefore it is not surprising that buyer commitment is not a factor in cost in the United States. Long-term relationships are often strategic and designed to be a partnership which is mutually beneficial to the two parties. These strategic relationships often expand beyond cost into supporting the competitive priorities quality, flexibility, and delivery. Therefore it is not surprising that buyer commitment and shared values impact the composite performance outcome in the United States. Shared values impacted cost in China, but not in the composite outcome variable of quality, flexibility, and delivery. China often competes in the global market place on cost. Therefore the importance on cost is shared by both buyers and suppliers in China.

Table 11 Regression Analysis for Performance: Cost

Independent variables	United States (07)	United States (09)	China (09)
Buyer commitment	.274***(.047)	.058 (.041)	.152** (.051)
Shared values	.248***(.045)	.178*** (.036)	.096** (.042)
Information sharing	-.073 (.051)	-.052 (.030)	.003 (.044)
Supplier evaluation	.026 (.029)	.004 (.031)	.012 (.037)
Supplier development	.010 (.030)	-.026 (.032)	0.057* (.034)
Buyer dependence	.0056*** (.020)	.065** (.022)	-.018 (.030)
Supplier dependence	-.044 (.0204)	-.021 (.024)	.054* (.031)
Adjusted R ²	.20	.305	.182
F	8.47***	9.823***	4.533***

*p<.10

**p<.05

***p<.01

Note: Items in parenthesis represent the standard error of the coefficient.

Table 12 Regression Analysis for Performance: Quality, Flexibility, Delivery

Independent variables	United States (07)	United States (09)	China (09)
Buyer commitment	.495*** (.119)	.242**(.106)	.681*** (.117)
Shared values	.549*** (.075)	.359*** (.092)	.145 (.096)
Information sharing	-.075 (.087)	-.046 (.078)	.058 (.101)
Supplier evaluation	.057 (.049)	-.018 (.079)	.106 (.085)
Supplier development	.146*** (.050)	-.084 (.082)	-.127 (.077)
Buyer dependence	.002 (.034)	.018 (.057)	.149 (.068)
Supplier dependence	-.004 (.040)	.067 (.061)	.035 (.071)
Adjusted R ²	.30	.219	.341
F	13.88***	6.635***	9.217***

*p<.10

**p<.05

***p<.01

Note: Items in parenthesis represent the standard error of the coefficient.

Table 13 Pairwise Comparison of Statistical Differences
Between United States (2007) and United States (2009) Path Coefficients

	United States (07)	United States (09)
Shared values → cost outcome	.248***	.178***
Buyer dependence → cost outcome	.0056***	.065***
Buyer commitment → composite outcome	.495***	.242***
Shared values → composite outcome	.549***	.359***

*p<.10

**p<.05

***p<.01

Table 14 Pairwise Comparison of Statistical Differences
Between United States and China Path Coefficients

	China (09)	United States (09)
Shared values → cost outcome	.096**	.178**
Buyer commitment → composite outcome	.681***	.242***
Shared values → composite outcome	.549***	.359***

*p<.10

**p<.05

***p<.01

Table 15 Pairwise Comparison of Statistical Differences
Between United States (2007) and China Path Coefficients

	United States (07)	China (09)
Buyer commitment → cost	.274***	.152***
Shared values → cost outcome	.248***	.096***
Buyer commitment → composite outcome	.495***	.681***

*p<.10

**p<.05

***p<.01

4.6 Nonparametric tests

Linear regression is based on the assumption of normality; however it was used in the above analysis in order to duplicate the process used in the prior study. In light of this assumption, normality of the distributions of the two dependent variables was tested for China and United States using both the Kolmogorov-Smirnov and Shapiro-Wilk tests from table 15 for United States and 16 for China. The null hypothesis that the distribution was normal was rejected in both populations.

Table 16 Tests of Normality – United States

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	Df	Sig.
Cost	.137	142	.000	.934	142	.000
Perfqtf	.118	142	.000	.955	142	.000

Table 17 Test of Normality - China

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Cost	.214	112	.000	.917	112	.000
perfqtf	.133	112	.000	.956	112	.001

The tests were rerun using Partial Least Squares (PLS) because it does not rely on the assumption of normality. The software tool Smart PLS was used to perform the PLS Analysis (Ringle, Wende et al. 2005). (See Chapter 6 for further discussion on PLS.) As expected, some differences were found in the results between the parametric and non-parametric technique. Tables 17 through 20 compare the results of parametric and nonparametric analyses.

Cost dependent variable—Looking at table 17, results show that the United States using cost as the dependent variable, buyer commitment was significant at the $p < .10$ level for the nonparametric test and not significant for the parametric tests. Looking at all comparisons in tables 17 through 18, only one difference was identified between the parametric and nonparametric tests for China (table 18). Supplier dependence was significant for the parametric test at $p < .05$ and not significant for the nonparametric test.

Composite performance outcome variable—For the United States, buyer commitment was significant at the $p < .001$ for the nonparametric and $p < .05$ for the parametric procedures. Buyer dependence is significant at the $p < .05$ level for the nonparametric and not significant for the parametric test. For China, shared values is significant at $p > .10$ for the nonparametric tests and not significant for the parametric test.

In summary, the nonparametric test used by PLS yielded some results that were different than the parametric tests used by linear regression. Because PLS is a distribution free technique and the dependent variables violate the assumption of normality, the results from PLS are more accurate than the linear regression technique.

Table 18 Technique Comparison for Cost – United States

Independent variables	Linear Regression		PLS	
	Path coefficient	P value	Path coefficient	P value
Buyer commitment	.058	.164	.121*	.073
Shared values	.178***	.000	.461***	.000
Information sharing	-.052	.087	-.153	.062
Supplier evaluation	.004	.904	.029	.382
Supplier development	-.026	.409	-.097	.182
Buyer dependence	.065**	.004	.233**	.001
Supplier dependence	-.021	.391	-.116	.176
R ²	.339		.347	

*p<.10

**p<.05

***p<.01

Table 19 Technique Comparison for Combined Dependent Variable – United States

Independent variables	Linear Regression		PLS	
	Path coefficient	P value	Path coefficient	P value
Buyer commitment	.242**	.024	.4588***	.000
Shared values	.359***	.000	.3842***	.000
Information sharing	-.046	.556	-.0161	.2476
Supplier evaluation	-.018	.818	-.011	.1074
Supplier development	-.084	.312	-.0513	.2788
Buyer dependence	.018	.750	.1334**	.0197
Supplier dependence	.067	.276	.0902	.1648
R ²	.257		.2905	

*p<.10

**p<.05

***p<.01

Table 20 Technique Comparison for Cost - China

Independent variables	Linear Regression		PLS	
	Path coefficient	P value	Path coefficient	P value
Buyer commitment	.152**	.004	.2395**	.0072
Shared values	.096**	.025	.2219**	.004
Information sharing	.003	.939	.0529	.3131
Supplier evaluation	.012	.742	-.224	.0515
Supplier development	-.057	.094	-.1043	.1186
Buyer dependence	-.018	.549	.0714	.3371
Supplier dependence	.054*	.085	.1247	.1859
R ²	.234		.3065	

*p<.10

**p<.05

***p<.01

Table 21 Technique Comparison for Combined Dependent Variable - China

Independent variables	Linear Regression		PLS	
	Path coefficient	P value	Path coefficient	P value
Buyer commitment	.681***	.000	.4341***	.000
Shared values	.145	.134	.1402*	.0548
Information sharing	.058	.568	.1086	.128
Supplier evaluation	.106	.218	.1439	.1767
Supplier development	-.127	.103	-.1146	.1402
Buyer dependence	.049	.473	.068	.2476
Supplier dependence	.035	.625	.1124	.206
R ²	.383		.4213	

*p<.10

**p<.05

***p<.01

4.7 Conclusion

The Krause, Handfield et al. 2007 study conducted in the United States was the first known published study to use all three dimensions of social capital to study the relationship between the buyer and seller. The 2007 study examined the relationship between structural capital (supplier evaluation, supplier development, and information sharing), relational capital (buyer and supplier dependency) and cognitive capital (goals and values), on buying firm performance (cost, quality, delivery, and flexibility). This study was replicated in the current studies in the United States and China. Differences between China and the United States were expected because of China's eastern culture. In actuality, similarities and differences between the countries were found.

Structural–Supplier evaluation and information sharing did not impact performance for all three countries. Supplier development only impacted the United States (2007) for the performance outcomes of quality, delivery, and flexibility. Supplier

development did not impact performance in the United States and China. The structural dimension as defined by the Krause, Handfield et al. 2007 study did not significantly impact performance.

Relational–Buyer commitment impacted all aspects of performance for China and the United States (2007). Also, buyer commitment had a bigger impact in the United States (2007) than in China on performance. For the United States buyer commitment impacted quality, delivery, and flexibility, but not cost. The long-term relationships between buyers and suppliers are examined in this study. Cost is a major focus for short-term, transactional exchanges with suppliers. This may be why in the US that buyer commitment (which represents a long-term relationship) was not an important influence on cost. Buyer dependence impacted cost in the United States. Buyer dependence did not impact performance in China. In China, business relationships are based on guanxi or prior relationships. Therefore, the relationship tie is important, not the buyer's dependence. Supplier dependence did not significantly impact performance in all three countries.

Cognitive–Shared values impacted all aspects of performance for the United States. In China, shared values impacted cost, but not quality, flexibility, or delivery. China competes on cost in the global market place. Therefore the focus, and thus shared values, would be on cost and not the other aspects of performance.

The Krause, Handfield et al. 2007 study focused on supplier development activities. There are many other activities that build social capital. The next chapter presents the results of the comprehensive model developed for this research study. All

the activities from the Krause, Handfield, et al. 2007 study were included in the comprehensive model, even if they were not significant in the prior study. In some cases additional item measures were added to the prior constructed and innovation was added as a measure of performance which could lead to different results.

CHAPTER 5

CURRENT RESEARCH MODEL (UNITED STATES AND CHINA)

5.1 Overview

Our overall research agenda is to identify activities that build a good relationship with a supplier which results in buyer satisfaction; and determine if buyer satisfaction is correlated with performance. The United States and Chinese populations were analyzed separately to identify items unique to the country that impacts buyer satisfaction and to determine if buyer satisfaction impacts buyer performance for each country. Next the combined population was analyzed to determine the interaction affect of country on the buyer and supplier relationship.

5.2 Data Collection and Analysis

5.2.1 Survey Development

The survey was comprised of the item measures detailed in Chapter 3 of this paper. In all cases, existing item measures were used. Descriptive demographic data was also requested in the survey, such as company size and industry. The final survey is included as Appendix A of this document.

5.2.2 Survey Validity

The survey items provide the foundation for the measurement of the theoretical framework. Therefore, it is essential that the item measures have content (or face)

validity in which they capture the “specific domain of interest yet contain no extraneous content” (Hinken 1995). Face validity refers to how a measure appears on the surface. For example, does it use language that the readers can understand? To ensure content validity, the theoretical support of each of the constructs and item measures is provided in chapter 3 (Hensley 1999). In addition, existing scales were used from prior research studies. The survey was reviewed by faculty experts in the disciplines of management and operations management for face validity. The survey was then translated into Chinese by a professional survey vendor. The Chinese version of the survey was reviewed by Chinese faculty and Ph.D. students. To provide further face and content validity, the survey was then pilot tested by a group of MBA students from mainland China. This resulted in responses from 47 students from China. The changes suggested by these individuals were incorporated into the final survey.

5.3 Data Collection

The final survey was distributed to United States and China executive MBA students from the University of Texas at Arlington during class sessions in which participation was voluntary. The survey was distributed to working professionals participating in MBA programs. This enabled us to limit the survey to respondents with significant practical experience and a relatively senior position in their firms. Each respondent was asked to identify a key supplier for their company. They were then asked a series of questions about that key supplier, including the impact of that specific supplier on their company’s performance.

The completed surveys were reviewed for missing data, outliers, and any obvious miscoding. Two surveys with missing data of over 20% of the 89 indicator variables were eliminated (Hair, Black et al. 2006). This left us with minimal impact of missing data, in most cases less than 2% for any specific variable. Missing data was replaced using the mean substitution method (Hair, Black et al. 2006). Surveys were also deleted if they did not provide reliable data, such as all items coded as a three. Our final population consisted of 142 responses from United States executives and 112 responses from Chinese executives.

5.4 Descriptive Statistics

Table 21 provides information about the size of the firms represented in the sample. The size of the firms ranged from small with less than 750 employees and gross sales of less than 10 million to very large with over 6,000 employees and gross sales over 500 million. The % of small firms based on the number of employees less than 750 were similar for the United States and China populations at 38.7% and 40.2 respectively. The % of large firms was larger for the United States at 42.3% with China at 28.6%. However, when the % is based on gross sales, the percentage of large firms with sales over \$500 million for China was 36.6% and United States at 42.3%. Overall, firm size across the two populations was fairly consistent which provides evidence that differences in firm size should not have a significant impact when comparing results across the populations.

Table 22 Firm Size

	US n=142		China n=112	
Variable	Frequency	Percent	Frequency	Percent
# employees				
< 750	55	38.7	45	40.2
750 to 6,000	26	18.3	33	29.5
> 6,000	60	42.3	32	28.6
Gross Sales (annual)				
< 10 million	29	20.4	24	21.4
10 to 500 million	40	28.2	44	39.3
> 500 million	60	42.3	41	36.6

As stated earlier, each respondent was asked to identify one key supplier and then answer the survey questions with regards to that key supplier. Table 22 provides information about the suppliers represented in the survey. 95.8% of the supplier relationships in the United States population and 88.4% of the China population had lasted longer than one year. These statistics provide evidence that the population being studied is comprised of long-term supplier relationships which is the focus of this research study. It is interesting to note that the U.S population had substantially more relationships longer than 10 years than China. This may be reflective of China's status as an emerging economy which creates an environment for new firms.

It is also interesting that the majority of the supplier relationships are covered by a contract. Long-term strategic relationships are typically governed with a combination of formal methods such as a contract and informal methods such as a relationship built on history and trust.

Table 23 Supplier Information

Variable	US n=142		China n=112	
	Frequency	Percent	Frequency	Percent
Length of relationship (years)				
0 to 1	6	4.2	13	11.6
1 to 5	39	27.5	55	49.1
5 to 10	42	29.6	36	32.1
Over 10	55	38.7	8	7.1
Contract				
Yes	113	79.6	100	89.3
No	26	18.3	12	10.7

5.5 Data Analysis

5.5.1 Technique

Analysis was performed using Partial Least Squares (PLS) modeling, specifically the software tool Smart-PLS (Ringle, Wende et al. 2005). PLS is a structural equation modeling (SEM) technique that generates a vector of coefficients that relates a set of predictor variables to a set of dependent variables (Sosik, Kahai et al. 2009). The PLS technique was originally developed by H. Wold (1975) to address problems of modeling data in the social sciences, such as small sample sizes or violations of distribution assumptions (Wold 1975). PLS was chosen to use in this research study due to several factors. One, PLS allows the researcher to designate if the relationship between the manifest variables and latent constructs are either formative or reflective. Reflective indicators are determined by the latent variable and formative indicators combine to define the latent variable (Sosik, Kahai et al. 2009). Two, PLS is a useful tool to support the early stages of theory development. PLS is recommended for the prediction and the

exploration of plausible causality. Other SEM tools focus on parameter accuracy to enable prediction of the hypothesized relationship. Three, PLS does not require the normality of data distributions, observation independence, or variable metric uniformity. Four, due to bootstrapping PLS does not require as large a sample size as other SEM techniques. The suggested sample size is based on the following rule of thumb. The number of cases must be greater than 10 times the largest number of formative indicators or the largest number of structural paths leading to a latent variable (Chin 1997; Gefen, Straub et al. 2000; Sosik, Kahai et al. 2009).

5.5.2 Summated Scales

The survey instrument included 89 indicator items used to measure the constructs. Each construct was measured by two or more items. The software SmartPLS (Ringle, Wende et al. 2005) was used to perform a confirmatory factor analysis of indicators used for predictive constructs for the United States and China. Separate summated scales based on the first order indicators were developed for each population. SmartPLS includes a bootstrapping function which estimates the distribution of the path coefficients by resampling with replacement from the original sample (Sosik, Kahai et al. 2009). PLS calculates a student t statistic which was used to calculate a p value. For the United States and China, all indicators with statistical significance indicated by p values less than .05 (tables 22 through 24) were included in the summated scales. These scales will be used to test the model for United States and China separately.

Even at this early stage of analysis, differences were identified in the business practices between United States and China. For example, the indicator item that

measures formal supplier evaluations is significant in the United States, but not in China. Item measures related to the constructs of supplier dependence and appropriability were statistically significant in the United States, but not in China. The buyer's relationship with government officials is important in China, but not in the United States. Face to face planning sessions are important in the United States, but not in China

Pairwise comparison tests were conducted on items that were significant in both countries to determine which items had statistically significant differences between the factor loadings (tables 23 and 24). Several items were found that were significantly different at $p < .05$. For example, social activities are important in both countries. However, in China frequent contacts through a variety of mediums (such as email and phone) and contacts after business hours have a higher factor loading than in the United States. Dining out, having fun, and sharing of common interests have higher factor loadings in the United States than China. The ability to modify production systems to components from another supplier has a higher factor loading in the United States than China. High corporate level exchanges of information and sharing of proprietary information have higher factor loadings in the United States than China.

Table 24 Path Coefficients for IVs – Structural Dimension

Constructs	Item Measures	United States	China	Pairwise Comparison
Performance Evaluation	<ul style="list-style-type: none"> Assessment of supplier's performance through formal evaluation, using established guidelines. 	.74**	-.21	***
	<ul style="list-style-type: none"> Provide supplier with feedback about the results of its evaluation. 	.76***	.89**	***
	<ul style="list-style-type: none"> Use of a supplier certification program to certify supplier's quality. 	.90***	.77***	**
	<ul style="list-style-type: none"> Assessment of supplier's performance through informal evaluation, which takes place on an ad-hoc basis. 	.61*	.47*	**
Supplier development	<ul style="list-style-type: none"> Allocation of your personnel to improve supplier's technical skill base. 	.74***	.82***	
	<ul style="list-style-type: none"> Regular visits by your personnel to supplier's facilities. 	.76**	.71***	
	<ul style="list-style-type: none"> Dedicated supplier development team. 	.90***	.93***	

Table 24 - continued

Information Sharing	<ul style="list-style-type: none"> Exchange of information in this relationship takes place frequently 	.80***	.80***	
	<ul style="list-style-type: none"> It is expected that the parties will provide information if it can help the other party. 	.70***	.45***	***
	<ul style="list-style-type: none"> It is expected that we keep each other informed about events or changes that may affect the other. 	.76***	.66***	**
	<ul style="list-style-type: none"> Exchange of information in this relationship takes place informally. 	.82***	.76***	
	<ul style="list-style-type: none"> The supplier shares its plans for the future with us. 	.76***	.73***	
	<ul style="list-style-type: none"> The supplier shares proprietary and sensitive information with us. 	.81***	.79***	**
	<ul style="list-style-type: none"> There is high corporate level communication on important issues with this supplier. 	.69***	.55***	***
	<ul style="list-style-type: none"> We have very frequent face to face planning sessions with this supplier. 	.60***	0.14	
Network Ties	<ul style="list-style-type: none"> Extent to which managers at your firms have utilized personal relationships, networks, and connections with managers at supplier firms. 	1.00***	.97***	**
	<ul style="list-style-type: none"> Extent to which managers at your firms have utilized personal guanxi, networks, and connections with political leaders in various levels of the government. 	0.24	.69***	

Table 24 - continued

Appropriability	<ul style="list-style-type: none"> • By working closely with this supplier, our firm becomes more attractive to our other suppliers. • Our way of doing business with this supplier has positive effects on our activities with other suppliers. • Too close a relationship with this particular supplier may destroy the balance amount our firm's other suppliers. (reverse coded) • Collaborating with this specific supplier may be rewarding in some ways, but harmful to our reputation with certain other firms. (reverse coded) • Although working closely together with this supplier will likely provide some benefits, important other suppliers may not be happy about this. (reverse coded) 	.90***	.77	
		.93***	.75	
		.07	-.37	
		0.11	-.41	
		0.05	-.41	

*p<.10

**p<.05

***p<.01

Table 25 Path Coefficients for IVs – Relational Dimension

Construct	Item Measures	United States	China	Pairwise Comparison		
Buyer commitment	• We expect to be working with this supplier for the foreseeable future.	.85***	.91***	*		
	• Our relationship with this supplier is long-term in nature.	.88***	.91***			
	• We have a strong sense of loyalty to this supplier.	.87***	.88***			
	• Our firm has a cooperative relationship with this supplier.	.88***	.83***			
Dependence ✓ Buyer	• There are many competitive suppliers for this component.	.61***	.68***	**		
	• Our production system can be easily adapted to components from another supplier.	.88***	.79***			
	• If we decided to stop purchasing from this supplier, we could easily replace their volume with purchases from other suppliers.	.84***	.89***			
	• Working with a new supplier would only require a limited redesign and development effort on our part.	.83***	.84***			
	Supplier	• It would be relatively easy for this supplier to find another buyer for these components.	.81***		-.31	***
		• Finding new buyers for these components would not have a negative impact on the price	.78***		-.14	
		• If the relationship with our company was terminated, it would not hurt this supplier's operation.	.87***		.60*	
		• If we stopped buying from this supplier, they could easily replace our volume with sales to some other buyer.	.54**		-.06	

Table 25 - continued

Socialization	• Our supplier visits our place of business frequently	.75****	.76****	
	• Our supplier spends time getting to know our people	.84****	.15	
	• Our supplier contacts us by phone, e-mails, letters, and/or fax frequently.	.66****	.75****	**
	• Our supplier's representative often contacts us after office hours.	.57****	.72****	***
	• Our supplier's representative usually meets us in a relaxed environment (e.g. dining out)	.80****	.70****	**
	• Our supplier's representative usually gets together with us primarily to have fun.	.69****	.57****	**
	• Our supplier's representative often talks about common interests besides work.	.79****	.69****	**
Reciprocity / favors	• We will do the supplier a favor if he did one for us before.	.45****	.52****	
	• The supplier will do us a favor if we did one for him before.	.78****	.74****	
	• We recognize supplier's performance improvements with awards.	.73****	.78****	
	• Cost savings are shared with this supplier.	.90****	.78****	**
	• This supplier is flexible in response to requests we make.	.84****	.84****	
	• This supplier makes an effort to help us out during emergencies.	.85****	.83****	
	• We work together to solve problems.	.64****	.57****	
Trust	• This supplier does not mislead us	.92****	.78****	
	• This supplier keeps its word.	.95****	.83****	**
	• This supplier has always been evenhanded in its negotiations with us.	.90****	.89****	
	• This supplier is trustworthy.	.95****	.90****	*

Table 25 - continued

Personal characteristics -Affect	<ul style="list-style-type: none"> • The supplier sometimes presents (non-expensive) souvenirs to us. 	.77****	.40**	***
	<ul style="list-style-type: none"> • The supplier sends greeting cards to us when there is a marriage, promotion, and so forth. 	.76****	.54****	***
	<ul style="list-style-type: none"> • The supplier is our good friend, and we care about each other wholeheartedly. 	.88****	.87****	
	<ul style="list-style-type: none"> • We like the supplier and they like us. 	.83****	.87****	
-Expertise	<ul style="list-style-type: none"> • This supplier is knowledgeable in their area. 	.93****	.92****	
	<ul style="list-style-type: none"> • This supplier is knowledgeable in the product market. 	.92****	.92****	
	<ul style="list-style-type: none"> • This supplier is able to propose alternative products to suite our applications 	.83****	.88****	
-Status	<ul style="list-style-type: none"> • This supplier has good relationships with renowned overseas suppliers. 	.70****	.79****	**
	<ul style="list-style-type: none"> • This supplier has good relationships with large suppliers. 	.75****	.78****	
	<ul style="list-style-type: none"> • The supplier's representative that we work with has a relatively high position in the supplier firm. 	.79****	.83****	
	<ul style="list-style-type: none"> • The supplier's representative that we work with has a professional and university education background. 	.90****	.92****	

*p<.10

**p<.05

***p<.01

Table 26 Path Coefficient for IVs – Cognitive Dimension

Construct	Item Measures	United States	China	Pairwise Comparison
Shared values	• Both firms share the same business values	.83***	.88***	
	• The parties often agree on what is in the best interest of the relationship.	.90***	.83***	*
	• This supplier shares our goals for this business	.91***	.86***	
	• Our company is enthusiastic about pursuing collective goals and missions with this supplier	.85***	.69***	
Common Fate	• A problem solved by this supplier means a problem solved for our company	.79***	.62***	**
	• We view this supplier as our ally against competition	.83***	.79***	**
	• We see our success as directly dependent upon the success of this supplier	.71***	.72***	
	• This supplier works with us to overcome difficulties	.80***	.83***	
	• We are jointly responsible with this supplier for getting things done.	.80***	.87***	*
	• We work with this supplier to help solve each other's problems.	.89***	.78***	**

*p<.10

**p<.05

***p<.01

Before creating the summated scales, the reliability of the construct items were validated. Reliability is concerned with internal consistency among the indicators. The indicators should measure the same construct. A composite alpha value (Cronbach's alpha) was used to assess the reliability of the constructs. Construct reliability coefficients should all exceed the .70 lower limit (Srinivasan 1985; Hair and Anderson

1998; Rossiter 2002). However, values as low as .50 are acceptable for initial construct development (Nunnally 1967; Srinivasan 1985). The Cronbach's alpha values were computed by SmartPLS and all fell within the acceptable ranges (see table 26).

Table 27 Cronbach's Alpha

Construct	United States	China
Performance Evaluation	0.73	0.59
Supplier Development	0.80	0.77
Information Sharing	0.88	0.81
Network Ties	1.00	0.65
Appropriability	0.82	n/a
Buyer Commitment	0.89	0.90
Buyer Dependence	0.80	0.84
Supplier Dependence	0.79	n/a
Socialization	0.87	0.82
Reciprocity	0.8	0.85
Trust	0.95	0.87
Affect	0.84	0.68
Expertise	0.88	0.89
Status	0.80	0.85
Shared Values	0.90	0.83
Common Fate	0.92	0.86

5.5.3 Common Method Bias

Common method bias is any systematic variance attributed to the measurement method rather than the theoretical constructs in the model (Podsakoff, MacKenzie et al. 2003). All measurement errors have the potential to impact the validity of the conclusions about a perceived relationship. Method bias is a potential source of measurement error (Podsakoff, MacKenzie et al. 2003). One common source of method

bias is due to self-reported data in which both the independent and dependent variables are reported by the same respondent. The data for this study is based on self-reported data, therefore there is a potential for common method bias.

There are procedural and statistical remedies to reduce the impact of common method bias. Several of the procedural remedies recommended by Podsakoff, MacKenzie et al (2003) were followed. Good scales are a major control over common method bias. Several steps were taken to ensure the validity of the scales. For example, in all cases existing validated scales were used. The survey was pretested to identify ambiguity and leading words. Verbal labels were added to the scale and simple focused questions were used. This helps ensure that what was intended to measure was measured (Spector 1987). The measurement of the IV and DV was physically separated on the study which helps reduce the reliance on prior responses. Respondent anonymity was ensured which helps reduce the tendency to provide socially desirable answers. It was stressed during the distribution that there were no right or wrong answers. Procedural remedies can greatly reduce and maybe even eliminate common method bias (Podsakoff, MacKenzie et al. 2003).

Procedural remedies were not the only methods to ensure validity. Statistical tests were performed to assess the existence of common method bias. First, a Harmon one-factor test was conducted. The technique assumes there is common method bias if a single factor is present or one factor accounts for most of the variance. Commonly, an exploratory factor analysis (EFA) is conducted on all key indicator values to determine if a single factor emerges. The EFA identified 18 factors that accounted for 72% of the

variance. This is an indicator that common method biases are not a likely cause of our results (Podsakoff and Organ 1986; Podsakoff, MacKenzie et al. 2003).

Additionally an additional test for common method bias outlined by Podsakoff (2003) was performed. They recommended that a common method factor be added to the model. Items are then loaded on the theoretical constructs as well as the common method factor. This allows the researcher to analyze the impact of common method on the structural parameters. The process outlined by Liang was followed to use PLS to conduct the test (Liang, Saraf et al. 2008). A common method factor was added to the analysis which included all the construct indicators in the model. (See Appendix A for a description of the variables.) The factor loadings were calculated with and without the common method factor. Results are documented in table 27. The average substantively explained variance of the indicator is 0.583 which is higher than the average method-bias variance is 0.063. The ratio of the substantive variance to the method variance is 9 to 1 (Liang, Saraf et al. 2008). Therefore, there is no evidence to suggest that common method bias is a serious problem.

Table 28 Common Method Bias

Construct	Indicator	Substantive Factor Loading (R1)	R1 ²	Method Factor Loading (R2)	R2 ²
Structural	SEVAL	-0.8877	0.788	0.2614	0.068
	SDEV	-0.8804	0.775	0.3004	0.090
	INFSHR	0.3731	0.139	0.3310	0.110
	APPR	0.3959	0.157	0.3022	0.091
	NET	0.2453	0.060	0.1458	0.021
Relational	BCOM	0.4786	0.229	0.2685	0.072
	SDEP	0.6372	0.406	-0.5170	0.267
	BDEP	0.9408	0.885	-0.5427	0.295
	SOC	0.8355	0.698	-0.3131	0.098
	RECIP	0.2737	0.075	0.5117	0.262
	AFF	0.9048	0.819	-0.3372	0.114
	EXP	0.8391	0.704	-0.0743	0.006
	STAT	0.4974	0.247	0.1816	0.033
	Trust	0.6174	0.381	0.1357	0.018
	Cognitive	SV	0.8154	0.665	0.1283
CF		1.0101	1.020	-0.1350	0.018
Buyer satisfaction	BSAT1	0.8345	0.696	-0.0028	0.000
	BSAT2	0.8192	0.671	-0.0901	0.008
	BSAT3	0.7270	0.529	0.0393	0.002
	BSAT4	0.9032	0.816	-0.0097	0.000
	BSAT5	0.8009	0.641	0.0367	0.001
	BSAT6	0.8319	0.692	0.0196	0.000
Buyer performance	COST	0.4205	0.177	0.3251	0.106
	QUAL	0.7162	0.513	0.1680	0.028
	TIME	0.7367	0.543	0.1274	0.016
	FLEX	0.8549	0.731	-0.0660	0.004
	INNOV1	0.9614	0.924	-0.1534	0.024
	INNOV2	1.0511	1.105	-0.2346	0.055
	INNOV3	0.9071	0.823	-0.1250	0.016
Average			0.583		0.063

5.5.4 Measurement Model

SmartPLS was used to perform a confirmatory factor analysis (CFA) on the measurement items and their constructs that they were theorized to reflect. In this portion of the analysis, the second order constructs discussed in the preceding section are used. The following tables present the results of several steps taken to assess the reliability and validity of the measurement model.

5.5.4.1 Convergent Validity

Each measurement item should correlate strongly (or converges) with the construct it is intended to measure and weakly (or discriminates) with all other constructs. PLS generates a student t statistic and a factor loading for each measurement item theorized to reflect a latent construct. Excel was used to generate a p value from the t statistic provided by SmartPLS. Results are documented in Tables 25 and 26. Additionally, SPSS was used to calculate the Variance Inflation Factor (VIF) for the predictor items. The VIF for all items was less than 5 which indicates that multicollinearity is not a problem (Kutner, Nachtsheim et al. 2005).

United States-Three items had t statistics less than 2; supplier development, supplier evaluation, and supplier dependence. These items were deleted and the measurement model was rerun. T statistics for the remaining measurement items were all significant with p values < .001. Factor loadings for the predictor measurement items ranged from .55 to .95 (table 28) and factor loadings for the predicted measurement items (table 29) ranged from .73 to .89, all within acceptable ranges (Hair and Anderson 1998).

China-Four items had t statistics less than 2; buyer dependence, network ties, supplier development, and supplier evaluation. These items were deleted and the measurement model was rerun. T statistics for the remaining measurement items were statistically significant with p values < .001. Factor loadings for the predictor measurement items (table 30) ranged from .51 to .94 and factor loadings for the predicted measurement items ranged from .59 to .91, all within acceptable ranges (Hair and Anderson 1998).

The factor loadings for the items included in the measurement model exceeded thresholds recommended by Hair and Anderson (1998). Therefore, it can be concluded that convergent validity exists for both populations.

Table 29 Predictor Exogenous Latent Construct Items

Structural Dimension		United States			China		
		Factor Loadings	T statistics	VIF	Factor Loadings	T statistics	VIF
APPR	Appropriability	.82	15.14***	1.963	n/a	n/a	n/a
INFSHR	Information Sharing	.69	7.78***	1.613	1	0	1.640
NET	Network Ties	.74	9.91***	1.523	n/a	n/a	n/a
Relational Dimension							
BCOM	Buyer Commitment	.72	14.29***	3.356	.80	21.35***	3.177
BDEP	Buyer Dependence	.55	8.45***	1.689	n/a	n/a	n/a
SOC	Socialization	.58	6.95***	2.537	.53	4.80***	2.246
TRUST	Trust	.76	16.51***	3.685	.75	17.67***	2.528
RCP	Reciprocity	.74	17.74***	2.552	.80	20.66***	2.268
STAT	Status	.64	9.42***	1.643	.70	10.32***	2.143
EXP	Expertise	.75	16.96***	1.861	.81	18.49***	2.036
AFF	Affect	.65	11.03***	2.465	.51	4.75***	2.121
Cognitive							
CF	Common Fate	.85	21.63***	2.259	.94	63.33***	2.535
SV	Shared Values	.95	108.26***	2.934	.92	44.97***	2.333

*p<.10

**p<.05

***p<.01

Table 30 Predicted Endogenous Latent Construct Items

		United States		China	
Buyer Satisfaction (BSAT)		Factor Loadings	T Statistic	Factor Loadings	T values
BSAT1	This relationship has fulfilled our expectations.	.86	30.63***	.79	15.21***
BSAT2	This supplier has exceeded our expectations.	.80	20.50***	.59	6.60***
BSAT3	There is close, personal interaction between the supply partners at multiple levels.	.76	14.43***	.75	12.68***
BSAT4	The relationship is characterized by mutual trust between the supply partners at multiple levels.	.89	42.15***	.91	47.15***
BSAT5	The relationship is characterized by mutual respect between the supply partners at multiple levels.	.86	24.99***	.80	13.63***
BSAT6	Considering all the aspects of this relationship, this supplier supports our objectives.	.87	32.17***	.84	26.93***
Buyer Performance (BUYPERF)					
COST	Lower the total cost of our products.	.73	16.85***	.73	10.12***
QUAL	Improve our product quality.	.88	41.35***	.87	30.87***
TIME	Increase the reliability of our product delivery time.	.85	25.91***	.85	28.69***
FLEX	Improve our manufacturing flexibility.	.77	17.27***	.83	25.95***
INNOV1	Improve our process design	.84	21.98***	.79	18.03***
INNOV2	Shorten our new product development life cycles	.83	18.80***	.84	22.23***
INNOV3	Improve our capability of developing new products and features.	.76	14.40***	.79	18.09***

*p<.10

**p<.05

***p<.01

5.5.4.4 Discriminant Validity

In PLS, discriminant validity is an important component of construct validity. The latent variable should share more variance with its items than with other latent variables in the model (Chin 1998; Sosik, Kahai et al. 2009). The loadings of an indicator on its assigned latent variable should be higher than its cross loadings on all other latent variables. There were no significant cross loadings of the measurement items across latent constructs for the United States and China populations (tables 29 and 30).

Table 31 Factor and Cross Loadings (United States)

	Buyer Performance	Buyer Satisfaction	Cognitive	Relational	Structural
COST	0.72	0.61	0.46	0.55	0.32
QUAL	0.88	0.63	0.52	0.57	0.32
TIME	0.85	0.55	0.43	0.51	0.32
FLEX	0.77	0.40	0.37	0.37	0.25
INNOV1	0.84	0.46	0.41	0.38	0.21
INNOV2	0.83	0.42	0.38	0.31	0.19
INNOV3	0.76	0.40	0.39	0.32	0.22
BSAT1	0.59	0.86	0.44	0.66	0.35
BSAT2	0.56	0.80	0.44	0.58	0.36
BSAT3	0.48	0.76	0.57	0.57	0.47
BSAT4	0.55	0.89	0.59	0.66	0.44
BSAT5	0.53	0.86	0.55	0.60	0.36
BSAT6	0.49	0.87	0.50	0.68	0.33
CF	0.43	0.41	0.85	0.41	0.54
SV	0.52	0.65	0.95	0.64	0.64
BCOM	0.42	0.55	0.50	0.72	0.47
BDEP	0.20	0.35	0.16	0.54	0.32
SOC	0.25	0.35	0.28	0.58	0.45
TRUST	0.42	0.64	0.44	0.76	0.44
RCIP	0.47	0.61	0.69	0.74	0.65
STAT	0.46	0.49	0.36	0.64	0.40
EXP	0.35	0.52	0.40	0.75	0.43
AFF	0.34	0.42	0.29	0.65	0.42
APPR	0.31	0.43	0.52	0.59	0.81
INFSHR	0.22	0.30	0.55	0.43	0.69
NET	0.18	0.26	0.42	0.45	0.74

Table 32 Factor and Cross Loadings (China)

	Buyer Performance	Buyer Satisfaction	Cognitive	Relational	Structural
COST	0.73	0.54	0.38	0.56	0.26
QUAL	0.87	0.57	0.39	0.62	0.38
TIME	0.85	0.61	0.43	0.68	0.38
FLEX	0.83	0.63	0.38	0.59	0.39
INNOV1	0.79	0.50	0.27	0.52	0.36
INNOV2	0.84	0.55	0.35	0.52	0.41
INNOV3	0.79	0.56	0.37	0.52	0.43
BSAT1	0.56	0.79	0.48	0.65	0.50
BSAT2	0.39	0.59	0.34	0.41	0.20
BSAT3	0.43	0.75	0.43	0.55	0.38
BSAT4	0.56	0.91	0.53	0.70	0.49
BSAT5	0.63	0.79	0.51	0.65	0.47
BSAT6	0.66	0.84	0.50	0.72	0.43
CF	0.44	0.59	0.94	0.57	0.46
SV	0.40	0.53	0.92	0.57	0.39
BCOM	0.59	0.67	0.53	0.80	0.53
SOC	0.29	0.36	0.26	0.53	0.16
TRUST	0.59	0.62	0.36	0.75	0.41
RCIP	0.64	0.67	0.57	0.80	0.41
STAT	0.46	0.55	0.47	0.70	0.39
EXP	0.57	0.64	0.48	0.81	0.41
AFF	0.21	0.33	0.27	0.51	0.01
INFSHR	0.46	0.54	0.46	0.51	1.00

Additionally, a latent variable should better explain the variance of its own indicators than the variance of other latent variables. The square root of the (AVE) should be larger than the correlation of that specific construct with any of the other constructs in the model (Fornell and Larcker 1981). United States-As indicated in Table 32, this requirement was met for the United States population. China-The buyer satisfaction and relational constructs have a correlation of .80 which is higher than the square root of the AVE for relational of .71 (table 33). Theoretically due to the emphasis on relationships via Guanxi, a significant correlation between buyer satisfaction and relational capital in the China population is expected to be found.

Table 33 Correlation and Reliability Measures (United States)

	AVE	1	2	3	4	5
Buyer Performance	0.66	0.81				
Buyer Satisfaction	0.71	0.63	0.84			
Cognitive	0.81	0.53	0.61	0.90		
Relational	0.46	0.55	0.75	0.61	0.68	
Structural	0.56	0.33	0.46	0.66	0.67	0.75

Note: Bolded items reflect the square root of the AVE.

Table 34 Correlation and Reliability Measures (China)

	AVE	1	2	3	4	5
Buyer Performance	0.66	0.81				
Buyer Satisfaction	0.61	0.70	0.78			
Cognitive	0.86	0.45	0.60	0.93		
Relational	0.50	0.71	0.80	0.61	0.71	
Structural	1.00	0.46	0.54	0.46	0.51	1.00

Note: Bolded items reflect the square root of the AVE.

The discriminant validity of the constructs was also assessed by using the average variance extracted statistical test. The Average Variance Extracted (AVE) measures the amount of variance captured by a latent construct in relation to the variance due to random measurement error. An acceptable threshold is greater than 0.5 (Fornell and Larcker 1981). As shown in table 34, all constructs for the United States population met this threshold except for relational which came very close at .46. Table 35 shows that all constructs for the China population exceeded .50 for AVE.

5.5.4.3 Reliability

Two additional statistical tests, Cronbach's alpha and Composite Reliability, were used to assess the reliability of the construct items (tables 33 and 34). For the China and United States populations, the composite reliability for each latent variable exceeded the recommended cutoff of .7 (Chin 1998; Sosik, Kahai et al. 2009). SmartPLS also provides the commonly used Cronbach's alpha, which exceeded the recommended cutoff of .6 or greater for the China and United States populations (Hair, Black et al. 2006).

5.5.4.4 Measurement Model Conclusion

Based on the statistical tests performed, the measurement model based on the data from the United States and China population is both valid and reliable. However, differences were noted between the United States and China measurement model. These differences may be explained by cultural differences between the countries. The interaction effect of country is explored on the measurement model later in this section of the paper.

Table 35 Reliability Measures of Constructs (United States)

Variable Constructs	Composite Scale Reliability	Average Variance Extracted	Cronbach's alpha
Structural	.79	.56	.62
Relational	.87	.46	.83
Cognitive	.89	.81	.78
Buyer Satisfaction	.94	.71	.92
Buyer Performance	.93	.66	.91

Table 36 Reliability Measures of Constructs (China)

Variable Constructs	Composite Scale Reliability	Average Variance Extracted	Cronbach's alpha
Structural	1.00	1.00	1.00
Relational	.87	.50	.83
Cognitive	.93	.86	.84
Buyer Satisfaction	.90	.61	.87
Buyer Performance	.93	.66	.92

5.5.5 Structural Model (United States)

SmartPLS 2.0 (M3) was used to perform structural equation modeling to test the hypothesized relationships between the variables. Figure 6 depicts the hypothesized model.

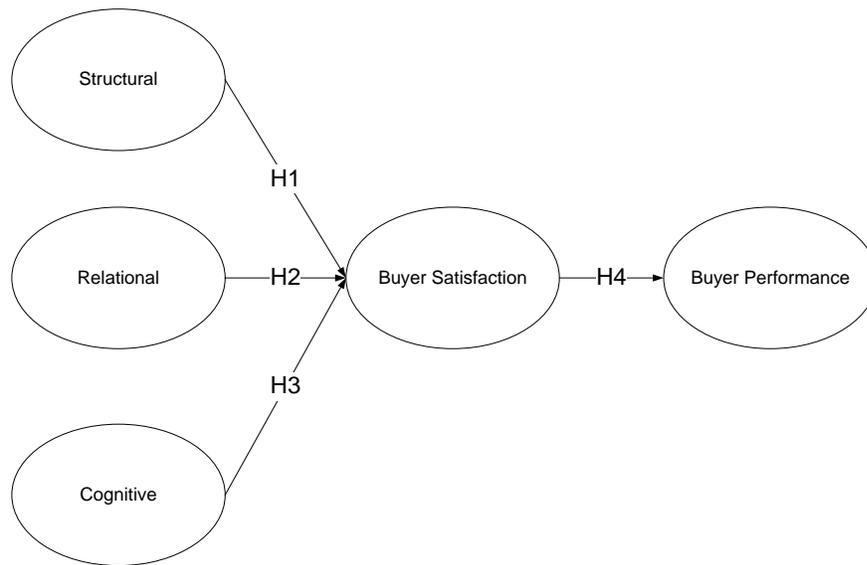


Figure 5 Hypothesized Structural Model

The model was designed in PLS based on the guidelines provided in the SmartPLS Guide (Ringle, Wende et al. 2005). Bootstrapping was performed based on five hundred iterations using randomly selected sub-samples. Bootstrapping provides t statistics, means, and standard deviations for the path coefficients (tables 37 through 39). Excel was used to generate p values from the t values provided by SmartPLS. For the United States population, H1 was not supported because the path coefficient was negative and the hypothesized relationship was positive. All other paths were significant. For the China population, all paths had a p value less than .05. For the combined population, the path between the structural dimension of social capital and buyer satisfaction had a negative coefficient and a t statistics of 1.27 which indicates that H1 is not supported using the combined population. All other paths were significant.

R^2 values are a measure of the usefulness of the model. For the United States population, the R^2 for buyer performance was .4007 and the R^2 for buyer satisfaction was

.622. For the China population, the R^2 for buyer performance was .489 and the R^2 for buyer satisfaction was .672. The dependent variables in a PLS model should explain at least 10% of the variance, the dependent variables for both populations exceeded 10%. (Falk and Miller 1992).

5.5.6 Power

The software G*Power 3 was utilized to assess the power of the model. A sensitivity analysis was performed in order to compute the effect size.

United States-With an alpha of .05 and a sample size of 142, the effect size was computed as 0.267. The effect size and sample size was then applied in a post hoc computation of achieved power. This resulted in a power of .96, which falls well above the 0.80 threshold suggested by Hair et al. (1998).

China-With an alpha of .05 and a sample size of 112, the effect size was computed as 0.20. The effect size and sample size was then applied in a post hoc computation of achieved power. This resulted in a power of .95, which exceeds the 0.80 threshold.

Table 37 Path Coefficient Means, Std. Deviations and T Statistics (United States)

	Path	Path Coefficient	Std Deviation	T Statistic	P values	
H1	Structural → Buyer Satisfaction	-0.23	0.09	2.68	.0038	Not Supported
H2	Relational → Buyer Satisfaction	0.69	0.07	9.60	<.0001	Supported
H3	Cognitive → Buyer Satisfaction	0.34	0.08	4.41	<.0001	Supported
H4	Buyer Satisfaction → Buyer Performance	0.63	0.06	10.87	<.0001	Supported

*p<.10

**p<.05

***p<.01

Table 38 Path Coefficient Means, Std. Deviations, and T Statistics (China)

	Path	Path Coefficient	Std Deviation	T Statistic	P values	
H1	Structural → Buyer Satisfaction	.15	.07	2.23	.0131	Supported
H2	Relational → Buyer Satisfaction	.63	.08	8.11	<.0001	Supported
H3	Cognitive → Buyer Satisfaction	.14	.09	1.68	.0468	Supported
H4	Buyer Satisfaction → Buyer Performance	.70	.05	13.08	<.0001	Supported

*p<.10

**p<.05

***p<.01

5.5.7 Results for United States

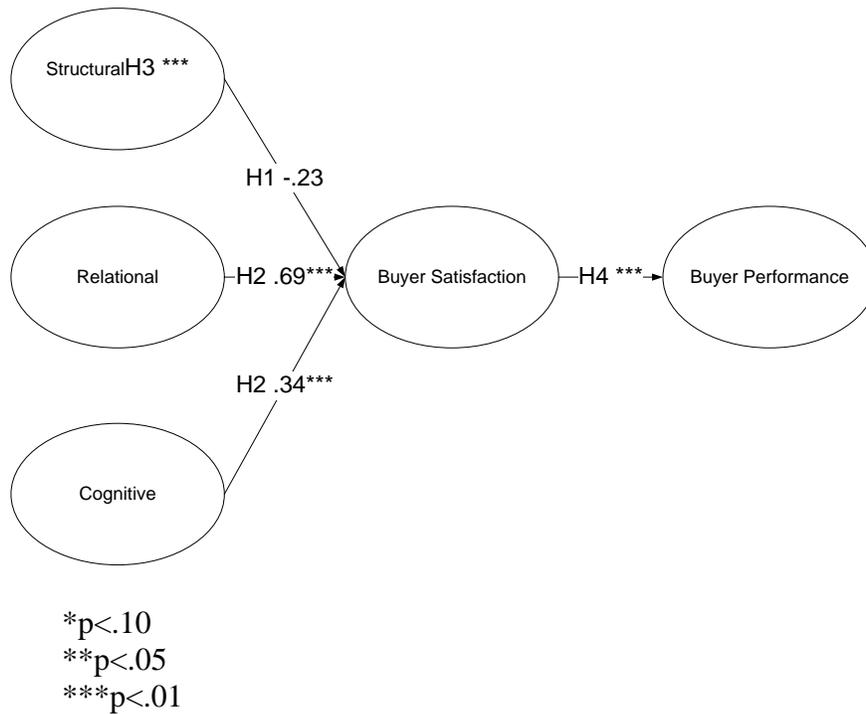


Figure 6 United States Results

H1 states that there is a positive relationship between the structural dimension of social capital and buyer satisfaction. The t statistic for this path was 2.68 which is statistically significant. However there was a negative relationship rather than a positive relationship as hypothesized. Therefore, H1 was not supported.

H2 states that there is a positive relationship between the relational dimension of social capital and buyer satisfaction. The t statistic for this was path was 9.60 which is statistically significant. Therefore, H2 was supported.

H3 states that there is a positive relationship between the cognitive dimension of social capital and buyer satisfaction. The t statistic for this was path was 4.41 which is statistically significant. Therefore, H3 was supported.

H4 states that there is a positive relationship between the buyer's satisfaction with the supplier and the buyer performance as it relates to that supplier. The t statistic for this was path was 10.87 which is statistically significant. Therefore, H4 was supported.

5.5.8 Results for China

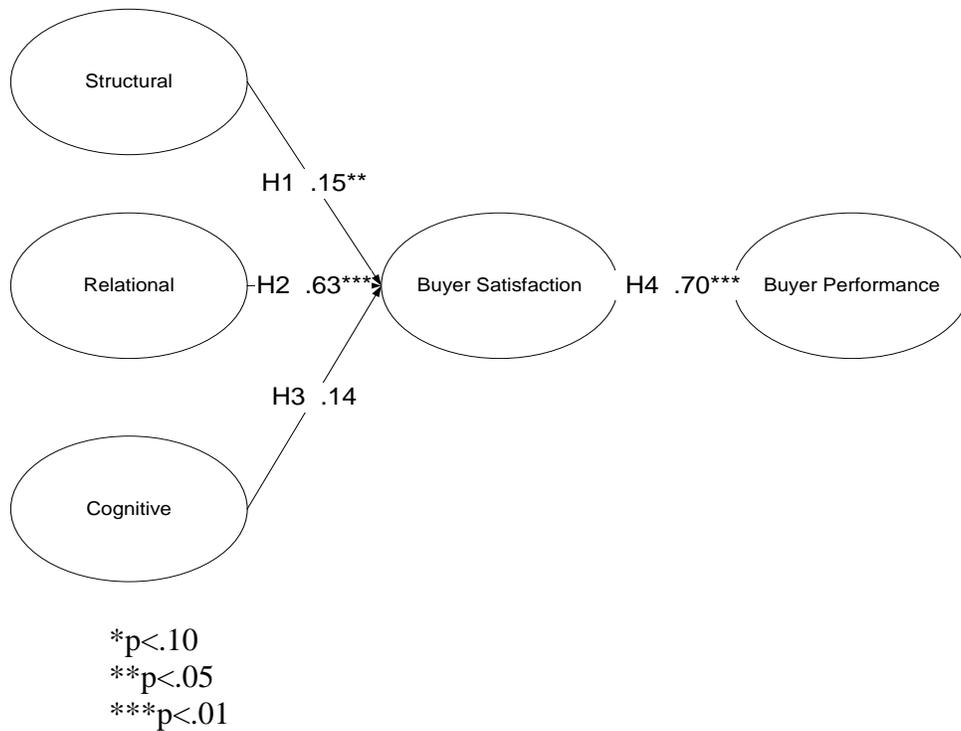


Figure 7 China Results

H1 states that there is a positive relationship between the structural dimension of social capital and buyer satisfaction. The t statistic for this path was 2.23 which is statistically significant. Therefore, H1 was supported.

H2 states that there is a positive relationship between the relational dimension of social capital and buyer satisfaction. The t statistic for this was path was 8.11 which is statistically significant. Therefore, H2 was supported.

H3 states that there is a positive relationship between the cognitive dimension of social capital and buyer satisfaction. The t statistic for this was path was 1.68 which is statistically significant. H3 is supported in the China population.

H4 states that there is a positive relationship between the buyer's satisfaction with the supplier and the buyer performance as it relates to that supplier. The t statistic for this was path was 13.08 which is statistically significant. Therefore, H4 was supported.

5.6 Interaction analysis

There were conflicting results with both the measurement and structural models between the two populations: United States and China. Table 38 and Figure 8 compare the confidence levels for the structural models of United States and China. The structural and cognitive dimensions of social capital impact on buyer satisfaction are clearly different between the two countries. Cultural differences between the United States and China may help explain these differences. To test this theory, the moderator value of country was added to the combined model. Values were either United States or China. SmartPLS was used to perform this analysis. SmartPLS includes the functionality to include a moderator variable with a predictor variable in the model. The moderator

variable country was included in the following predictor constructs; structural, relational, cognitive, and buyer performance.

Table 39 Confidence Intervals

	LCL	Mean	UCL
Buyer Satisfaction → Buyer Performance			
United States	0.59	0.70	0.81
China	0.52	0.63	0.74
Structural → Buyer Satisfaction			
United States	0.02	0.15	0.29
China	0.32	0.45	0.59
Relational → Buyer Satisfaction			
United States	0.08	0.63	0.79
China	0.04	0.75	0.82
Cognitive → Buyer Satisfaction			
United States	-0.03	0.14	0.31
China	0.06	0.61	0.73

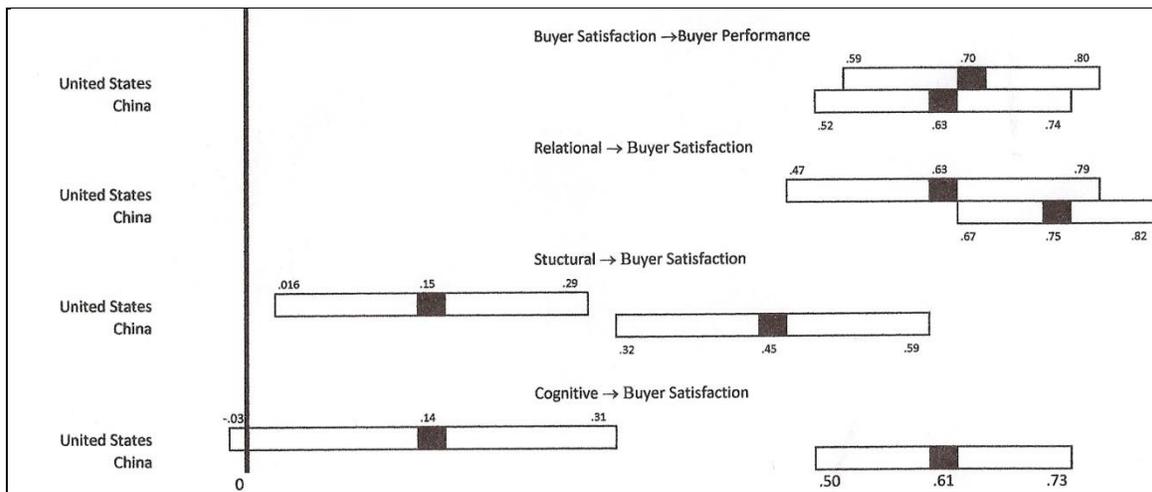


Figure 8 Confidence Level Comparisons

5.6.1 Measurement Model (Combined with Moderator)

A confirmatory factor analysis (CFA) was performed on the interaction effects of country on the measurement items of the predictor variables. Table 39 shows that all interaction effects for each construct items were statistically significant with t statistics greater than 2, p values less than .10 and factor loadings ranging from .60 to .97.

Therefore, statistical evidence exists that country has an impact on the relationship between the item measures and the constructs that they are reported to measure.

Table 40 Interaction Effects on Latent Construct Items

	Path Coefficient	Standard Deviation	T Statistic
Structural Dimension			
appr <- STRUC	0.76	0.07	11.06***
appr*country <- STRUC * COUNTRY	0.77	0.37	2.08*
infshr <- STRUC	0.76	0.06	12.32***
infshr*country <- STRUC * COUNTRY	0.75	0.37	2.02**
net <- STRUC	0.36	0.13	2.72***
net*country <- STRUC * COUNTRY	0.60	0.29	2.07**
sdep <- RELAT	0.15	0.10	1.57*
sdep*country <- RELAT * COUNTRY	0.42	0.08	5.07***
sdev <- STRUC	-0.34	0.15	2.23**
sdev*country <- STRUC * COUNTRY	-0.26	0.38	0.68
seval <- STRUC	-0.40	0.16	2.51**
seval*country <- STRUC * COUNTRY	-0.14	0.34	0.41

Table 40 - continued

Relational Dimension			
bcom <- RELAT	0.75	0.03	22.33***
bcom*country <- RELAT * COUNTRY	0.81	0.03	28.01***
bdep <- RELAT	0.44	0.07	6.67***
bdep*country <- RELAT * COUNTRY	0.69	0.05	15.16***
soc <- RELAT	0.52	0.07	7.68***
soc*country <- RELAT * COUNTRY	0.71	0.06	12.54***
trust <- RELAT	0.76	0.03	25.96***
trust*country <- RELAT * COUNTRY	0.84	0.02	37.60***
recip <- RELAT	0.73	0.03	20.98***
recip*country <- RELAT * COUNTRY	0.84	0.03	28.43***
stat <- RELAT	0.65	0.05	13.18***
stat*country <- RELAT * COUNTRY	0.77	0.04	17.82***
exp <- RELAT	0.78	0.03	25.81***
exp*country <- RELAT * COUNTRY	0.82	0.03	29.27***
aff <- RELAT	0.57	0.06	9.32***
aff*country <- RELAT * COUNTRY	0.75	0.05	15.36***
Cognitive Dimension			
cf <- COGN	0.88	0.02	38.09***
cf*country <- COGN * COUNTRY	0.91	0.02	40.14***
sv <- COGN	0.94	0.01	111.97***
sv*country <- COGN * COUNTRY	0.97	0.01	170.25***
Buyer Satisfaction			
bsat1 <- BUYSAT	0.84	0.02	33.54***
bsat1*country <- BUYSAT * COUNTRY	0.89	0.02	51.83***
bsat2 <- BUYSAT	0.74	0.04	19.67***
bsat2*country <- BUYSAT * COUNTRY	0.86	0.02	36.88***
bsat3 <- BUYSAT	0.76	0.04	20.12***
bsat3*country <- BUYSAT * COUNTRY	0.83	0.03	25.20***
bsat4 <- BUYSAT	0.89	0.02	57.78***
bsat4*country <- BUYSAT * COUNTRY	0.92	0.01	67.35***
bsat5 <- BUYSAT	0.83	0.03	27.86***
bsat5*country <- BUYSAT * COUNTRY	0.90	0.02	41.25***
bsat6 <- BUYSAT	0.85	0.02	43.32***
bsat6*country <- BUYSAT * COUNTRY	0.90	0.02	54.61***

Table 40 - continued

Buyer Performance			
cost <- BUYPERF	0.72	0.04	17.64***
flex <- BUYPERF	0.80	0.03	27.25***
innov1 <- BUYPERF	0.82	0.03	29.25***
innov2 <- BUYPERF	0.84	0.03	29.20***
innov3 <- BUYPERF	0.78	0.03	24.35***
net <- STRUC	0.36	0.13	2.72***
net*country <- STRUC * COUNTRY	0.60	0.29	2.07**
qual <- BUYPERF	0.87	0.02	48.84***

*p<.10

**p<.05

***p<.01

5.6.2 Structural Model

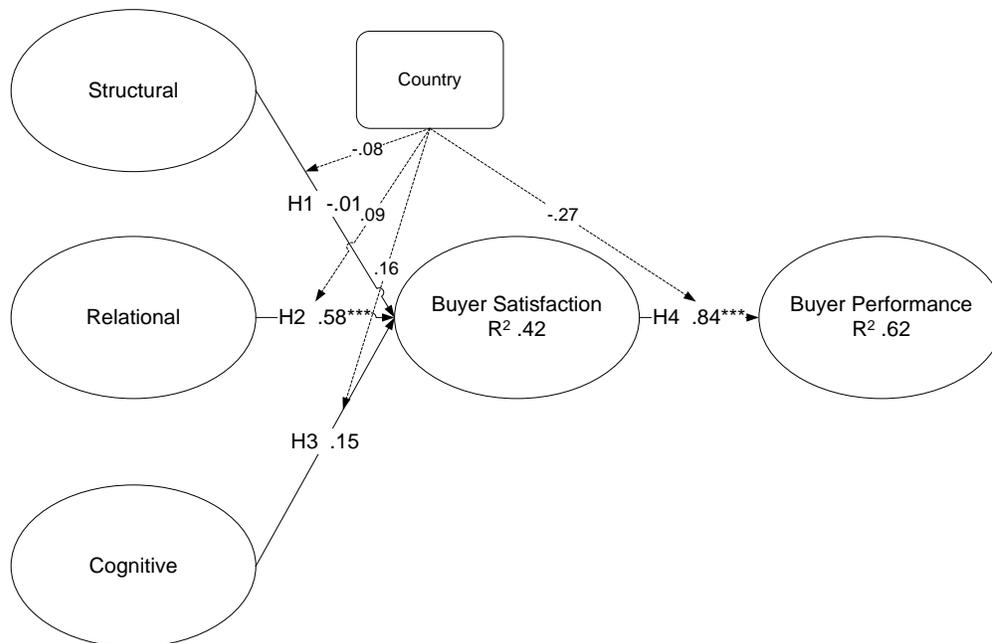


Figure 9 Interaction Effects

Table 40 shows the interaction impact of country on the structural model. The interaction effect for all paths had a t statistic of less than 2.00. Therefore, the structural model is not impacted by country.

Table 41 Interaction Effects on Structural Model

	Path	Path Coefficient	Std Deviation	T-Statistic	P Value	
H1	Structural → Buyer Satisfaction	-0.01	0.23	0.06	0.4761	Not significant
H1	Structural & Country → Buyer Satisfaction	-0.08	0.30	0.27	0.3936	Not significant
H2	Relational → Buyer Satisfaction	0.58	0.16	3.56	0.0002	Significant
H2	Relational & Country → Buyer Satisfaction	0.09	0.34	0.38	0.3521	Not significant
H3	Cognitive → Buyer Satisfaction	0.15	0.19	0.80	0.212	Not significant
H3	Cognitive and Country → Buyer Satisfaction	0.16	0.27	0.61	0.2711	Not significant
H4	Buyer Satisfaction → Buyer Performance	0.85	0.18	4.64	<.0001	Significant
H4	Buyer Satisfaction and Country → Buyer Performance	-0.27	0.25	1.09	0.1381	Not significant

5.7 Summary

In this section of the paper, the process for developing the summated scales to use in testing the theoretical model was described. Results of analyzing both the measurement and structural model were provided. Interesting results were found when analyzing the hypothesized relationships. For H1, the relationship between the structural dimension and buyer satisfaction was actually negative for the United States. This could be a result of the cultural dimension that stresses individualism for the United States. The United States can be portrayed somewhat as a “cowboy”, adverse to structure and formal relationship ties. For China, we found a positive relationship with statistical significance. This dimension was designed to measure guanxi, which was found to be relevant in China. For H2, the relationship between the relational dimension and buyer satisfaction was found to be significant for the United States and China. For H3, the relationship between the cognitive dimension and buyer satisfaction was found to be significant for the United States, but not for China. Evidence was also found that impacted discriminant validity between the Relational and Cognitive dimensions for China. It may be that these two dimensions are so related in China that they cannot be separately measured. In all cases, support was found for H4, buyer satisfaction with their supplier does have an impact on buyer performance.

The impact of culture (measured by country) was analyzed on both the measurement and structural model. Culture impacted all constructs of the measurement model, but had no impact on the structural model. Therefore, culture does have an impact on the business relationship between buyers and suppliers.

CHAPTER 6

SUMMARY

6.1 Conclusions

In this research project, the impact of the buyer's satisfaction with their supplier on the buyer's performance was studied. Prior studies confirm that the relationship between a buyer and supplier can have a positive impact on performance (Terpend, Tyler et al. 2008). However these studies were conducted in western cultures. This relationship was tested in both the United States and China, as representatives of Western and Eastern cultures. A buyer's satisfaction with their supplier has a positive impact on the buyer's performance as it relates to that supplier in both countries. Therefore, this leads one to believe that this is a truth that transcends cultural differences between western and eastern cultures.

Since buyer satisfaction is important in both cultures, then that leads to the question on how to build buyer satisfaction. The three dimensions of social capital (structural, relational, and cognitive) were used to evaluate activities that lead to buyer satisfaction (Nahapiet and Ghoshal 1998). Prior studies have defined various activities that build social capital between the buyer and supplier which results in enhanced performance (Cousins, Handfield et al. 2006; Koufteros, Cheng et al. 2007; Krause, Handfield et al. 2007; Cousins and Menguc 2008; Lawson, Tyler et al. 2008). It was discovered that activities that support the relational and cognitive dimensions of social

capital had a positive influence on buyer's satisfaction in both the United States and China. We also found that the structural dimension of social capital influences buyer satisfaction in China, but was not significant in the United States. The structural dimension includes the existence of network ties, characterized as *guanxi* in China (Jiang and Prater 2002; Zhao, Flynn et al. 2006; Zhao, Flynn et al. 2007). In China, a relationship between the buyer and supplier must exist before a business relationship can be formed. In the United States, a network tie is not required to be in place before a business relationship can begin.

Interesting results were uncovered when comparing the activities that contribute to buyer satisfaction capital between the United States and China. In China, supplier dependence and supplier evaluations did not contribute to buyer satisfaction. In China, the sharing of proprietary information was discouraged. In the United States, these activities were considered important. In the United States, activities that develop suppliers, such as sharing of technical expertise, was not considered as important as it was in China.

Based on this analysis, there were differences between the United States and China for activities that build buyer satisfaction. This supports the notion that culture influences the buyer and supplier relationship. The interaction impact of culture on the model was tested by adding the country of the respondent. In the measurement model, culture impacted almost all of the constructs. However, the overall predicted model was not significantly impacted by culture.

6.2 Theoretical Contributions

Social capital has been proven to positively impact performance outcomes in a variety of settings (Coleman 1988; Burt 1997; Walker, Kogut et al. 1997; Gulati 1998; Freeman, Edwards et al. 2006; Cooke 2007). In 2007, Krause, Handfield et al. used social capital theory to study the impact of supplier improvement activities on the buying firm's performance. They structured their study around the three dimensions of social capital: structural, relational, and cognitive. Their study was performed in the United States. Their study was expanded by replicating it in the United States and China. This study provided validation that social capital with suppliers has a positive impact on buying firm performance in western cultures and that it also has an impact on performance in eastern cultures.

Common method bias is not often addressed in operations management literature. Common method bias could result in inaccurate results and conclusions. This study illustrates a method for testing for common method bias by using SmartPLS.

Social capital theory is relatively new to the operations management (OM) field. We expanded on the Krause, Handfield et al. 2007 study by adding additional activities that can build social capital between buying firms and their suppliers. This should help OM researchers further analyze the impact of social capital in a variety of OM situations. Historically, OM has focused on traditional production issues that impact performance, such as the number of machines, throughput, etc. Recently the OM field has begun to recognize the importance of behaviors on performance. This is evidenced by a new OM behavioral focused college in the Production and Operations Management Society.

Social capital theory can provide a framework to study behavioral issues that impact OM performance.

Finally, this study examined the impact of culture on social capital between buying firms and their supplier by testing in the eastern culture of China and western culture of the United States. We found that social capital is important in both countries. However, the activities to build social capital varies by country. In summary, this study offered a unique perspective to examine buyer supplier relationships by combining the theoretical foundations of supply chain management, social capital, and culture.

6.2 Managerial Implications

The relationship between the buyer and supplier can have a significant impact on the performance of both parties. The management of suppliers is a critical link in the supply chain and can impact the overall success of a company's ability to offer quality products and services. China is the largest emerging economy in the world. Many United States firms are looking to China for suppliers. It will become increasingly common that United States supply chains will include China suppliers as a critical link. To be successful, business practices should consider the impact of culture in managing these global supply changes. This study demonstrates that activities that work in one country may not be successful in the other country. However, the relationship between the parties contributes to the success of the organization in both countries. The key to success is to study the culture and adjust business practices to meet the unique needs of each country involved in the supply chain.

6.3 Future Research

The OM field has only begun to study the impact of both social capital and culture on buyer supplier relationships. There may be many more activities that build social capital within the relationship that were not addressed in this study. There are opportunities to further identify and expand on the constructs identified in this study.

This study concentrated on the relationship between two countries, China and the United States. It could be expanded to include a number of different countries. For example, Taiwan would be an interesting country to study because it is influenced by both eastern and western cultures.

From a methodological standpoint, the existence of common method bias was tested for using statistical tests performed in PLS. There are many surveys conducted in Operations Management (OM) research that rely on the respondent to provide both the independent and dependent variable. It would be interesting to survey some recent OM literature that used surveys to analyze the various processes used to address common method bias. This would help determine if common method bias is addressed in OM literature and the potential impact on the field.

Future research could expand on this current research project by surveying both the buyer and supplier so differences in perception could be analyzed across the dyadic relationship. Further validation of the impact of social capital on performance could be provided by comparing the subjective perceptions of the respondents to objective measures.

APPENDIX A

SURVEY

I. Select One Supplier: If you are unsure of the answer to a question, please provide your best estimate.

Please focus your answers on **one** of your suppliers. This supplier should be providing your firm with a **critical material or component** that is used in one of your firm's end product(s).

1. Approximately how long has your company been purchasing from this supplier?
 - a. 0 to 1 years
 - b. 1 to 5 years
 - c. 5 to 10 years
 - d. over 10 years.
2. a. Are you a major customer for this supplier?
 - a. yes
 - b. no
 b. If yes, approximately what % of this supplier's total sales does your company purchase?_
 - a. 0 to 25%
 - b. 25% to 50%
 - c. 50% to 75%
 - d. 75% to 100%
3. a. What percentage of your total purchases of this particular item is purchased from this supplier?
 - a. 0 to 25%
 - b. 25% to 50%
 - c. 50% to 75%
 - d. 75% to 100%
 b. If you answered less than 100% to 3a, how many other suppliers provide this item to you?
 - a. 1 to 3
 - b. 4 to 8
 - c. over 8
4. Do you have a formal, written contract with this supplier?
 - a. yes
 - b. no

II. Please circle your answer to the following questions about the supplier that you selected in Section I above.

1. Please indicate the extent to which your firm has engaged in each of the following activities related to <u>this</u> supplier.	Very Little	Sometimes	Very Often
Assessment of supplier's performance through <i>informal</i> evaluation, which takes place with no set procedures	1	2	3 4 5 6 7
Assessment of supplier's performance through <i>formal</i> evaluation, using established guidelines and procedures	1	2	3 4 5 6 7
Provide supplier with feedback about the results of its evaluation	1	2	3 4 5 6 7
Use of a supplier certification program to certify supplier's quality	1	2	3 4 5 6 7
Allocation of your personnel (human resources) to improve supplier's technical knowledge	1	2	3 4 5 6 7
Regular visits by your engineering personnel to supplier's facilities	1	2	3 4 5 6 7
There is a team from your firm that is dedicated to help the supplier improve performance.	1	2	3 4 5 6 7
2. Please characterize your communication effort with <u>this</u> supplier.	Strongly Agree	Neutral	Strongly Disagree
Exchange of information in this relationship takes place frequently	1	2	3 4 5 6 7
Exchange of information in this relationship takes place informally	1	2	3 4 5 6 7
It is expected that both firms will provide information if it can help the other firm	1	2	3 4 5 6 7
It is expected that we keep each other informed about events or	1	2	3 4 5 6 7

changes that may affect the other party							
The supplier shares its plans for the future with us.	1	2	3	4	5	6	7
There is high corporate level communication on important issues with this supplier.	1	2	3	4	5	6	7
We have very frequent face to face planning sessions with this supplier	1	2	3	4	5	6	7
The supplier shares proprietary and sensitive information with us.	1	2	3	4	5	6	7

3. Please characterize your relationship with this supplier.	Strongly Agree		Neutral			Strongly Disagree	
This supplier does not mislead us	1	2	3	4	5	6	7
This supplier keeps its word	1	2	3	4	5	6	7
This supplier negotiates fairly with us	1	2	3	4	5	6	7
This supplier may use opportunities that arise to profit at my expense.	1	2	3	4	5	6	7
This supplier is trustworthy	1	2	3	4	5	6	7
We are hesitant to transact with this supplier when the specifications are vague	1	2	3	4	5	6	7
We expect to be working with this supplier for the foreseeable future	1	2	3	4	5	6	7
Our relationship with this supplier is long-term in nature	1	2	3	4	5	6	7
We have a strong sense of loyalty to this supplier.	1	2	3	4	5	6	7
Our firm has a cooperative relationship with this supplier	1	2	3	4	5	6	7

4. Please indicate your level of agreement with the following statements:	Strongly Agree		Neutral			Strongly Disagree	
There are many competitive suppliers for this component	1	2	3	4	5	6	7
Our production system can be easily adapted to use components from a new supplier	1	2	3	4	5	6	7
Working with a new supplier would only require a limited redesign and development effort on our part	1	2	3	4	5	6	7
If we decided to stop purchasing from this supplier, we could easily replace their volume with purchases from other supplier	1	2	3	4	5	6	7
If we stopped buying from this supplier, they could easily replace our volume with sales to some other buyer	1	2	3	4	5	6	7
It would be relatively easy for this supplier to find another buyer for these components	1	2	3	4	5	6	7
Finding new buyers for these components would not have a negative impact on the price this supplier can	1	2	3	4	5	6	7

charge

If the relationship with our company was terminated, it would not hurt this supplier's operations 1 2 3 4 5 6 7

Our managers utilize personal relationships, networks, and connections with managers at supplier firms 1 2 3 4 5 6 7

Our managers utilize personal relationships, networks, and connections with political leaders in various levels of government 1 2 3 4 5 6 7

Strongly Agree **Neutral** **Strongly Disagree**

5. Please indicate your level of agreement with the following statements:

We recognize supplier's performance improvements with awards 1 2 3 4 5 6 7

The supplier will do us a favor if we did one for him before 1 2 3 4 5 6 7

We will do the supplier a favor if he did one for us before 1 2 3 4 5 6 7

This supplier is flexible in response to request we make 1 2 3 4 5 6 7

This supplier makes an effort to help us during emergencies 1 2 3 4 5 6 7

We work together to solve problems 1 2 3 4 5 6 7

Cost savings are shared with this supplier 1 2 3 4 5 6 7

6. Please indicate your level of agreement with the following statements:

Strongly Agree **Neutral** **Strongly Disagree**

This supplier shares our goals for this business 1 2 3 4 5 6 7

Both firms share the same business values 1 2 3 4 5 6 7

Both firms often agree on what is in the best interest of the relationship 1 2 3 4 5 6 7

Our company is enthusiastic about pursuing collective goals and missions with this supplier 1 2 3 4 5 6 7

A problem solved by this supplier means a problem solved for our company 1 2 3 4 5 6 7

We view this supplier as our ally against competition 1 2 3 4 5 6 7

We see our success as directly dependent upon the success of this supplier 1 2 3 4 5 6 7

This supplier works with us to overcome difficulties. 1 2 3 4 5 6 7

We are jointly responsible with this supplier for getting things done 1 2 3 4 5 6 7

We work with this supplier to help solve each other's problems 1 2 3 4 5 6 7

7. Please indicate your level of agreement with the following statements regarding your relationship with the specific supplier you have been reporting on:	Strongly Agree		Neutral			Strongly Disagree	
By working closely with this supplier, our firm becomes more attractive to our other suppliers.	1	2	3	4	5	6	7
Our way of doing business with this supplier has positive effects on our activities with other suppliers	1	2	3	4	5	6	7
Too close a relationship with this particular supplier may destroy the balance among our firm's other suppliers	1	2	3	4	5	6	7
Collaborating with this specific supplier may be rewarding in some ways, but harmful to our reputation with certain other firms	1	2	3	4	5	6	7
Although working close together with this supplier will likely provide some benefits, important other suppliers may not be happy about this	1	2	3	4	5	6	7

8. Please answer the following questions about the supplier's representative that you work with most frequently.	Strongly Agree		Neutral			Strongly Disagree	
The supplier's representative sometimes present non-expensive souvenirs to us	1	2	3	4	5	6	7
The supplier's representative sends greeting cards to us when there is a marriage, promotion, and so forth	1	2	3	4	5	6	7
The supplier's representative is our good friend, and we care about each other wholeheartedly	1	2	3	4	5	6	7
We like the supplier's representative and they like us	1	2	3	4	5	6	7
The supplier's representative is knowledgeable in their area	1	2	3	4	5	6	7
The supplier's representative is knowledgeable in their product market	1	2	3	4	5	6	7
The supplier's representative is able to propose alternative products to meet our needs	1	2	3	4	5	6	7
The supplier's representative visits our place of business frequently	1	2	3	4	5	6	7
The supplier's representative spends time getting to know our people	1	2	3	4	5	6	7
Our supplier's representative contacts us by phone, e-mails, letters, and/or fax frequently	1	2	3	4	5	6	7
Our supplier's representative often contacts us after office hours.	1	2	3	4	5	6	7
Our supplier's representative usually meets us in a relaxed environment (e.g. dining out)	1	2	3	4	5	6	7
Our supplier's representative usually gets together with us primarily to have fun	1	2	3	4	5	6	7

Our supplier's representative often talks about common interests besides work							
The salesperson that we work with has a relatively higher position in the supplier firm	1	2	3	4	5	6	7
The salesperson that we work with has a professional and university education background	1	2	3	4	5	6	7
Our supplier's representative has good relationships with renowned overseas suppliers	1	2	3	4	5	6	7
Our supplier's representative has good relationships with large suppliers	1	2	3	4	5	6	7

9. Overall, how would you characterize the relationship between your company and this supplier?

	Strongly Agree		Neutral			Strongly Disagree	
This relationship has fulfilled our expectations	1	2	3	4	5	6	7
This supplier has exceeded our expectations	1	2	3	4	5	6	7
There is close, personal interaction between the supply partners at multiple levels	1	2	3	4	5	6	7
The relationship is characterized by mutual trust between the supply partners at multiple levels	1	2	3	4	5	6	7
The relationship is characterized by mutual respect between the supply partners at multiple levels	1	2	3	4	5	6	7
Considering all the aspects of this relationship, this supplier supports our objectives	1	2	3	4	5	6	7

10. Our supplier has helped.....	Strongly Agree		Neutral			Strongly Disagree	
lower the total cost of our products	1	2	3	4	5	6	7
improve our product quality	1	2	3	4	5	6	7
increase the reliability of our product delivery time	1	2	3	4	5	6	7
improve our manufacturing flexibility	1	2	3	4	5	6	7
improve process design	1	2	3	4	5	6	7
shorten our new product development life cycles	1	2	3	4	5	6	7
Improve our capability of developing new products and features	1	2	3	4	5	6	7

III. General Information: If you are not sure of the answer to a question, please provide your best estimate.

Please answer the following questions about your company.

- 1. What is your job title**
- 2. Are you directly involved in working with key suppliers?**
- 3. Are you in the purchasing or supply chain management function?**

4. **What is the primary product(s) made in your facility?**
5. **What is the primary industry in which your products compete?**
6. **What is the approximate number of employees in your firm?**
7. **Circle the country / region where you primarily conduct business.**
 - a. China
 - b. United States
 - c.
 - d. other
 - e. Taiwan
8. **What are your company's annual gross sales dollars (in U.S. dollars)?**
 - a. Less than \$1 million
 - b. \$1 mil. to <\$5 million
 - c. \$5 mil. to <\$10 million
 - d. \$10 mil. to <\$50 million
 - e. \$50 mil. to <\$100 million
 - f. \$100 mil. to <\$500 million
 - g. \$500 mil. to < \$1 billion
 - h. ≥\$1 billion

APPENDIX B

VARIABLE DESCRIPTIONS

Dimension	Indicator Code	Description
Structural	SEVAL*	Supplier performance evaluation
	SDEV*	Supplier development
	INFSHR*	Information sharing
	APPR*	Appropriability
	NET*	Network ties
Relational	BCOM*	Buyer commitment
	SDEP*	Supplier dependence
	BDEP*	Buyer dependence
	SOC*	Socialization
	RECIP*	Reciprocity
	AFF*	Affect
	EXP*	Expertise
	STAT*	Status
	TRUST*	Trust
Cognitive	SV*	Shared values
	CF*	Common Fate
Buyer satisfaction	BSAT1	This relationship has fulfilled our expectations.
	BSAT2	This supplier has exceeded our expectations.
	BSAT3	There is close, personal interaction between the supply partners at multiple levels.
	BSAT4	The relationship is characterized by mutual trust between the supply partners at multiple levels.
	BSAT5	The relationship is characterized by mutual respect between the supply partners at multiple levels.
	BSAT6	Considering all the aspects of this relationship, this supplier supports our objectives.
Buyer performance	COST	Lower the total cost of our products.
	QUAL	Improve our product quality.
	TIME	Increase the reliability of our product delivery time.
	FLEX	Improve our manufacturing flexibility.
	INNOV1	Improve our process design
	INNOV2	Shorten our new product development life cycles
	INNOV3	Improve our capability of developing new products and features.

*Composite of several item measures

APPENDIX C

INDEPENDENT VARIABLES

Table 42 Independent variables means and standard deviations

Variable Name	Description	Means	Standard Deviation
APPR	Appropriability	7.2402	2.64825
INFSHR	Information Sharing	28.7340	9.89482
NET	Network Ties		
SEVAL	Supplier Evaluation	12.6077	4.28520
SDEV	Supplier Development	10.7881	5.08425
NET	Network Ties	7.8639	2.88064
BCOM	Buyer Commitment	12.0283	5.77232
BDEP	Buyer Dependence	14.7192	5.93018
SOC	Socialization	28.0724	9.17514
TRUST	Trust	12.2217	5.57720
RCP	Reciprocity	25.2610	8.53907
STAT	Status	13.8566	4.78813
EXP	Expertise	8.8982	3.84410
AFF	Affect	16.7288	5.28579
SDEP	Supplier Dependence	11.6954	4.53514
CF	Common Fate	21.7130	7.62197
SV	Shared Values	13.8847	4.99649

APPENDIX D

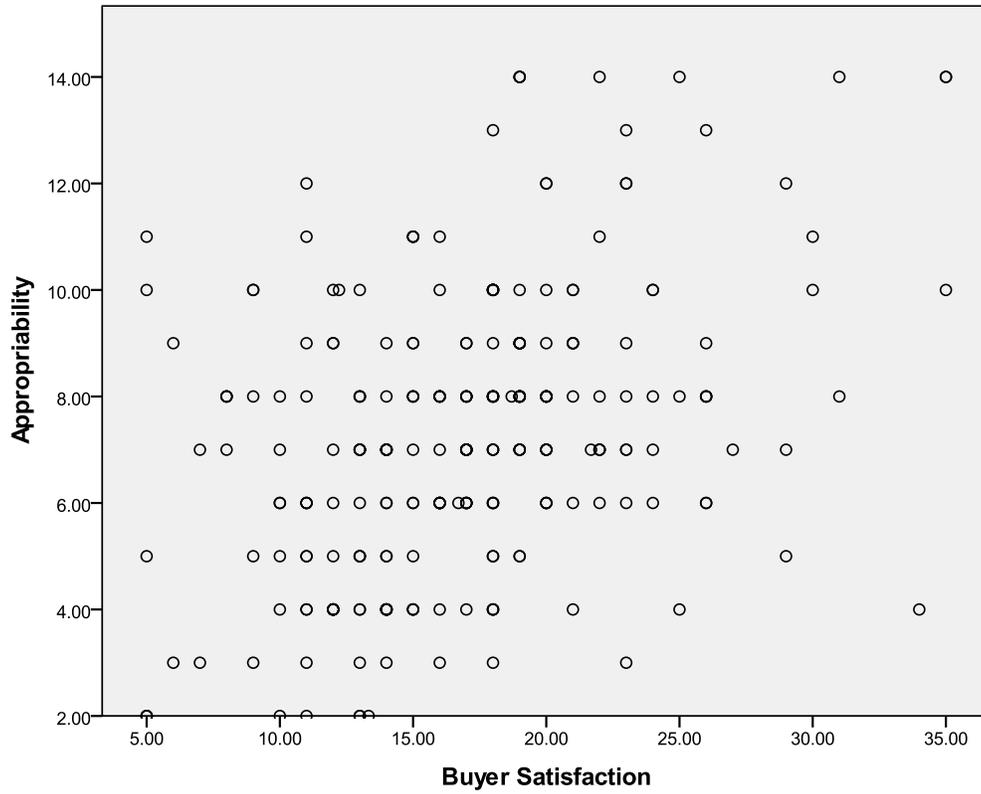
DEPENDENT VARIABLES

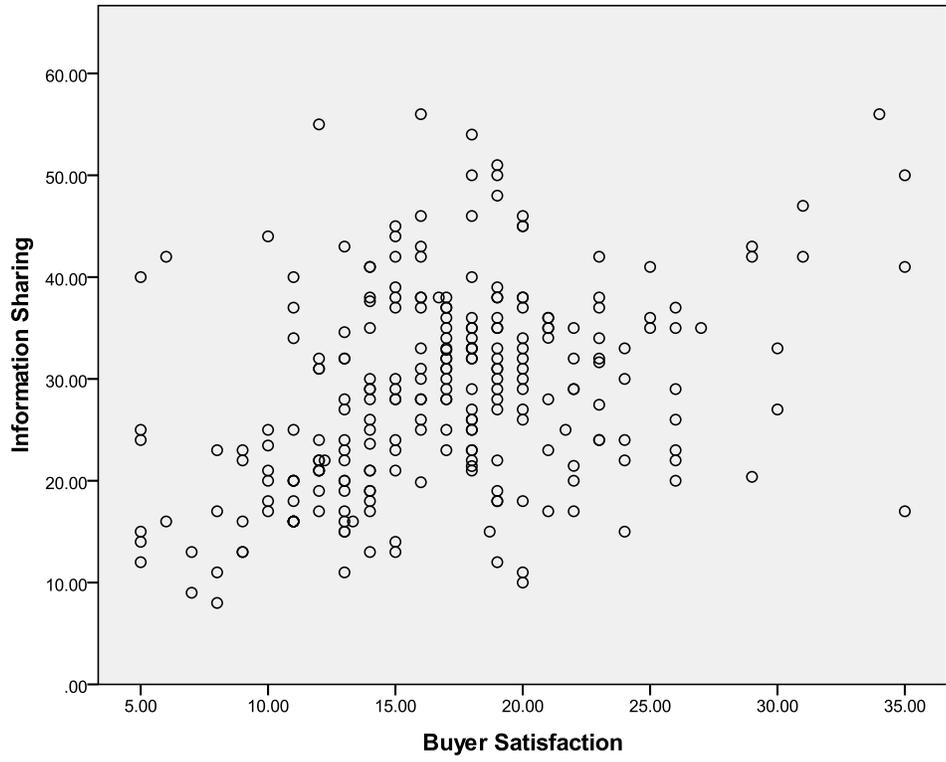
Table 43 Dependent Variables Means and Standard Deviations

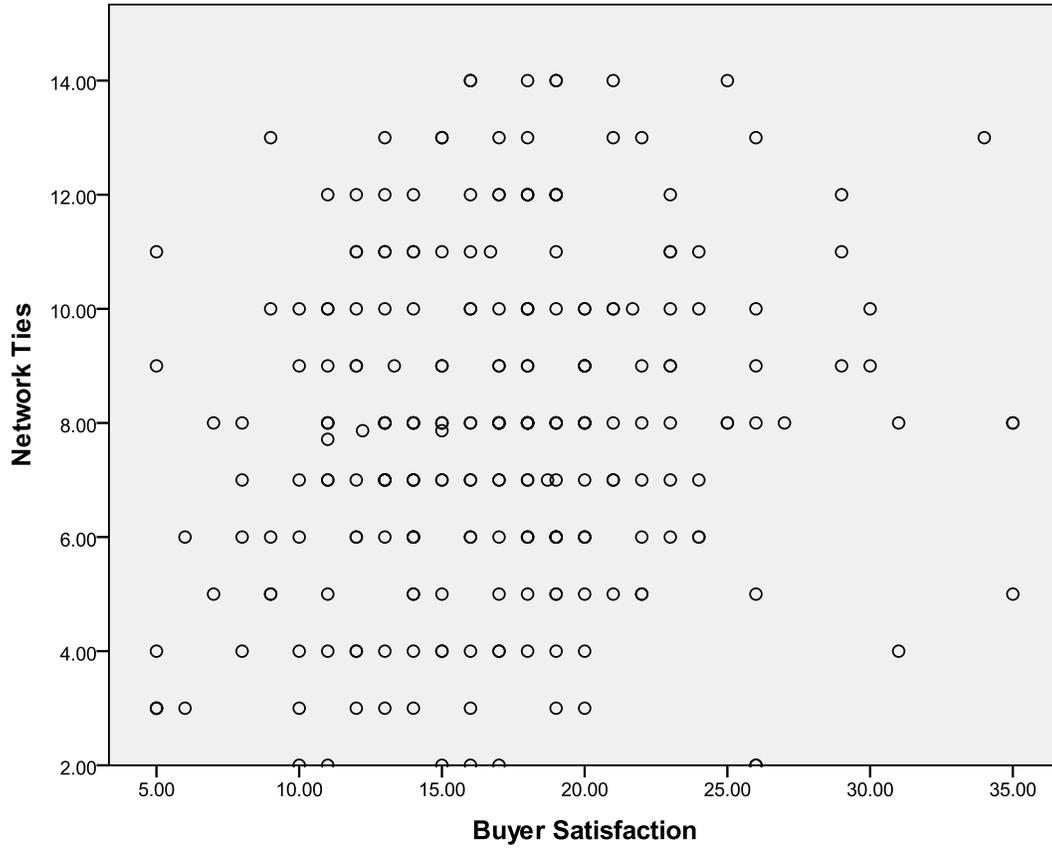
Variable Name	Description	Means	Standard Deviation
Buyer Satisfaction			
BSAT1	This relationship has fulfilled our expectations.	3.00	1.420
BSAT2	This supplier has exceeded our expectations.	3.68	1.410
BSAT3	There is close, personal interaction between the supply partners at multiple levels.	3.70	1.404
BSAT4	The relationship is characterized by mutual trust between the supply partners at multiple levels.	3.33	1.325
BSAT5	The relationship is characterized by mutual respect between the supply partners at multiple levels.	3.22	1.321
BSAT6	Considering all the aspects of this relationship, this supplier supports our objectives.	3.05	1.365
Total Buyer Satisfaction Variables		19.98	8.245
Buyer Performance Variables			
COST	Lower the total cost of our products.	3.37	1.576
QUAL	Improve our product quality.	3.16	1.475
TIME	Increase the reliability of our product delivery time.	3.12	1.479
FLEX	Improve our manufacturing flexibility.	3.45	1.482
INNOV1	Improve our process design	3.54	1.470
INNOV2	Shorten our new product development life cycles	3.69	1.495
INNOV3	Improve our capability of developing new products and features.	3.69	1.592
Total Buyer Performance Variables		24	10.569

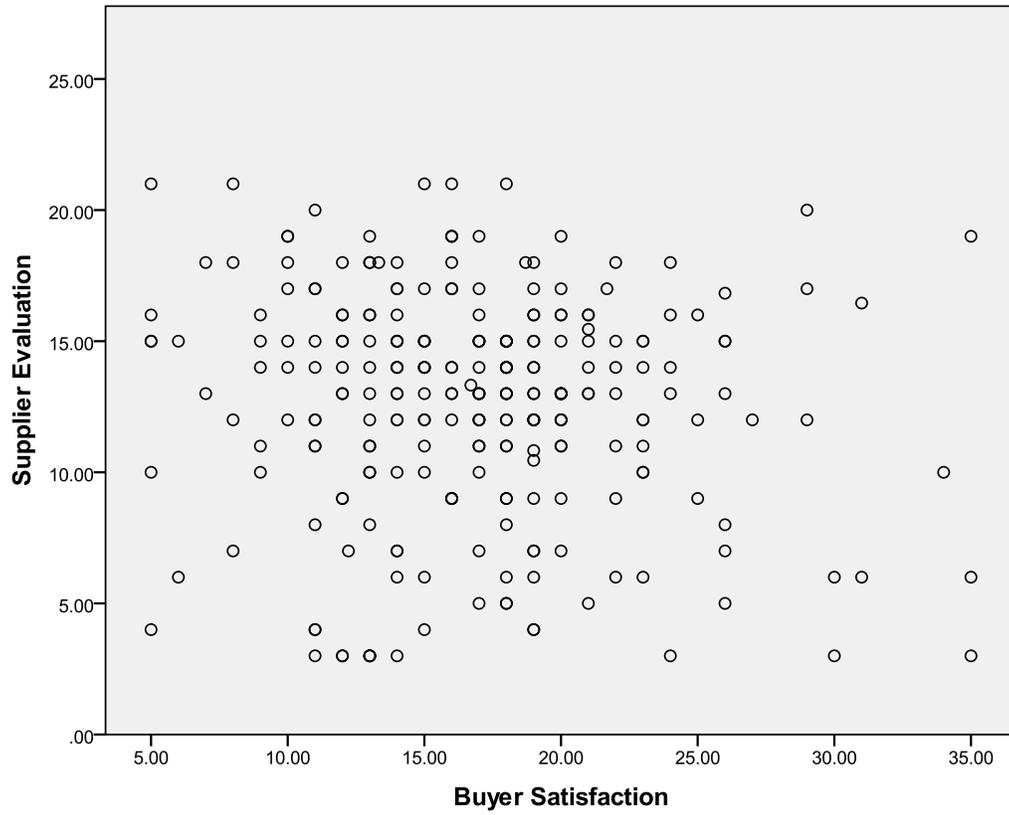
APPENDIX E

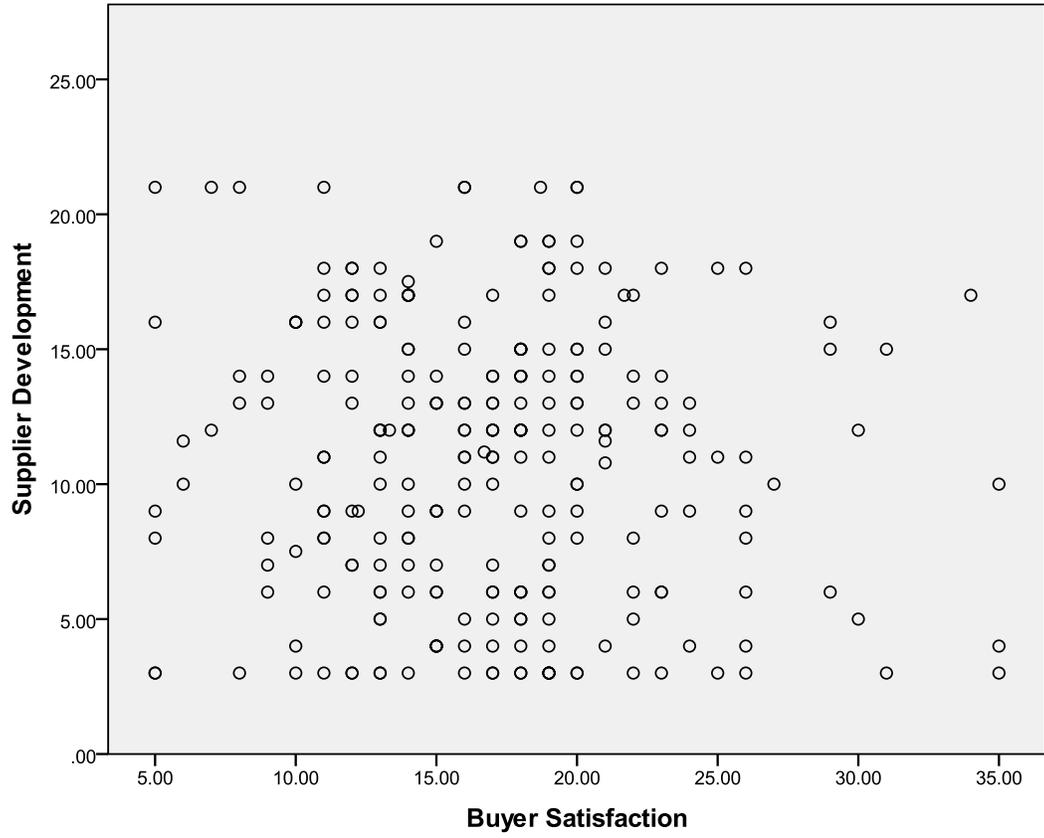
SCATTER PLOTS

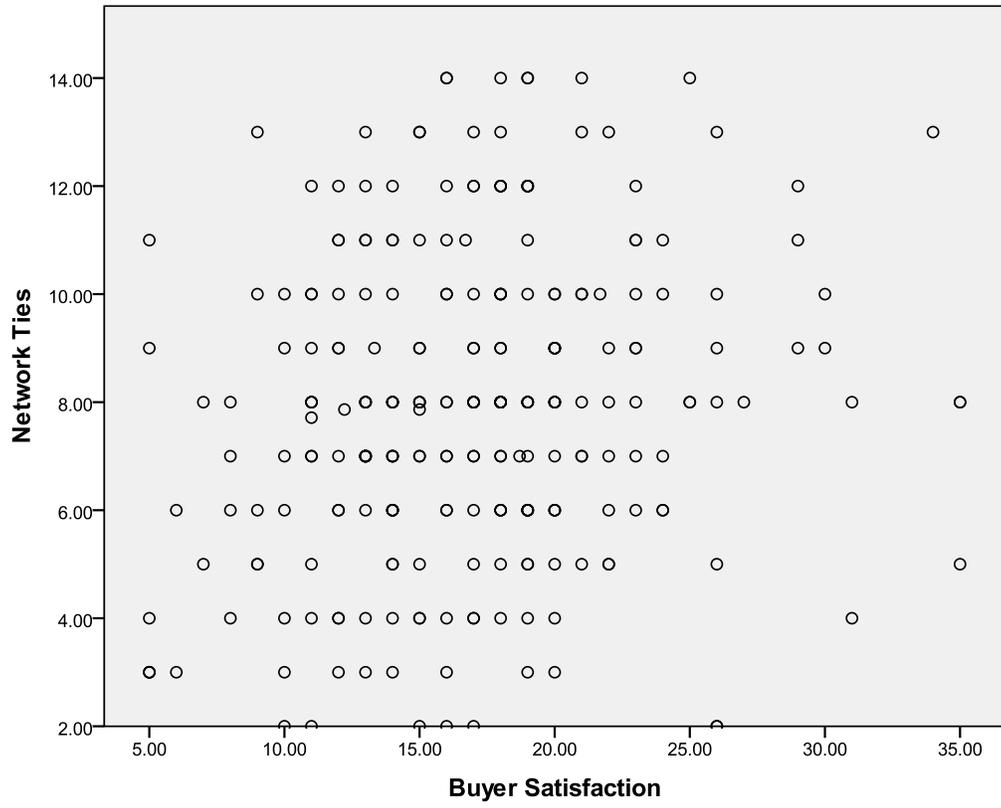


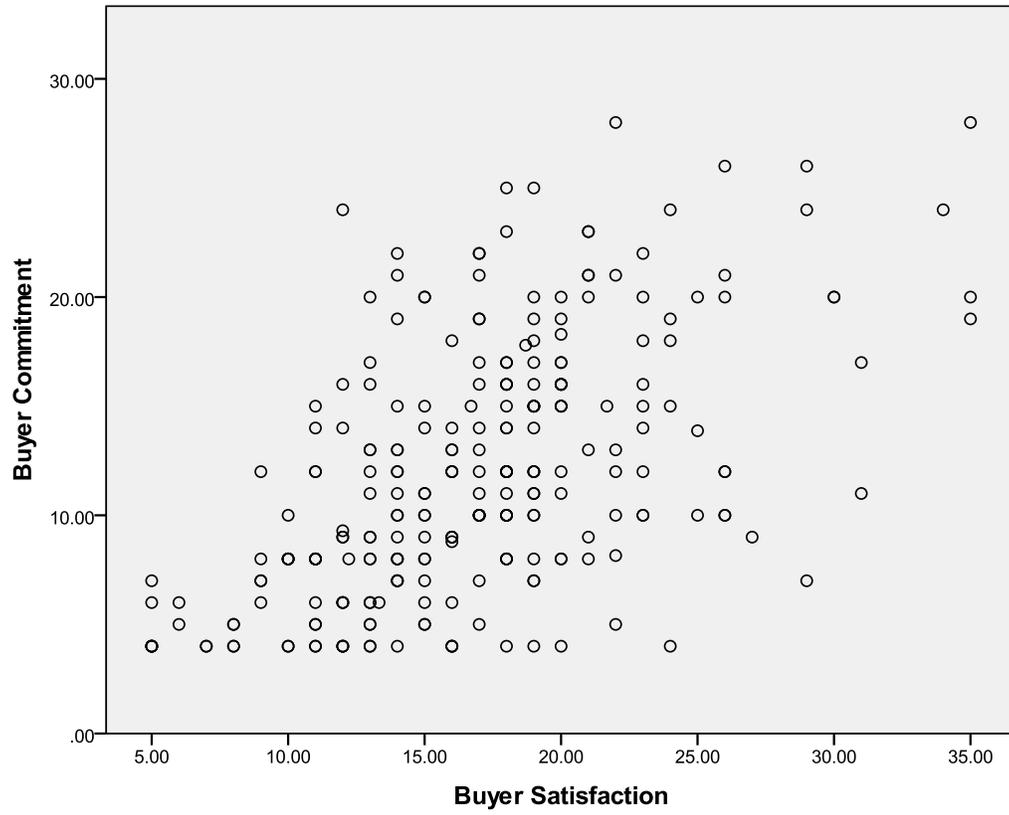


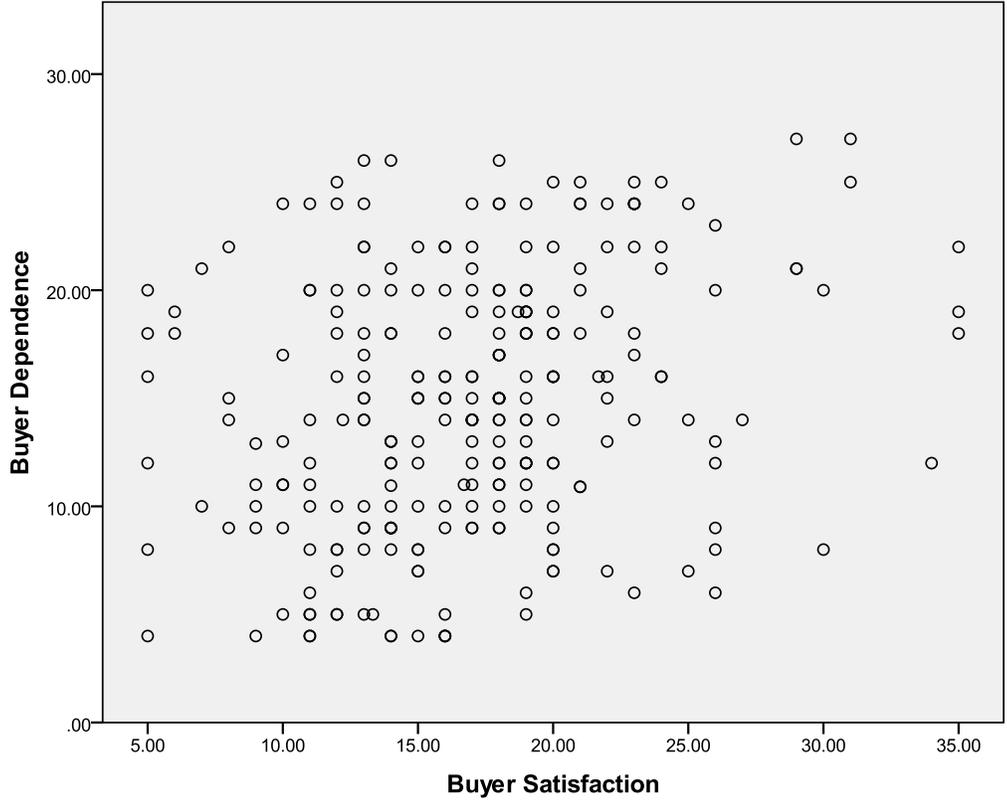


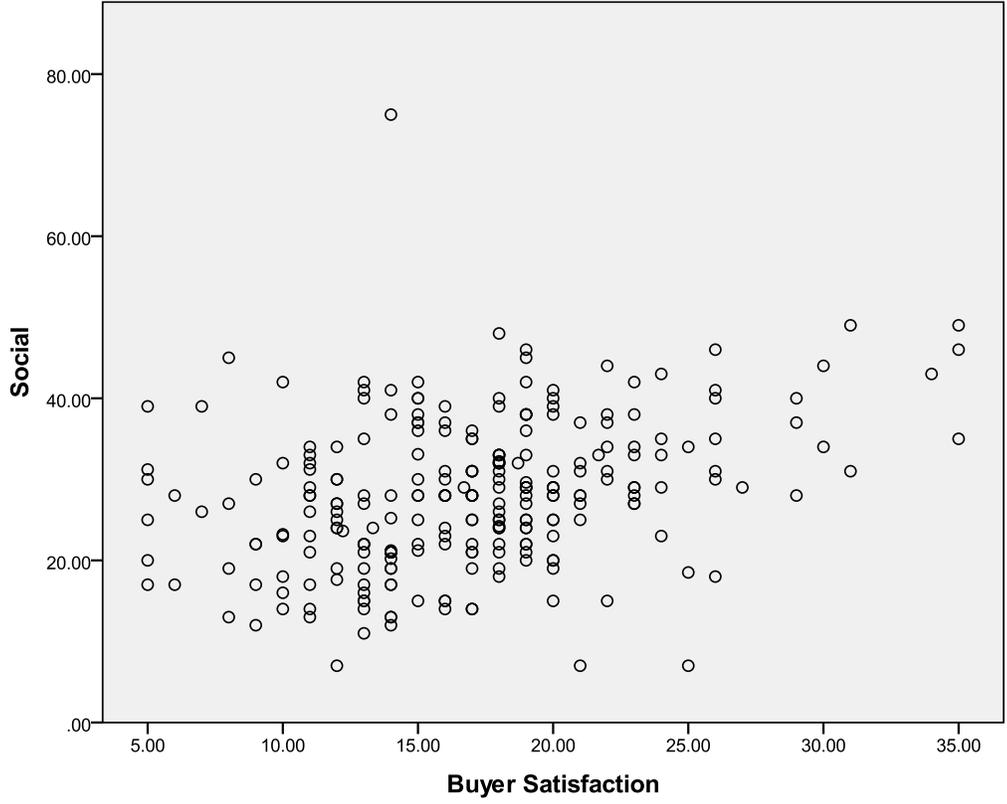


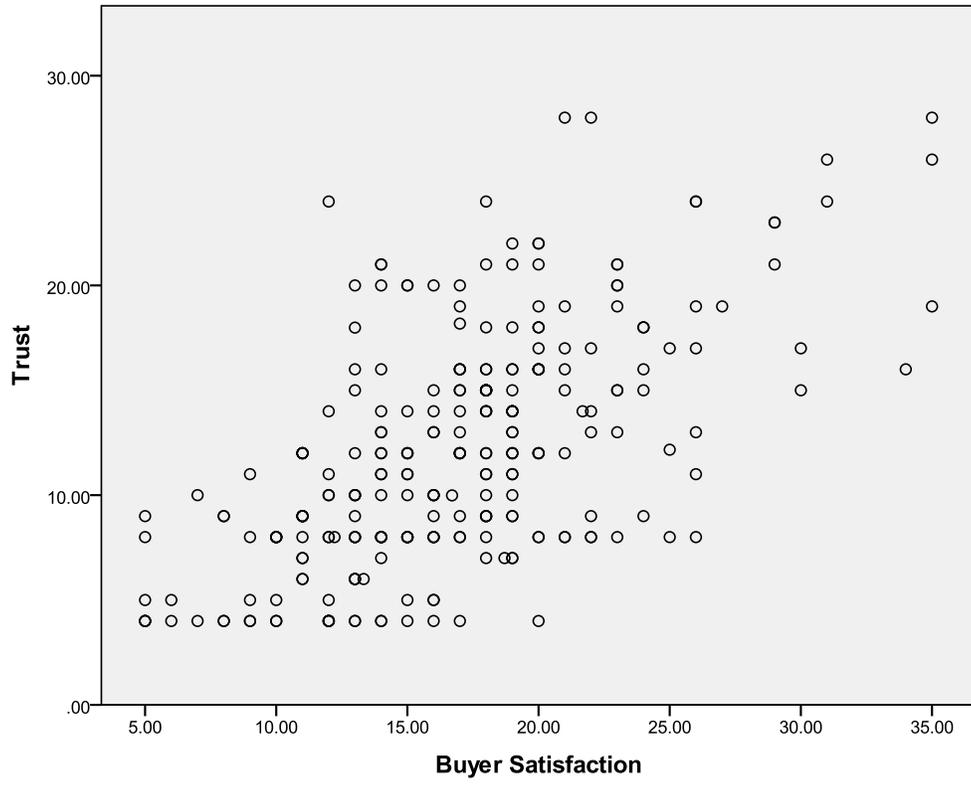


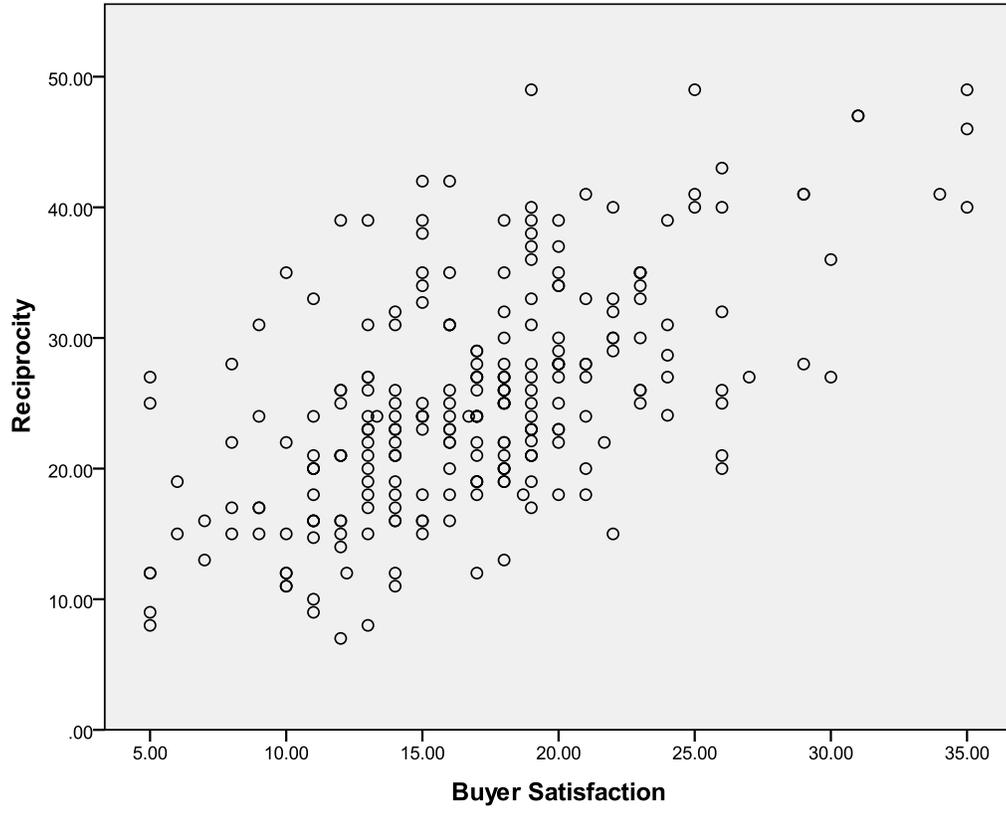


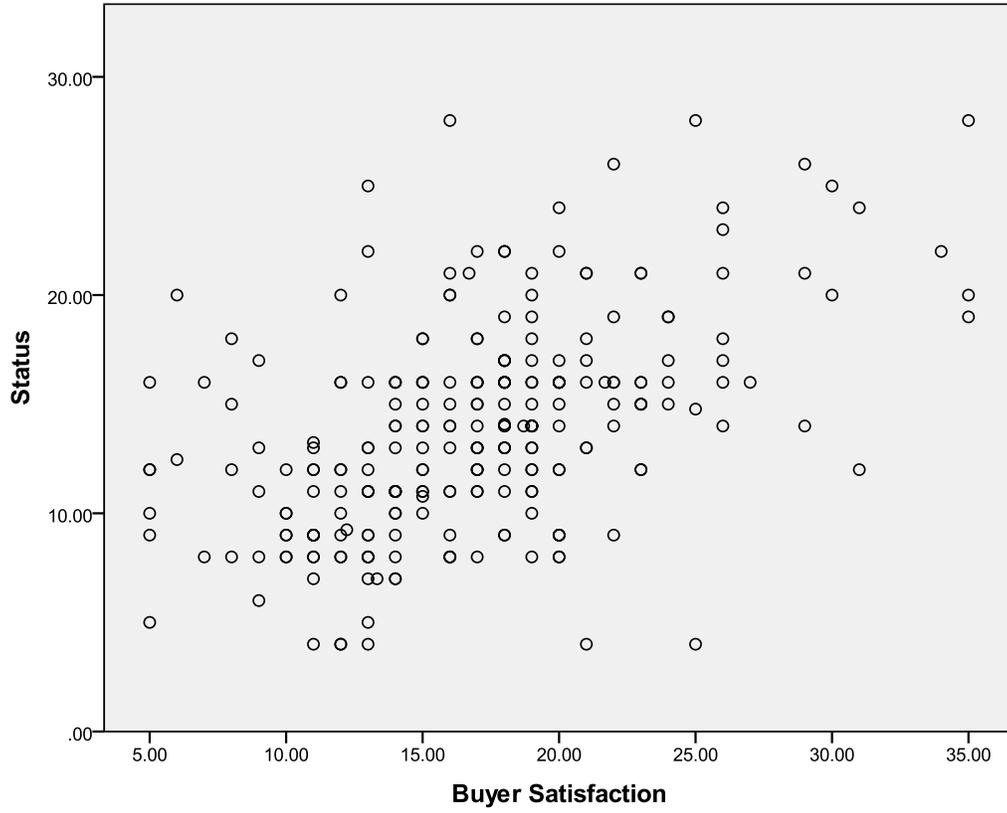


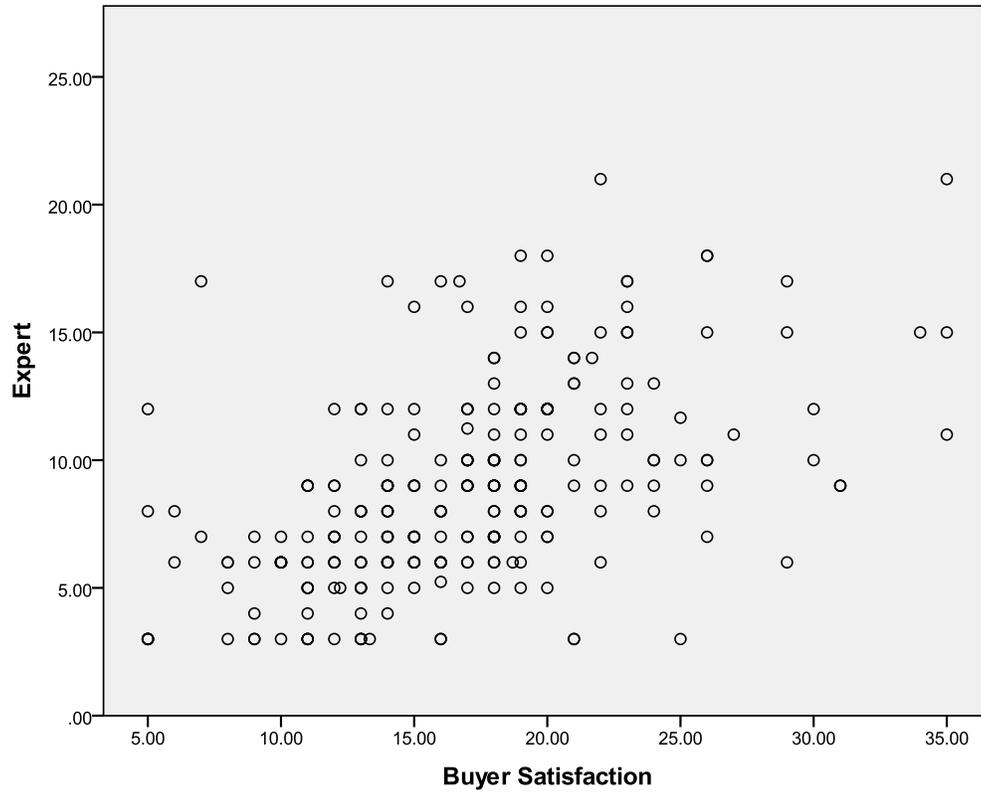


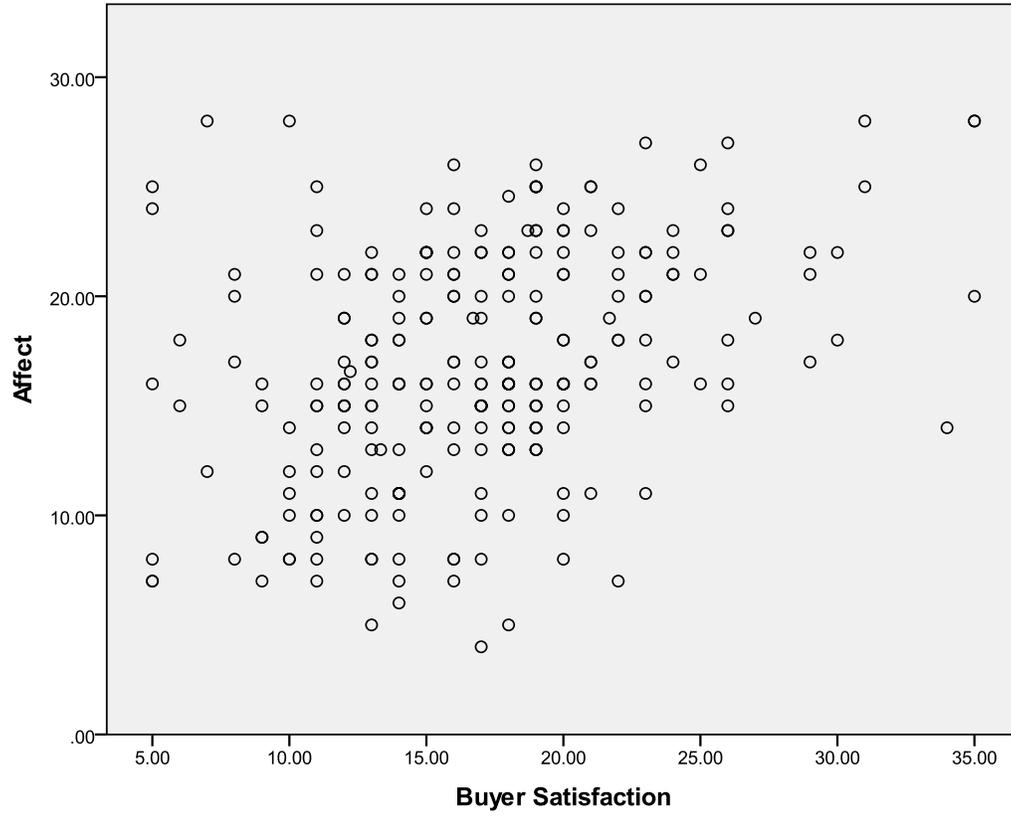


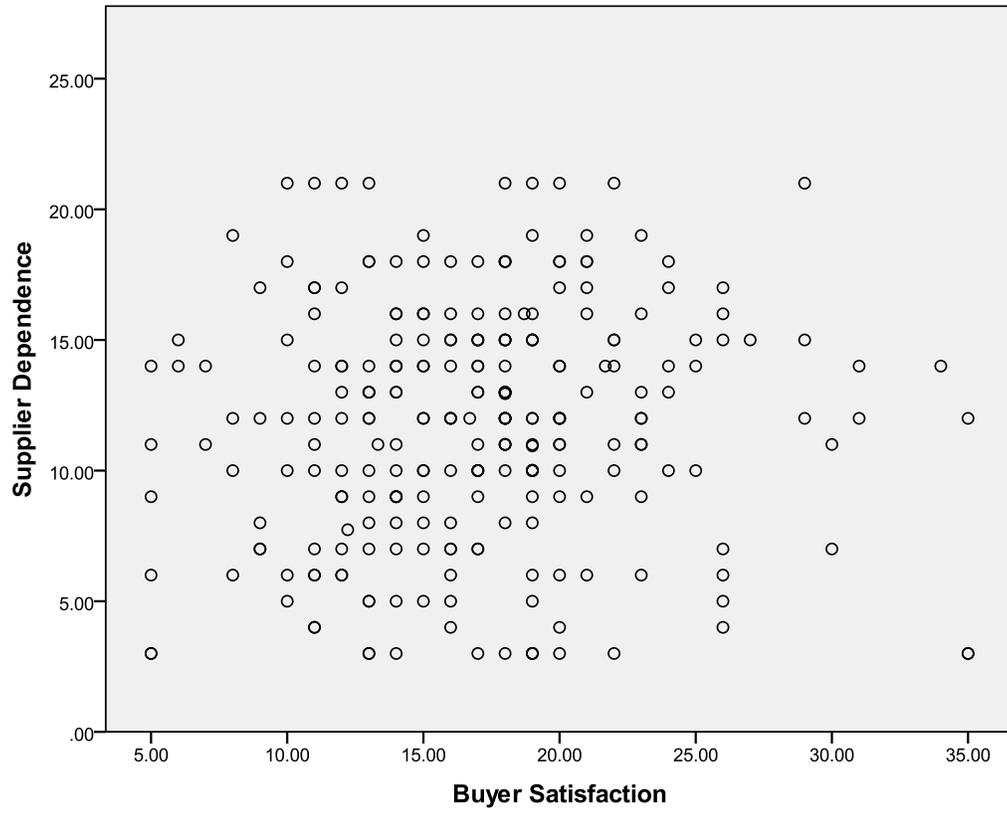


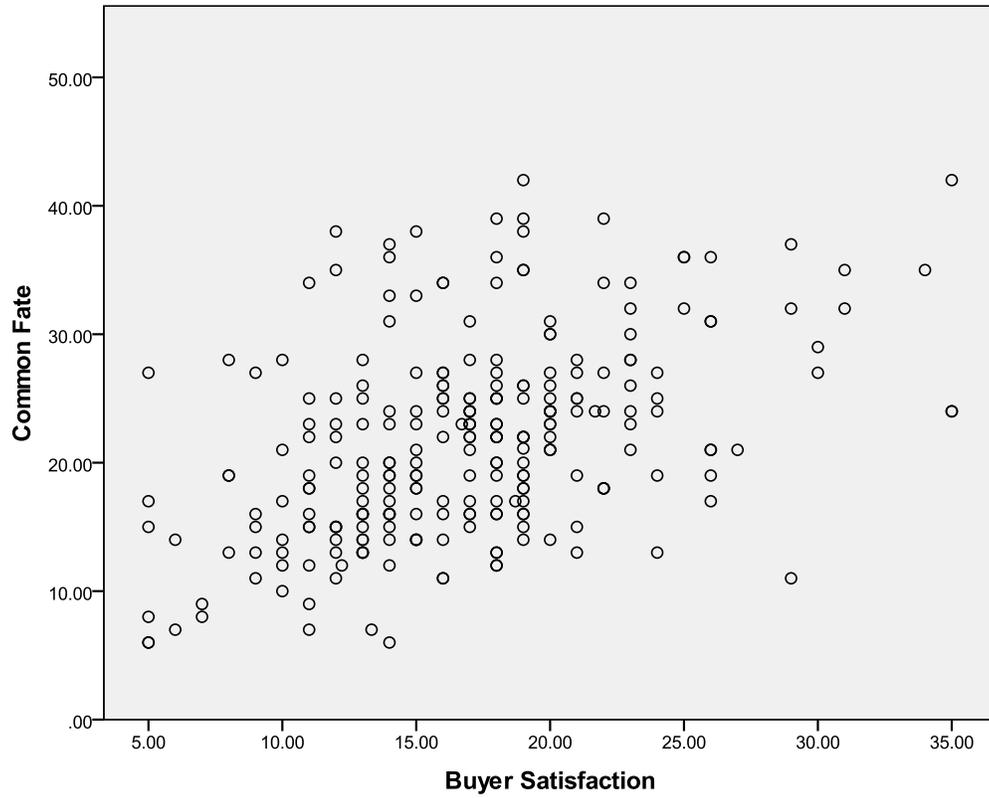


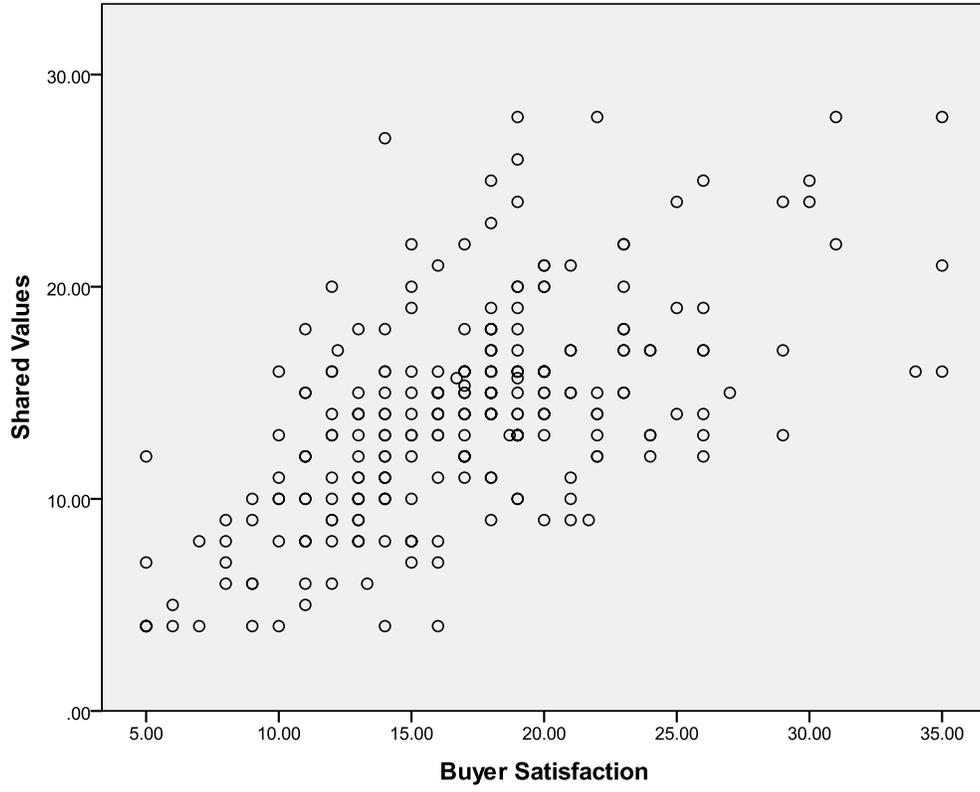


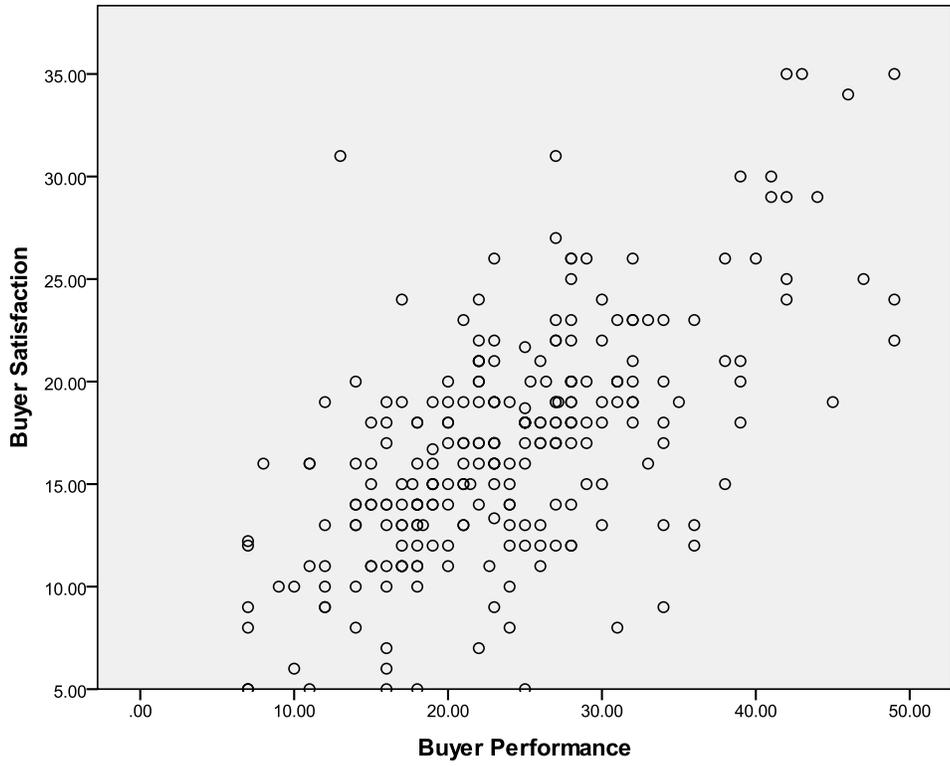












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