THE CHAIN OF COMMUNICATION: A STUDY OF COMMUNICATION AND MULTIPLE ORGANIZATIONAL IDENTIFICATION IN SUPPLY CHAINS

THESIS

Presented to the Graduate Council of
Texas State University-San Marcos
in Partial Fulfillment
of the Requirements

for the Degree

Master of ARTS

by

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San Marcos, Texas
May 2008

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DEDICATION

To my wife.

ACKNOWLEDGEMENTS

An array of people played a major part in making this thesis possible. First, I would like to thank all the members of the Department of Communication Studies at Texas State University-San Marcos for your help and guidance in completing this thesis. Specifically, I would like to thank Dr. Keri Stephens for her help in getting this project off the ground and for supporting me every step of the way, Dr. Phil Salem for bringing me back to the ground, and Dr. Mary Hoffman for keeping me in touch with the real world. I would also like to thank Dr. Steven Beebe for providing departmental support through this project and for providing additional encouragement through the Communication Studies graduate program. Additionally, I thank Dr. Lee Williams for answering many statistical questions while I was writing this thesis and Dr. Cecilia Temponi for providing a solid expertise in supply chains. I thank also Sue Hall and Sondra Howe for helping me navigate the bureaucracy.

On a personal note, I would never have been able to complete this project if it were not for the continued support from my family. So, I wish to thank my wife for always lovingly supporting me in this and in all endeavors in my life. I also wish to thank my parents, my grandparents, and my sister as they have always been there for me. Thank you all.

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ABSTRACT

THE CHAIN OF COMMUNICATION: A STUDY OF COMMUNICATION AND MULTIPLE ORGANIZATIONAL IDENTIFICATION IN SUPPLY CHAINS

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May 2008

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Previous studies concerned with supply chains have not delved very deeply into the communicative aspects on which supply chains are built. This study examines the role that communication quality in multiple communication channels and that multiple organizational identification play in the supply chains. Specifically, it examines how these predictor variables affect the performance, profitability, satisfaction, and trust in members of supply chain alliances. The results demonstrate that communication greatly influences the outcome variables in question, while organizational identification with any target has no meaningful role. It also shows that quality communication in the channels of electronic mail and of the telephone have the most profound effect.

CHAPTER 1

INTRODUCTION

The business world has become increasingly specialized, interdependent, and reliant upon communities and networks of organizations to achieve competitive advantages. The vehement and recent eruption of supply chains is evidence to this effect. A supply chain is a type of interorganizational relationship in which two or more autonomous organizations work collaboratively together to provide a product or service to another entity (Lummus & Vokurka, 1999). They are typically found within some of today's most powerful organizations, such as Wal-Mart, Dell Computers, and Toyota, and have become a key component to such organizations' business strategies.

By continuously providing individual firms with numerous competitive benefits, the mere presence of these supply chains have created environments in which competition can no longer be defined as business versus business but as supply chain pitted against supply chain in the competition for resources (Henkoff, 1994; Spekman, Kamauff, & Myhr, 1998). These types of relationships, however, are not simple automated links of two dimensional organizational processes (Mentzer, Min, & Zacharia, 2000). They are best represented as complex and multidimensional interorganizational strategic alliances having communicative processes that trump the complexity of the supply chain networks themselves (Li & Lin, 2006).

Within these supply chains, communication and coordination are critical to maintain sufficient levels of performance (Fynes, Voss, & de Búrca, 2005; Li & Lin, 2006; Morh & Spekman, 1994; Yu, Yan, & Cheng, 2001; Zhao, Xie, & Zhang, 2002). Organizations enmeshed within them simply cannot afford to maintain older intraorganizational (or worse intradepartmental) ideologies alongside their interorganizational goals as this can become quite costly if not detrimental to all players involved (Brewer & Speh, 2000; Emiliani, Stec, & Grasso, 2005). The end goal of all organizations involved in supply chains is to maintain profitability by sharing information, value, and even risks (Beamon, 1999; Brewer & Speh, 2000; Das & Teng, 2000). To achieve this goal, however, quality interorganizational communication is one major factor critical for success. Even though this prerequisite of communication seems obvious, we have little communication-based empirical research examining specifically how communication functions in supply chains. The purpose of this study is to explore the various communicative factors related to supply chains from the perspective taken within the field of communication. This study specifically focuses on how these communicative factors affect the dependent variables of *alliance performce, profitability, overall satisfaction with the interorganizational relationship,* and *interorganizational trust.*

Supply chains, like any complex organization, are susceptible to a number of organizational phenomena, such as organizational identification. Organizational identification is a social process in which organizational members define themselves in relation to a given firm or organization (Ashford & Mael, 1989; Garud, Raghuram, & Wiesenfeld, 1998; Mael & Ashford, 1995). This process occurs when an individual sees

himself or herself as a part of a given organization, accepting the given organization's objectives, goals, and values as the individual's own (Barge & Shlueter, 1988; Cheney, 1983a; Hall, Schneider, & Nygren, 1970). All individuals, at any given time, find themselves affiliated with a number of organizations or groups (Scott, 1997; Scott et al., 1999; Scott & Fontenot, 1999; Scott & Stephens, 2005). These multiple affiliations result in multiple simultaneous identifications with multiple distinct organizations and groups (Scott et al., 1999; Scott & Fontenot, 1999). Individuals who work in supply chains are not exempt from experiencing multiple identifications as they, by the very nature of their interorganizational dependency, have multiple affiliations with multiple organizations. Research to date, however, has not addressed the nature and effects of multiple identification in the specific setting of supply chains.

The next communicative variable of interest to this study, that is omnipresent in supply chains, is the quality of interorganizational communication in various communication channels. A communication channel is the media used to transmit and receive messages to and from others (Putnam, 1982). In more traditional views of communication, senders—those who are transmitting information to others—send messages to receivers—those who are receiving the encoded information—using a variety of communication channels (Berlo, 1960). In organizations, these channels include face-to-face interactions, the telephone, electronic mail, instant messaging, and many others (Rice & Shook, 1990; Salmon & Joiner, 2005). Management, logistics management, marketing, and economics researchers have studied the communication present in supply chains and have found that good interorganizational communication within a supply chain affects the performance of interorganizational relationships in a

positive way (Fynes et al., 2005; Heide & John, 1992; Krishna et al., 2006; Li & Lin, 2006; Mohr & Spekman, 1994; Yu et al., 2001; Zhao et al., 2002). They have also found that supply chains have a very high failure rate (Das & Teng, 2000; Kelly, Schaan, & Joncas, 2002) and that they fail primarily because of communicative centered issues (Fawcett, Ogden, Magnam, & Cooper, 2006; Kelly et al., 2002; Wildeman, 199) The idea that "good" communication in interorganizational relationships has positive outcomes for supply chains is also enmeshed in the general supply chain management literature, which insists that some form of communication is critical for a general profitability across the whole supply chain (Brewer & Speh, 2000). Although good communication is critical for success in any complex organization, none of these studies examined the communication quality in specific channels. These same studies have also not delved into the specific channels in which communication occurs in supply chains, nor have they studied communication with the precision that inherently accompanies communicative perspectives.

This means that the current understanding of communication in supply chains is limited and offers an opportunity for more extensive exploration in multiple channel contexts. The impetus for this study is thus to understand the critical communicative properties of interorganizational relationships that determine their success or failure. This study will therefore address this need and examine the communicative factors involved in supply chains and analyze how these same variables found affect the overall performance of supply chains.

Three specific independent variables, which are communicative by nature, are of interest to this study. Specifically, this study will use *multiple organizational*

identification in the form of *organizational identification with the partner firm* and *organizational identification with the parent organization* along with *interorganizational communication quality in the communication channels of the telephone, electronic mail, face-to-face situations, and instant messaging* as the independent variables of interest. The dependent variables in this study will attempt to gauge the overall performance on various levels and include: *alliance performce, profitability, overall satisfaction with the interorganizational relationship,* and *interorganizational trust.*

Method

The present design for this study is that of an *ex post facto* design with a compound sampling methodology. An *ex post facto* design examines the relationship between variables of interest at a given moment in time. It is capable of demonstrating various degrees of associations and relationships among the given variables and differences among distinct groups. Paired with regression analyses, it can even explain the variance of variables; however, it cannot demonstrate absolute causality. Multiple sampling methods were used since this study sought a sample of working professionals and sought to expand the sample with additional participants.

This study is primarily concerned with how the independent variables of *organizational identification with the partner firm, organizational identification with the parent organization,* and *interorganizational communication quality in various communication channels* correlate with the dependent variables of *alliance performce, profitability, overall satisfaction with the supply chain,* and *interorganizational trust.* It is also concerned with the amount of variance in the dependent variables that can be explained with the same independent variables. To determine these relationships, this

study used Pearson product-moment correlations to test the hypotheses and multiple regression analyses to address the research questions. It also conducted a *post hoc* analysis where fitting.

Summary and Preview

This chapter has introduced the relevant concepts, theories, and contexts of this study. The next chapter discusses the relevant literature on supply chains, on organizational identification, on interorganizational communication quality, and on the dependent variables of interest to this study. In doing so, it more deeply explores the communicative centered literature on multiple organizational identification and literature on interorganizational communication. It also takes the opportunity to define what supply chains are, the motivations for their creation, their internal processes, their current outcomes, and the factors driving their successes and failures. It presents a more detailed view of the theoretical base through which this study analyzes these entities. The final part of the literature review discusses the variables of interest to this study in a more detailed manner and presents the various hypotheses to be tested and research questions to be answered.

In the chapters following the review of literature, this thesis then describes the methodology and operationalization of the variables, discusses the sample and sampling procedures, presents the statistical procedures with the findings that address the hypotheses and research questions, and discusses the practical and theoretical implications of these findings.

CHAPTER 2

LITERATURE REVIEW

Chapter Preview

This chapter discusses the relevant literature on supply chains, the theory base employed, and the variables that are analyzed. It begins by defining what supply chains are, by highlighting their benefits, and by illuminating their current problems. Next, it introduces the dependent variables of interest to this study. It then discusses game theory, the theory used to analyze these supply chains. Following this discussion it presents the concepts of organizational identification and interorganizational communication quality, the independent variables of interest to this study. It explores the communicative centered literature related to these concepts and presents the hypothesis to be tested as each concept is explored to detail.

Supply Chains and Strategic Alliances as a Contemporary Interorganizational Relationship

A supply chain is a type of interorganizational relationship in which two or more autonomous organizations work collaboratively to provide a product or service to another entity (Lummus & Vokurka, 1999). It houses the process of "moving goods from the raw-materials stage through to the end user," which includes "sourcing, procurement, production scheduling, order processing, inventory management, transportation,

warehousing, and customer service" (Quinn, 1997, p. 43). There are also many ways of referring to it. Since the supply chain is not a simple two-dimensional linking of organizations, Thomas and Griffin (1996) refer to it as a "supply chain network" (p. 2). Walton (1996) uses the term, "supply chain partnership" as it is also a dependent partnership (p. 57). And Selen and Soliman (2002) employ the term "demand chain" since they see it as driven inherently by demand or "pull" processes (p. 667). Other notable characteristics of supply chains are that they inherently posses the processes of boundary spanning and function spanning that work to link organizations and tend to focus on creating either efficient processes, responsive processes, or a balance between the two (Brewer & Speh, 2000).

A supply chain can also be considered a type of strategic alliance—an interorganizational agreement of cooperation with a harmony of goals—and therefore, the literature that addresses strategic alliances also applies to the study of supply chains (Das & Teng, 2000; Parkhe, 1993; Tucci, Kaufman, Wood, & Theyel, 2005). Firms create these supply chain-type relationships for a variety of reasons (Das & Teng, 2000; Parkhe, 1993). They do so to form joint ventures, exploit research and development opportunities, create joint-marketing agreements, create organizational learning opportunities, and to establish and maintain buyer-supplier relationships (Das & Teng, 2000; Inkpen, 2005). Firms can also fill organizational gaps—resources or expertise that firms lack—by forming supply chains (Das & Teng, 2000). Some even find that by doing so they gain legitimacy in a market (Chen & Chen, 2002), and still some use the forming of supply chains to learn from their partner organizations (Love & Gunasekaran, 1999; Spekman, Spear, & Kamauf, 2002; Wu & Cavusgil, 2003). Their main stated goals of

forming supply chains and staying competitive tend to be unit cost reduction, waste reduction, flexible response, and time compression (Brewer & Speh, 2000). The main reason for forming any interorganizational relationship, however, is typically a matter of economics. Firms find that they can be more profitable, more productive, and more innovative in supply chains than by operating independently (Feams, Looy, & Debackere, 2005; Koza & Lewin, 1998; Ojah, 2007; Oum, Park, Kim, & Yu, 2004). They are also able to provide products at more competitive prices, thus benefiting consumers (Brewer & Speh, 2000). The financial advantages of these alliances even extend to investors, in a very slight manner (Burton, 2007).

With these numerous benefits in mind, in recent years the number of supply chains has exploded (Das & Teng, 2000). These supply chains can be exclusively domestically focused as well as internationally focused (Moskalev & Swenson, 2007; Fujita & Thisse, 2006). They also find themselves in a variety of industries as well, from high-tech fields to airline industries to grocery industries (Lummus & Vokurka, 1999). Although supply chains have become almost ubiquitous in today's business world, they do not always have positive outcomes with substantial profits for all players involved (Adobar, 2005; Chen & Chen, 2002; Das & Teng, 2000; Kelly et al., 2002; Wildeman, 1998). The first problem that strikes these types of relationships is a high failure rate (Kelly et al., 2002). Studies found that between 50% and 70% of all types of interorganizational relationships fail within the first two years of inception (Das & Teng 2000; Kelly et al., 2002). Vast numbers of risks accompany them as well; these risks include those associated with: managing property, managing knowledge, maintaining control, achieving partner fit, managing collaboration, planning for the future (Das &

Teng, 1999). Power inequities also exist in supply chains (Chen & Chen, 2002; Das, 2006; Feldman & Müller, 2003). Chen and Chen (2002) found that equal sharing of the benefits between the partners in supply chains was not always the case as smaller firms tended to have significantly less power than the larger ones. Some partners have even been shown to exploit the goodwill of their respective partner firms (Das, 2006), and some found that the assumption that partners in supply chains act altruistically is a critical error (Feldman & Müller, 2003).

There are a number of possible causes for the problems within supply chains and their failures (Fawcett et al., 2006; Kelly et al., 2002; Wildeman, 1998). Some cited a lack of complementary skills (Wildeman, 1998), and some cited a lack of coordination and a lack of organizational commitment (Fawcett et al., 2006). However, the root of this high failure rate is not entirely a management issue as the main reason for these failures is a lack of attention given to more communicative and soft issues (Kelly et al., 2002; Wildeman, 1998). In a study of 59 high-tech Canadian companies involved in interorganizational relationships, Kelly et al. (2002) found that communication related issues (including “communication problems,” cultural problems, and role problems) accounted for the vast majority of the problems. More specifically, they found that communicative problems, coded as “relationship problems,” accounted for 55.1% of the difficulties of formed strategic alliances while “operations” (problems about technical aspects of the alliance) accounted for 29%, “strategic agenda” (problems related to the goals of a joint venture), and “results” (problems having to do with the performce of the alliance) accounted for the remaining 29%, 11.2%, and 4.7%, respectfully. Furthermore, they found that “relationship problems” occurred in more specific contexts that they

divided into “communication” problems (accounting for 50% of this category of problems), “culture” problems (accounting for 29.7 %), and “role and responsibilities” (accounting for 20.3%). Research conducted by Wildeman (1998) and his subordinates at KPMG Alliances, Networks and Virtual Organizations, Freek Erens, Richard Stoffelen, ad Frans van de Ven, had similar findings. They found that in almost 70% of the cases of premature disbanding, the main causes of this negative outcome were problems having to do with “the relationship” or those of a softer and more communicative nature, including “culture,” “trust,” and “commitment” (Wildeman, 1998, p.104). The above research taken in sum points to communication related factors being significant predictors of supply chain success, and thus, these factors must be better understood from a solid communicative perspective.

Common Outcomes

Supply chains can be evaluated by multiple standards. Common ways of doing so involve measuring the performance, the profitability, the amount of satisfaction, and the levels of trust of pairs of firms operating in a supply chain type relationship. The dependent variables of the present study assess the overall performance of the supply chain network in this same manner. Since this can be measured in many ways, this study evaluates supply chain performance with the following variables: (1) *alliance performance* (a measure of goal accomplishment), (2) *profitability* (an objective but inexact and nonproprietary measure of the attainment of financial goals), (3) *overall satisfaction with the supply chain*, and (4) *interorganizational trust*. All of these variables can be operationalized using existing and reliable measures. This section will use the extant literature relevant to this study to first explore the dependent variables.

Alliance performance. Within the strategic alliance literature, researchers define *alliance performance* in a multitude of ways (Ariño, 2003; Krishna et al., 2006). Zaheer et al. (1998) saw it related to levels of conflict and ease of negotiations. Ariño (2003), in a study specifically analyzing this construct, saw strategic alliance performance ultimately as a process of partners' goal accomplishment. Bstieler (2006) viewed it composed of four measures: satisfaction, continuity, financial success, and time efficiency. Noting that the objective and subjective measures of this construct are highly coordinated, Krishna et al. (2006) believed that it is well defined as subjective measures of satisfaction from the perception of performance of strategic alliance. Their definition touches upon goal fulfillment and financial performance, and this definition will serve as the base of this construct in the current study.

Profitability. Bstieler (2006) defined profitability as the financial performance of the strategic alliance. Although the constructs of profitability and alliance performance overlap slightly, this construct is more objectively based. It is not, however, based on a mathematical function since obtaining actual financial data from private firms, in many cases, would be extremely difficult and viewed as excessively invasive, but it does represent the reality of financial goals obtained (Bstieler, 2006).

Satisfaction with the supply chain. Many researchers have defined this form of interfirm satisfaction as a sub-construct of performance (Bstieler, 2006; Krishna et al., 2006). Yilmaz, Sezen, and Kabaday (2004), looking at supplier-buyer relationships, saw it as an appraisal of every aspect of the supplier-buyer relationship. This study follows Bstieler's (2006) view that satisfaction with the strategic alliance is defined as achieving the presupposed expectations of the relationship.

Interorganizational trust. In the literature of supply chains and strategic alliances, research examining the variable of interorganizational trust is quite prevalent (e.g., Fynes et al., 2005; Krishna et al., 2006; Morgan & Hunt, 1994; Ratnasingam, 2005; Zaheer et al., 1998). The literature generally defines interorganizational trust as the scope of trust given to partner organizations by members of an allied firm (Zaheer et al., 1998). More specifically, it also is the expectation that one firm will not act opportunistically and "betray" the goodwill or vulnerability of a partner firm (Adabor, 2005; Sako & Helper, 1998). Looking more deeply into this construct, Zaheer et al. found that interorganizational trust is composed of three related sub-constructs: reliability, predictability, and fairness. This form of trust is seen as a construct distinct from interpersonal trust, although the two are related in that interpersonal trust is needed to form interorganizational trust (Zaheer et al., 1998).

As an independent measure, interorganizational trust greatly impacts strategic alliance performance in a variety of ways (Krishna et al., 2006; Ratnasingam, 2005; Zaheer et al., 1998). In a study of 205 purchasing managers, Zaheer et al. found that interorganizational trust and the cost of negotiations are negatively correlated and that there is a direct relationship between interorganizational trust and performance. Krishna et al. (2006) also had similar findings. Krishna et al., in a survey study of 126 boundary spanners working within international strategic alliances functioning from India in the manufacturing sector, found that trust and performance were strongly correlated. Furthermore, Ratnasingam (2005) found that trust developed from solid, dependable, and reliable electronic infrastructure and can even evolve into deeper levels of interfirm trust.

Considering the importance of trust, this study will use Zaheer et al.'s widely applied definition of trust.

Supply Chains as a Game

A game theoretic perspective is quite enlightening when applied to the study of supply chains (Parkhe, 1993). Game theory states that parties (or players) involved in a game will ultimately act in a manner that best reflects their own interests even at the expense of a partner. This theory also posits that there are a range of possible outcomes from "win-win" to "win-lose" to "lose-lose," depending on the nature of the game, the possible resources at stake, and the players involved. Partners may elect to play it safe and cooperate and thus create a "win-win" outcome. Partners have the option to create "lose-lose" situations. Partners also have the option to betray their counterparts and act opportunistically.

Translating this theoretical view to supply chains indicates that individual firms have a range of possible behaviors in their respective supply chain. They can elect to "betray" their respective partner firms with which they operate and reap the short-term economic benefits, and in most cases, this would lead to a premature termination of the strategic alliance. However, firms can also choose to look toward the long-term and anticipate greater future rewards and greater long-term value in a given supply chain. If partner firms elect this option, they will share information, resources, forego opportunities to act opportunistically, establish good long-term relationships, and ultimately share profits for years to come (Parkhe, 1993). This later situation represents the ideal type of relationship needed to have a high performing and highly profitable strategic alliance or a supply chain (Brewer & Speh, 2000; Chandra & Kumar, 2000).

Game theory can be paired with Mentzer et al.'s (2000) theory of partner orientation. This theory states that once the supply chains are formed, they can exist anywhere on a continuum between a more long-term or "strategic partnering orientation" or a more short-term "operational partnering orientation" (Mentzer et al., 2000, pp. 551-552). This perspective provides a more concrete way of classifying the state of a relationship in which a given supply chain is operating. By combining these theoretical perspectives it appears that individual members of partnerships will examine their game theoretic options and choose a place of existence on a continuum, tending to be either more strategic (in it for the long run and have an enduring relationship) or more operational (in it for short-term gains and act in "selfish manners"). By deciding what their goals for the interfirm relationship are, individual members of an alliance will choose a place of existence on Mentzer et al.'s partner orientation continuum, and this will reflect how the individual players (the organizations) play the game of the supply chain.

This unique combination of the game theoretic perspective and the theory of Mentzer et al.'s (2000) partner orientation continuum can be used to examine a multitude of dynamic factors that interact within supply chains, and these may therefore explain the origin of the unstable nature of the relationship between firms. These concepts can be used to analyze various theoretical constructs of supply chains with the general idea that anticipation of future rewards from cooperation will in turn lead to cooperation, which can be seen in the many communicative aspects of the interfirm relationship. This will lead to higher inputs into a system of alliances and thus lead to higher outputs, which will be reflected in overall performance. These perspectives also explain how lower

cooperation (which again will be reflected by the communication) will lead to lower inputs and lower alliance outputs (which will be again seen in the performance level). Once one determines how the supply chain game is being played, one can then label the relationship on Mentzer's relationship continuum and draw additional conclusions about a given supply chain relationship.

Multiple Organizational Identification

All humans are naturally driven to bracket and classify the world in order to make sense of complex social phenomena (Ashford & Mael, 1989; Weick, 1995). Consequently, all individuals classify themselves and other individuals into multiple social categories (Tajfel & Turner, 1986), and this same process is prevalent in organizations of all types (Ashford & Mael, 1989). When this process occurs in the intraorganizational and interorganizational contexts, as it inevitably does, this leads to a sense of social identity in relation to organizations (Ashford & Mael, 1989; Mael & Ashford, 1995). Organizational identification is thus a form of social identification and is one of the results of the human sensemaking mechanism at work. Organizational communication, social science, rhetorical inquiry, and management research have all explored the topic of identification and found multiple ways to define it (e.g., Ashford & Mael, 1989; Barge & Shlueter, 1988; Burke, 1950, Cheney, 1983a; Cheney 1983b, Cheney & Tompkins, 1987; Garud et al., 1998; Miller, Allen, Casey, & Johnson, 2000; Thatcher & Zhu, 2006). They find it, however, to be a sense of similarity that organizational members share and use to define themselves in relation to any given firm or organization (Ashford & Mael, 1989; Garud et al., 1998; Mael & Ashford, 1995). Furthermore, these researchers see it as the extent to which organizational members

accept a given organization's objectives, goals, and values as their own (Barge & Shlueter, 1988; Hall, Schneider, & Nygren, 1970; Tompkins & Cheney, 1985).

There is little doubt of identification's importance in the context of multiple organizational outcomes. Organizational identification is negatively correlated with the intention of employees to leave a current organization, meaning that higher levels of identification with a place of work, in general, indicate less employee turnover and an overall more profitable business (Cole & Bruch, 2006; Scott et al. 1999). More specifically, Scott et al. (1999), in a study of 97 government employees, found that identification with a subunit in an organization along with supervisor and coworker relationships were significant predictors of intent to leave the organization. They also found that identification was built upon good communication. Reconfirming Scott et al.'s (1999) findings and expanding it to include various hierarchical levels of organizations, Cole and Bruch (2006) found that organizational identification was also negatively correlated with the intention of employees to leave an organization. Using a sample of roughly 3,000 individuals in three hierarchical classifications (workers, middle-managers, and officers) from multiple companies in India, they additionally found that identification seemed to matter most at the lower levels of the organization, i.e., in the *worker* group of this study. Also, in support of Scott et al.'s (1999) findings, George and Chattopadhyay (2005) also found, using a sample of 307 employees from four organizations, that identification with the client organization was associated, and possibly built upon "quality relations with colleagues and supervisors," which rests upon a communicative foundation (p. 89). Hall, Schneider, and Nygren (1970) studied 158 workers from almost 40 years ago in a more traditional organization of the U.S. Forest Service and found that

identification grew and became more important as workers' tenure in the organization increased. They also found it related to satisfying workers' higher order needs. In line with these findings, Scott and Stephens (2005), in a study of 174 volunteers of an arts organization, found that identification predicted job satisfaction.

Although the above conclusions about identification are undoubtedly important in the organizational context, the complete human social environment is more complex than a simple direct correlation between a given individual and a given organization (Ashford & Mael, 1989). Human beings, by their very nature, belong to various groups and organizations outside of their principal places of work, and consequently, identify with multiple organizations at any single point in time (Scott, 1997; Scott et al., 1999; Scott, & Fontenot, 1999; Scott & Stephens, 2005). These multiple identifications can be found within primary organizations of employment, within additional outside organizations with which one is loosely affiliated, and within any number of the multiple social institutions such as families, religious groups, or intraorganizational workgroups (Ashford & Mael, 1989; Scott & Fontenot, 1999). This situation of multiple affiliations results in multiple positions of simultaneous identification with many other separate organizations and multiple intraorganizational groups (Scott & Fontenot, 1999; Scott et al., 1999).

Additionally, contemporary organizations are more complex than their predecessors and are filled with a variety of new processes that justify a reexamination of the multiple contexts in which organizational identification occurs (Scott & Timmerman, 1999; Thatcher & Zhu, 2006). Examples of this new complexity are seen in supply chains where boundary spanners—people who span their employing organizations'

boundaries—are commonplace and regularly engage in interaction with multiple targets to achieve business goals (Brewer & Speh, 2000; Noble & Jones, 2006). Those who work in supply chains or in other interorganizational relationships have multiple affiliations with multiple organizations. They are affiliated with their respective parent organizations—the organizations for which they work. With outside interaction, they also become affiliated with partner firms—the outside organizations with which they work but for which they do not work, and from which they do not typically receive a paycheck. Following social identity theory, one should find evidence of multiple simultaneous identification in supply chains. The effects and results of this phenomenon in the specific setting of supply chains are, however, unknown at this point, and thus this study explores identification with multiple targets in supply chains.

In the context of game theory, multiple organizational identification is an exemplar of a stance in game theory since it is an indication of long-term collaboration and cooperation in place of short-sighted competition. It would therefore also be an indication of better outcomes. In a supply chain or strategic alliance, boundary spanners are ubiquitous (Brewer & Speh, 2000; Noble & Jones, 2006), and individuals from various organizations interact constantly to achieve mutual goals. Individuals will naturally identify with partner firms as well as parent organizations. Identification with partner firms is an indication of cooperation and playing a game with a “win-win” objective in mind. It also leads to higher long-term outputs in a supply chain, and thus the following hypothesis is proposed:

H1: Higher levels of identification with a partner firm within a supply chain network are positively related to (a) performance of the supply chain, (b) profitability, (c) satisfaction with the supply chain, and (d) trust.

Furthermore, there are those who will have high levels of identification with their parent organization and not identify with partner firms. These individuals have not developed relationships with partner organizations and there will be less cooperation between themselves and others employed by other firms. However, one can clearly have high levels of identification with multiple targets and maintain high levels of identification with a parent organization (Scott, 1997). This leads to the following research question:

RQ1: How is organizational identification with parent organizations related to (a) performance of the supply chain, (b) profitability, (c) satisfaction with the supply chain, and (d) trust?

Interorganizational Communication Quality in Communication Channels

The research on interorganizational relations repeatedly notes the importance of communication. It crosses organizational borders and has become omnipresent, more complex, and increasingly important within all types of interorganizational relationships. Numerous studies have verified the importance of interorganizational communication quality in supply chain performance (Fynes et al., 2005; Krishna et al., 2006; Li & Lin, 2006; Morh & Spekman, 1994; Yu et al., 2001; Zhao et al., 2002). Good communication between entities in supply chains is one factor that has been shown to alleviate many of the inherent problems (Yu et al., 2001; Zhao et al., 2002). Focusing on supply chains, good communication has been shown to reduce the “bullwhip effect,” the lack of

coordination in demand between supply chain partners (Yu et al., 2001). Fynes et al. (2005) showed communication to be a sub-construct of relationship quality, and with a sample of suppliers in the electronic sector, showed that it positively impacted certain aspects of quality performance. Morh and Spekman (1994) also found that communication enhances satisfaction in the relationships between manufacturers and dealers. Furthermore Zhao et al. (2002) conducted a modeling simulation experiment and found that information sharing (i.e., communication) increased supply chain performance.

In reviewing the literature on effective interorganizational communication, one can easily see that there is little agreement on how to characterize this construct. Research presents terms such as *information exchange* (Heide & John, 1992; Zhao et al., 2002), *information sharing* (Yu et al., 2001), *communication* (Fynes et al., 2005), *quality of information exchanged* (Li & Lin, 2006; Monezka, Peterson, Handfield, & Ragatz, 1998), *communication quality* (Mohr & Spekman, 1994), and even *quality of information exchanged* (Krishna et al., 2006). Researchers do not discriminate "information" from "communication" nor do they discriminate "quality' from "effective."

One area of apparent agreement appears to be the importance of receiving adequate information. That is, the use of a particular channel is effective when the goal of the sender is to transmit needed information and the receiver obtains that information. Obtaining needed information has been the focus of much traditional organizational communication research (Daniels & Spiker, 1983; Galbraith, 1977; Kramer, 2004; Salem & Williams, 1984). Interorganizational research examined "communication quality" using the standard of adequacy (e.g. Fynes et al., 2005; Heide & John, 1992; Krishna et

al., 2006; Li & Lin, 2006; Morh & Spekman, 1994; Yu et al., 2001; Zhao et al., 2002). These studies researched interorganizational communication "quality" as the formal and informal "sharing of meaningful and timely information between firms" (Anderson & Narus, 1990, p. 44; Fynes et al., 2005, p. 341). Furthermore, these researchers developed measures that gauged the individual components that create this construct. The scales included indicators of adequacy, clarity, formality, frequency, and the timeliness of the information exchanged between partner firms in supply chains.

Most past research about interorganizational communication does not focus on the use of specific channels. A communication channel is the medium used to transmit and receive messages (Putnam, 1982). When communication occurs, senders of messages encode information and transmit it along these channels to receivers (Berlo, 1960). Within most organizations, individuals can select and use a variety of communication channels. These include but are not limited to: the telephone, face-to-face interactions, electronic mail, and instant messages (Pichert-Duthler & Freitag, 2004; Salmon & Joiner, 2005). Effective channel use occurs when individuals can fulfill goals (social or otherwise) in a communicative experience (Westmyer, DiCioccio, & Rubin, 1998). In interorganizational communication, one way the use of a channel is effective is if partners obtain needed information.

Prior research has examined these communication channel differences in general and has found a way to classify them and identify the underlying motivations for channel selection. Daft and Lengel's (1986) media richness theory claims that communication media (or channels) can vary in richness from being relatively lean, such as an office memo or electronic mail message, to rich, such as a face-to-face conversation. Along

with this descriptive claim, this theory supports the functional idea that organizational members believe there are appropriate channels for specific types of communication and operational tasks and that they select media depending on the needs of the task or the message (Daft & Lengel, 1986; Daft, Lengel, & Trevino, 1987). A complicated task or message, that is, a task or message of high ambiguity will require a relatively rich form of interaction in which multiple social cues are available along with a redundancy of cues. This reduces the probability of problems arising while communicating or while trying to accomplish various tasks. This theory also posits that using inappropriate forms of media or communication can result in confusion (Daft & Lengel, 1986; Daft et al.,1987).

Face-to-face communication is the richest form of communication, according to the media richness perspective (Daft & Lengel, 1986; Daft et al., 1987). Empirical literature that has examined this communication channel in comparison to others found that it was better for expressing emotions and resulted in more fulfilling and satisfying communicative experiences (Flahery, Pearce, & Rubin, 1998). Face-to-face communication cannot, however, overcome situational constraints such as distance or time while other mediated forms of communication can do so very easily (Rice & Shook, 1990). According to this literature, effective face-to-face communication is suited for the moment and place in which it occurs, and according to media richness theory, it is also more effective for non-routine and difficult tasks (Daft et al., 1987). Effective face-to-face communication occurs when one fulfills his or her desired goals in a face-to-face communicative exchange such as obtaining needed information.

Telephone based communication represents a leaner channel than face-to-face communication since it lacks many redundant social cues, but it is also richer than text-

based communication, such as electronic mail. In fact, the telephone was found to be a better channel for expressing emotions than electronic mail (Dimmick, Kline, & Stafford, 2000) and better for satisfying interpersonal needs than other written forms of communication (Westmyer et al., 1998). It also led to greater levels of relationship satisfaction than electronic mail could (Daiton & Aylor, 2002). Effective telephone communication is the ability to achieve one's desired goals within a communicative exchange that takes place over the telephone (Westmyer et al., 1998).

Electronic mail is an even leaner medium than both telephone based communication and face-to-face communication. It is often the preferred channel in the organizational context (Markus, 1994) and has been linked to the development of trust in interpersonal relationships (Daiton & Aylor, 2002). Effective interorganizational e-mail communication is the ability to achieve one's desired goals by using the channel (Westmyer et al., 1998).

Of the communication channels of interest to the present study, instant messaging is the leanest since, by its very nature, it is text-based and the messages which populate this channel tend to be very brief. Similar to electronic mail, using instant messaging as a communicative medium results in less fulfilling experiences than using richer forms of communication, but helps users communicate easily and inexpensively to others (Flanagin, 2005; Simon, 2006). It is often used between people who have already well-established relationships and among family members (Kim, Kim, Park, & Rice, 2007). Extending Westmyer et al.'s (1998) definition to instant messaging implies that effective instant messaging communication involves one's ability to achieve his of her goals by using this form of communication.

Although the past supply chain focused research demonstrated that communication was important (e.g., Fynes et al., 2005; Li & Lin, 2006; Morh & Spekman, 1994; Yu et al., 2001; Zhao et al., 2002), the respective views and definitions of communication contained in this research were rather primitive, linked to the various disciplines from which its scholars operate, and lacked the precision that accompanies a study from a communicative perspective. The present study formally adopts their definition of the construct of *interorganizational communication quality* as the formal and informal "sharing of meaningful and timely information between firms" (Anderson & Narus, 1990, p. 44; Fynes et al., 2005, p. 341). This aspect is the most developed definition because it is grounded in interorganizational empirical evidence, accompanied by validated scales, appropriate for analyzing supply chains, and it is consistent with the traditional organizational communication literature on information adequacy. This present thesis investigates the interorganizational communication quality of specific communication channels in a given supply chain relationship through face-to-face situations, telephone-based channels, the channel of electronic mail, and the channel of instant messaging.

Since little is known about the use of the various communication channels in complex supply chain relationships, and the relationships between the use of these channels and the dependent variables of interest is largely unknown, this study will explore these avenues. More specifically this study focuses on face-to-face communication, electronic mail usage, telephone based communication, and instant messaging in the context of supply chains. Considering that numerous studies have identified good communication as a predictor of good interorganizational relationships

(e.g., Fynes et al., 2005; Li & Lin, 2006; Morh & Spekman, 1994; Yu et al., 2001; Zhao et al., 2002) and that game theory would predict that good communication would be a sign of cooperation and thus a more productive relationship, this study proposes the following hypothesis with regard to the independent variable of *interorganizational communication quality* in relation to the various communication channels:

> *H2:* Interorganizational communication quality within a supply chain network in a given communication channel is positively related to (a) alliance performance of the supply chain, (b) profitability of the supply chain, (c) satisfaction with the supply chain, and (d) trust.

Additionally, this hypothesis raises the question of how individuals communicate in a supply chain. Specifically, it explores what communication channels they use and which are the most effective. Incorporating the communication channels of telephone, face-to-face, e-mail, and instant messaging yields the following two research questions:

> *RQ2:* Which of the four communication channels have the greatest effect on (a) alliance performance of the supply chain, (b) profitability of the supply chain, (c) satisfaction with the supply chain, and (d) trust?

Delving into this topic of inquiry even more, one finds that all of the above mentioned predictor variables (i.e., organizational identification and the communication quality in various communication channels) can possibly work together to affect the individual outcome variables. In addition to the above hypothesis, this study will also take the opportunity of having a multitude of variables to explore the following research question with a regression analysis:

RQ3: How do interorganizational communication quality in the various channels, identification with multiple organizations in the supply chain, and identification with a parent organization affect (a) alliance performance of the supply chain, (b) profitability of the supply chain, (c) satisfaction with the supply chain, and (d) trust?

Summary and Preview

The present section has reviewed the relevant extant literature on supply chains. It examined what supply chains are, the motivations for their creation, their internal processes, their current outcomes, and the factors driving their successes and failures. It also presented the theoretical base through which this study will analyze these entities. Lastly, this literature review discussed the variables of interest to this study in a more detailed manner by reviewing the relevant literature addressing them, and presented two hypotheses to be tested and three research questions to be answered.

Since these more theoretical aspects of the study need to be grounded in data, the next section delves into the methodological approaches. It discusses the sample, how variables are operationalized, and what measures are employed.

CHAPTER 3

METHOD

Chapter Preview

The present chapter describes the methodological approaches used to gather and quantify data. It opens with a brief discussion of the method and with a detailed discussion of the sampling procedure. It then discusses how the questionnaire was constructed and describes the scales used to operationalize the independent and dependent variables and closes describing the control variables.

Overview of Methodology

The design for this study is an *ex post facto* design surveying a sample of individuals employed in various supply chains. This study collected data from these participants at a single point in time. All variables were operationalized using extant measures.

Sample and Procedure

Virtually all of the literature reviewed in this study with a focus on supply chains or other types of interorganizational relationships obtained convenience or, in some cases, random samples of available employees of strategic alliances or supply chains. They studied participants who were boundary spanners (e.g., purchasing managers, buyers, supplier representatives, or supply chain managers). These types of samples tend

to work well as they provide a window into the operations of the various supply chains or strategic alliances of interest.

The present thesis used a slightly more complex sampling strategy resulting in a combination of two separate samples. The first sample obtained was a random sample of 700 individuals from a large United States based supply chain management organization. Those individuals sampled were from various places throughout the United States—representing every state in the nation—and worked in a variety of industries, in differing supply chains, and in varying capacities. The majority of those sampled were employed as buyers or employed in varying functions in purchasing departments, but their job titles indicated that there were a wide range of individuals sampled, from assistants in purchasing to vice president.

In this first sample, the participants of this study received a cover letter in the mail asking them to participate in this study. In exchange for completing an electronic questionnaire, I offered them an executive summary of the results of this study to give them a competitive edge in their respective working environments. The cover letter they received included a web address at which they were asked to complete the questionnaire posted on SurveyMonkey.com. They received one follow-up postcard to help increase the response rate. After I had taken this step, the response rate was very low, at 3.5%, with only 25 people completing the questionnaire. I then changed the sampling strategy to that of a snowball sample and obtained an additional 34 participants. These individuals of the snowball sample were solicited via e-mail, various association newsletters, and via word of mouth. Specifically, they were contacted via local supply chain associations across the United States. Additionally, I requested all participants to send an e-mail message to any

other individuals who had a similar job function. Although, 95 people began the questionnaire, many did not complete it. The entire sample resulted in 54 completed and usable questionnaires; however, 59 individuals completed some of the demographic questions. The responses of these 59 individuals who answered the demographic questions indicated that they worked in a variety of industries and had a number of job titles. More detailed demographic information can be found in the next chapter of this thesis.

The Data Collection Instrument

The instrument used to collect data was an electronic questionnaire. Appendix B contains an example of the data collection instrument used for this purpose. All of the content found in Appendix B displaying the data collection instrument was present in the electronic version of this instrument; however, it is worth mentioning that the electronic format of this instrument had a very different physical layout, which required participants to simply "click" their chosen responses and also required minimal scrolling with a mouse. The measures included on the questionnaire were laid out so that scales with the same number of responses were grouped together. This had the effect of making the electronic version of the questionnaire more pleasing to the eye and less complicated. Excluding the electronic consent form, the final page expressing gratitude for completing the survey, and the page requesting participants' e-mail addresses, the entire questionnaire had seven pages. In the instructions, participants were asked to think of a single relationship that they had or have with one specific person who is their main contact at a specific partner firm. To help participants keep these instructions in mind

while completing this questionnaire, these instructions were present on each of the six pages that asked any questions related to the interorganizational relationships of interest.

Dependent Measures

This section discusses the operationalization of the variables that were tested in this study. First, it discusses the dependent variables, and in a separate section discusses the independent variables. It uses slightly modified versions of existing and validated measures. The majority of the scales used in this study are either five point or seven point Likert-type scales with a few exceptions that will be noted. Each subsection discusses the details of each scale along with the preceding variables of interest. Appendix A of this study holds a summary of the measures and Appendix B holds the final instrument to be used for data collection purposes.

Alliance performance. The present study gauged *alliance performance* using a modified version of the measure developed by Krishna et al. (2006). In Krisha et al.'s (2006) study this scale demonstrated a Cronbach alpha reliability of .90. The present study almost matched this reliability score as it demonstrated a Cronbach alpha reliability of .89. It used a five point Likert-type scale ranging from (1) "strongly disagree" to (5) "strongly agree." Included in this instrument are the statements, "The objectives for which the collaboration was established are being met," "My organization is satisfied with the financial performance of the collaboration," "My partner firm seems to be satisfied with the overall performance of the collaboration," "My organization is satisfied with the overall performance of the collaboration," and "My partner firm seems to be satisfied with the overall performance of the collaboration." None of these items were reverse coded.

Profitability. This study measured *profitability* on Bstieler's (2006) scale, which in Bstieler's study, had a Cronbach alpha reliability of .96 and a reliability for this study of .90. The first item on this scale, "This project was a financial success," used a 10 point Likert-type scale ranging from (1) "way below expectations" to (5) "met expectations" to (10) "way above expectations." The next three items on the instrument, "The profits met the acceptable return for projects like this in your company," "The product met the company's sales objectives/expectations," and "The product met company's profit objectives/expectations," used a seven point Likert-type scale ranging from (1) strongly disagree to (7) strongly agree. None of the above items were reverse coded.

Satisfaction with the supply chain. This study measured *satisfaction with the supply chain* on Bstieler's (2006) scale, which, in Bstieler's work had a Cronbach alpha reliability of .97. and had a Cronbach alpha reliability of .91 in this study. It also employed a seven point Likert-type scale ranging from (1) "strongly disagree" to (7) "strongly agree." Included in this measures are the statements, "The results and benefits of this partnership met expectations," "This partnership realized the goals we set out to achieve," "The time and effort spent in developing and maintaining this relationship was worthwhile," "Our relationship with the partner company was productive," and "We were satisfied with this working relationship." None of these items were reverse coded.

Interorganizational trust. The present study also measured *interorganizational trust* employing Zaheer et al.'s (1998) widely used measure, which, in Zaheer et al.'s study, had a Cronbach alpha reliability of .76. It demonstrated a higher reliability score of .87 in the present study. As with the former measures, it employed a seven point Likert-type scale ranging from (1) "strongly disagree" to (7) "strongly agree." Included in this

measure are the statements, “Our partner firm has always been evenhanded in its negotiation with us,” “Our partner firm may use opportunities that arise to profit at our expense,” (reverse coded) “Based on past experiences, we cannot with complete confidence rely on our partner firm to keep promises made to us,” (reverse coded) “We are hesitant to transact with our partner firm when specifications are vague,” (reverse coded) and “Our partner firm is trustworthy.”

Independent Measures

As with the dependent variables, the majority of the scales used to measure the independent variables of this study were either five point or seven point Likert-type scales. Each subsection will discuss the details of each scale along with the preceding variables of interest. Again, this study used slightly modified versions of existing and validated measures to operationalize them effectively.

Identification with multiple organizations. Employing a slightly modified version of the identification questionnaire used by Scott and Stephens (2005), this study measured the levels of identification with multiple organizations in the supply chain networks focusing on two organizational entities: the participants’ parent organization and the participants’ partner firm. This section of the data collection instrument used a five point Likert type scale using the following statements: “I feel I have a lot in common with others in my parent organization,” “I find it easy to identify with my parent organization,” “I find that my values and the values of those in my organization are very similar,” and “I view problems in my parent organization as my problems.” In order to gauge the levels of identification with the multiple targets of interest, participants were asked to reflect on either their parent organization, on a specific partner in their supply

chain, or on their supply chain itself. When asked to reflect on a specific partner in their supply chain or on their supply chain itself, the wording of the items was changed from "my parent organization" to "my partner firm." None of these items are reverse coded. For the items adopted from this scale, which was a modified version of Cheney's (1982) Organizational Identification Questionnaire, Scott and Stephens (2005) reported Cronbach alpha reliabilities from .75, .73, and .81, depending on the target in question. This study obtained Cronbach alpha reliabilities of .72 for items measuring the parent organization and .71 for the items measuring the partner firm.

Communication quality in communication channels. I also measured *communication quality* in a multitude of communication channels with a modified version Krishna et al.'s (2006) scale and a modified version of Fynes et al.'s (2005) and Heide and John's (1992) measure. In Krishna et al.'s study, the entire scale used had a Cronbach alpha reliability of .80, in Fynes et al.'s (2005) study, the entire scale had a reliability of .76.

The first three items of Krishna et al.'s (2006) scale held responses that range from (1) "strongly disagree" to (5) "strongly agree" and contains the following statements: "Our partner firm has provided enough relevant information whenever we asked them for it," "We are promptly notified by our partner firm whenever any major change occurs at their firm," and "We get enough clear information about the plans of our partner firm concerning the collaboration well in advance." The fourth item scale had responses that range from (1) "daily" to (5) "once a month or less" and asking, "How often do senior managers from your firm communicate with their counterparts in your partner firm?" The final item held responses ranging from (1) "twice a month or more" to

(5) “once a year or less” and asking the question, “How often do senior and middle managers in your company make business trips to your partner firm?” None of these items were reverse coded. To make this scale more accurate for the specific context of the necessary communication channels and to eliminate the inherent measure of face-to-face interaction the item, “How often do senior and middle managers in your company make business trips to your partner firm?” was excluded. The other items were adopted and used to measure the communication quality.

Additionally, this study included a single item from Fynes et al.’s (2005) and Heide and John’s (1992) measure, which was originally designed to measure *interorganizational communication quality.* Because of their impersonal nature of and their mention of proprietary information, three items were not included on this scale. The item, “Exchange of information in this relationship takes place frequently and informally, and not only according to a pre-specified agreement,” was split into two additional items: “Exchange of information in this relationship takes place frequently,” and “Exchange of information in this relationship takes place informally, and not only according to a pre-specified agreement,” since it measures two qualities. This item originally used a five point Likert-type scale ranging from (1) “strongly disagree” to (5) “strongly agree.” Another item, “We exchange enough information,” was added to help gauge a degree of satisfaction with the communication.

The seven items that were adopted from these two scales were then put into the context of various communication channels. Participants were asked the seven questions in the context of the communication channels of the telephone, electronic mail, face-to-face situations, and instant messaging. When assessed, these scales demonstrated

Cronbach alpha reliabilities of: .78 for the questions related to telephone based communication, .72 for the questions related to electronic mail based communication, .85 for the questions related to face-to-face communication, and .89 for questions related to instant messaging based communication.

Additionally, this study combined the four above scales related to communication quality in various channels to form a distinct measure of the overall communication quality in interorganizational relationships. In this scale, this study included the dropped item, “How often do senior and middle managers in your company make business trips to your partner firm?” and used another item in combination with it. This item read, “How often do you make business trips to your partner firm?” This item was used to gauge individual communication patterns better. This 30 item scale demonstrated a Cronbach alpha reliability of .63. This made this scale unreliable. All the items (seven in total) related to communication via instant messaging were then removed, because only five participants indicated that they employed this form of communication. This brought this 23 item scale’s reliability up to a score of .85.

Control Variables

In addition to testing for relationships among the independent variables and dependent variables, this study used some control variables to better explain the tested relationships. For this study, there are three important control variables: *alliance duration, partner firm size*, and *parent firm size*. Parkhe (1993) justifies controlling for these variables since alliances of greater duration will obviously have demonstrated repeated positive performance and since larger firms are more easily able to outperform smaller ones. The instrument measured these variables with a single item that asked

participants for an estimate of how long the partner firms have cooperated jointly, that asked for an estimate of the number of employees of the partner firm in question, and that asked for an estimate of the number of employees of the parent firm in question, respectively. The exact manner in which these questions were asked can be seen in the field instrument, which is included in Appendix B.

Summary and Preview

This study's specific goals are to determine the relationship among the independent variables reflective of the communication within a given supply chain with the dependent variables determined to be reflective of overall performance of the supply chain network. The present chapter presented a methodical foundation which makes this possible. It described the sample, measures, and statistical approaches to be used to test the hypotheses presented in the literature review. The next chapter discusses demographic information, descriptive statistics, and the results of the statistical analyses in great detail.

CHAPTER 4

RESULTS

Chapter Preview

This chapter describes the results of the data analysis. It first describes the demographic information provided by the participants who responded to the questionnaire. Next, it gives descriptive statistics. It then describes the results of the correlations and regressions used to test the hypotheses and answer the research questions. This chapter ends with a *post hoc* analysis that explores additional relationships among variables.

Sample Description

The entire sample resulted in 56 completed and usable questionnaires; however, 65 questionnaires contained some usable data, and 59 individuals completed some of the demographic questions. Of these 59 individuals who answered the demographic questions, 20.33% (n = 12) were supply chain management specialists, 15.25% (n = 9) were purchasing managers, 11.86% (n = 7) were buyers, 11.86% (n = 7) were purchasing agents, 6.77% (n = 4) were procurement managers, 6.77% (n = 4) were sales managers, 3.38% (n = 2) were business owners, 1.69% (n = 1) were vendors, 1.69% (n = 1) were warehouse managers, 1.69% (n = 1) were vice presidents of operations, 1.69% (n = 1) were directors of logistics, 1.69% (n = 1) were marketing directors, 1.69% (n = 1) were

project managers, 1.69% (*n* = 1) were directors of materials, 1.69% (*n* = 1) were logistic managers, 1.69% (*n* = 1) were analysts, 1.69% (*n* = 1) were senior contract administrators, 1.69% (*n* = 1) were sourcing specialists, 1.69% (*n* = 1) were procurement and warehouse managers, 1.69% (*n* = 1) were procurement and materials directors, and 1.69% (*n* = 1) were vice presidents of materials. They also came from a variety of industries. A smaller number, 57 participants, indicated that 17.54% (*n* = 10) were from manufacturing, 10.52% (*n* = 6) were from transportation and warehousing, 10.52% (*n* = 6) were from wholesale trade, 8.77% (*n* = 5) were from other services besides government, 8.77% (*n* = 5) were from professional, scientific and technical services, 7.01% (*n* = 4) were from government, 7.01% (*n* = 4) were from mining and petrochemicals, 5.26% (*n* = 3) were from information, 5.26% (*n* = 3) were from management of companies and administrative services, 5.26% (*n* = 3) were from utilities, 3.50% (*n* = 2) were from construction, 3.50% (*n* = 2) were from healthcare and social assistance, 3.50% (*n* = 2) were from retail trade, 1.75% (*n* = 1) were from accommodation and food services, and 1.75% (*n* = 1) were from real estate and rental and leasing. This diverse sample mirrors the diversity of the individuals who work in supply chains and the diversity of supply chains. This information can be seen on Tables 1 and 2 below.

Table 1

The Organizational Roles of the Participants

Job Titles	N	n	%
Supply Chain Management Specialists	59	12	20.33
Purchasing Managers	59	9	15.25
Buyers	59	7	11.86
Purchasing Agents	59	7	11.86
Procurement Managers	59	4	6.77
Sales Managers	59	4	6.77
Business Owners	59	2	3.38
Vendors	59	1	1.69
Warehouse Managers	59	1	1.69
Vice President of Operations	59	1	1.69
Directors of Logistics	59	1	1.69
Marketing Directors	59	1	1.69
Project Managers	59	1	1.69
Directors of Materials	59	1	1.69
Logistics Managers	59	1	1.69
Analysts	59	1	1.69
Senior Contract Administrators	59	1	1.69
Sourcing Specialists	59	1	1.69
Procurement and Warehouse Managers	59	1	1.69
Procurement and Materials Directors	59	1	1.69
Vice Presidents of Materials	59	1	1.69

Table 2

Industry Representation of Sample

Industries	N	n	%
Manufacturing	57	10	17.54
Transportation and Warehousing	57	6	10.52
Wholesale Trade	57	6	10.52
Other Services Besides Government	57	5	8.77
Professional, Scientific and Technical Services	57	5	8.77
Government	57	4	7.01
Mining and Petrochemicals	57	4	7.01
Information	57	3	5.26
Management of Companies and Administrative Services	57	3	5.26
Utilities	57	3	5.26
Construction	57	2	3.50
Healthcare and Social Assistance	57	2	3.50
Retail Trade	57	2	3.50
Accommodation and Food Services	57	1	1.75
Real Estate and Rental and Leasing	57	1	1.75

The same 57 participants answered additional demographic questions, and this revealed that 66.7% (*n* = 38) were male and that 33.3% (*n* = 19) were female. This also showed that 29.8% (*n* = 17) held the designation of a Certified Purchasing Manager (CPM), and 70.2% (*n* = 40) did not. Of this same sample, 8.8% (*n* = 5) had a title of Accredited Purchasing Practitioner (APP) while 91.2% (*n* = 52) did not. 31.6% (*n* = 18) indicated that this was their first collaborative project with the partner firm in question, and 64.8% (*n* = 39) indicated that this was not their first collaborative project.

Additionally, 58 participants indicated that they communicated with their main contact from their partner firm on the phone an average of 33.38% of the time, by electronic mail an average of 46.50% of the time, in face-to-face situations an average of 18.83% of the time, with instant messaging an average of 1.29% of the time. One person indicated that they did not use the phone to communicate with their main contact from

their partner firm. Three people indicated that they did not use electronic mail in this manner. Seven people indicated that they did not use the channel of face-to-face communication for this type of communication, and 53 individuals indicated that they did not use instant messaging. These participants also indicated that they spent an average of 81.02% of their time at their respective parent organizations, 8.45% of their time at their partner firms, and 10.53% of their time at other organizations, numbers that indicate the degree of their boundary spanning. A summary of all of this above information can be seen in Table 3 below.

Table 3

Additional Demographic Information

Characteristics	N	n	%	% of Time
Males	57	38	66.7	-
Females	57	19	33.3	-
Certified Purchasing Managers	57	17	29.8	-
Accredited Purchasing Practitioners	57	5	8.8	-
First Project	58	18	31.6	-
Not First Project	58	39	64.8	-
% Use of the Telephone	58	57	33.38	33.38
% Use of Electronic Mail	58	55	46.50	46.50
% Use of Face-to-Face Communication	58	51	18.83	18.83
% Use of Instant Messaging	58	5	1.29	1.29
Average Time at Parent Organization	58	58	81.02	81.02
Average Time at Partner Firm	58	58	8.45	8.45
Average Time at Other Organizations	58	58	10.53	10.53

Scale Information

All scales demonstrated Cronbach alpha reliabilities of at least the minimum requirement of .70. The means, standard deviations, reliability scores, minimum and maximum values, range, and number of cases for all variables can be seen in Table 4 below. All variables were measured on a 5 point Likert-type scale, except for satisfaction,

which was measured on a seven point Likert-type scale and profitability, which was measured with four items in total. Three of those items employed a seven point Likert-type scale and a single item used a scale of ten points, which was later transformed into a seven point measure to make the data compatible with the other three items. This descriptive information can also be seen in Table 4 below.

Table 4

Descriptive Information of Scales

Variables	Number of Items	N	Mean	SD	α
Identification with Parent Organization	4	65	3.86	.62	.72
Identification with Partner Firm	4	65	3.56	.60	.71
Communication Quality (Overall)	23	48	3.39	.48	.85
Communication Quality (Phone)	7	56	3.46	.69	.78
Communication Quality (E-Mail)	7	54	3.52	.61	.72
Communication Quality (F-t-F)	7	51	3.44	.62	.85
Communication Quality (IM)	7	5	3.48	.46	.89
Alliance Performance	5	65	3.70	.65	.89
Profitability	4	58	5.03	1.07	.92
Satisfaction with Supply Chain	5	58	5.48	1.18	.91
Interorganizational Trust	5	58	5.08	1.28	.87

Test of Hypotheses

This study investigated two hypotheses and three research questions. To test all hypotheses and research questions, Pearson product-moment correlations were used to test for basic relationships and linear and multiple regressions were used to explain the variance found in the same relationships. Controls were not included in any statistical analysis since these did not correlate significantly with any dependent variable in a one-tailed test.

Hypothesis one (H1) stated that higher levels of identification with a partner firm within a supply chain network are positively related to (a) performance of the supply

chain, (b) profitability, (c) satisfaction with the supply chain, and (d) trust. This hypothesis was partially supported. Identification with a partner firm showed a significant correlation with the performance of the supply chain alliance (r = .38, p < .01, df = 63) and with interorganizational trust (r = .33, p < .01, df = 56). It was not significantly correlated with the satisfaction with the supply chain (r = .11, p > .05, df = 56), and with profitability (r = .10, p > .05, df = 56). The entire correlation matrix that displays these correlations as well as others can be seen in Table 5 below.

Table 5

Intercorrelations Between All Independent and Dependent Variables

Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
1. Identification with Parent Organization	1 65	-.04 65	.06 48	.01 56	-.04 54	.13 51	.95[a] 5	.14 65	.08 58	.03 58	-.03 58
2. Identification with Partner Firm		1 65	.27 48	.32[a] 56	.20 54	.24 51	.91[a] 5	.38[b] 65	.10 58	.11 58	.33[b] 58
3. Communication Quality (Overall)			1 48	.90[b] 48	.80[b] 48	.82[b] 48	-.43 5	.46[b] 48	.40[b] 48	.61[b] 48	.52[b] 48
4. Communication Quality (Phone)				1 56	.49[b] 53	.70b 51	-.05 5	.42[b] 56	.36[b] 56	.52[b] 56	.50[b] 56
5. Communication Quality (E-mail)					1 54	.49[b] 48	-.52 5	.47[b] 54	.44[b] 54	.61[b] 54	.57[b] 54
6. Communication Quality (F-to-F)						1 51	.00 5	.36[b] 51	.31[a] 51	.51[b] 51	.46[b] 51
7. Communication Quality (I.M.)							1 5	-.55 5	-.52 5	-.51 5	-.07 5
8. Alliance Performance								1 65	.67[b] 58	.64[b] 58	.53[b] 58
9. Profitability									1 58	.74[b] 58	.57[b] 58
10. Satisfaction with Supply Chain										1 58	.82[b] 58
11. Interorganizational Trust											1 58

[a] p < .05, [b] p < .01, (2-tailed)

Research question one (RQ1) was concerned with how organizational identification with the parent organizations is related to (a) performance of the supply chain, (b) profitability, (c) satisfaction with the supply chain, and (d) trust. The

correlational results suggest that there is no relationship between organizational identification with a parent organization and any of the dependent variables of interest. A two-tailed Pearson product-moment correlation found no significant relationship between organizational identification with parent organizations and the alliance performance in the supply chain relationship ($r = .14$, $p > .05$, $df = 61$), the overall profitability of the alliance ($r = .08$, $p > .05$, $df = 54$), the satisfaction with the supply chain relationship ($r = .03$, $p > .05$, $df = 54$), or the amount of interorganizational trust found within the supply chain relationship ($r = -.03$, $p > .05$, $df = 54$).

Hypothesis two (H2) stated that interorganizational communication quality in a given communication channel within a supply chain network is positively related to (a) alliance performance of the supply chain, (b) profitability of the supply chain, (c) satisfaction with the supply chain, and (d) trust. This hypothesis was supported for all channels except instant messaging. Communication quality over the phone was significantly correlated with the performance of the supply chain ($r = .42$, $p < .01$, $df = 54$), with profitability of the alliance ($r = .36$, $p < .01$, $df = 54$), with satisfaction with the supply chain alliance ($r = .52$, $p < .01$, $df = 54$), and with interorganizational trust in the alliance ($r = .50$, $p < .01$, $df = 54$).

Communication quality via electronic mail was more strongly correlated to all dependent variables than any of the other independent variables measuring the communication quality of the specific communication channels. It was significantly correlated with the performance of the supply chain alliance ($r = .47$, $p < .01$, $df = 52$), profitability ($r = .44$, $p < .01$, $df = 52$), satisfaction with the supply chain relationship ($r = .61$, $p < .01$, $df = 52$), and interorganizational trust ($r = .57$, $p < .01$, $df = 52$).

The communication quality in face-to-face situations was significantly correlated with the performance of the supply chain alliance ($r = .36$, $p < .01$, $df = 49$), profitability ($r = .31$, $p < .05$, $df = 49$), satisfaction with the supply chain relationship ($r = .51$, $p < .01$, $df = 49$), and with interorganizational trust ($r = .46$, $p < .01$, $df = 49$).

The communication quality over instant messaging showed no significant correlation with the alliance performance in the supply chain ($r = -.55$, $p > .05$, $df = 3$), the overall profitability ($r = -.55$, $p > .05$, $df = 3$), the satisfaction with the supply chain ($r = -.51$, $p > .05$, $df = 3$), or the amount of trust found within the supply chain ($r = -.07$, $p > .05$, $df = 3$).

Research question two (RQ2) asked which of the four communication channels has the greatest effect on (a) alliance performance of the supply chain, (b) profitability of the supply chain, (c) satisfaction with the supply chain, and (d) trust. This question was partially answered by the correlation matrix, which showed that since the communication quality in instant messaging was not significantly correlated with any of the dependent variables, it was not a significant predictor. To answer this question, a multiple step-wise regression was used, employing the three remaining independent variables related to communication channels and the dependent variables of interest. In these step-wise regressions, SPSS selected the order in which the variables would be entered into the model based on the variance explained.

The first regression used the quality of the various channels as predictors with the performance of the supply chain alliance. There was a significant model ($F(1,46) = 15.75$, $\beta = .50$, $R^2 = .25$, R^2 *adj.* $= .23$, $p < .001$). However, the model contained only one channel, the communication quality over the telephone, which accounted for 23% of the

total variance of the profitability of the supply chain alliance. The other two variables, the communication quality of electronic mail and of face-to-face communication, were excluded from this model. The results of this regression can be seen in Table 6 below.

Table 6

Summary of Step-wise Regression Analysis for Variables Predicting Alliance Performance in Supply Chain Relationships (N = 46)

Variable	F(1,46)	Sig.	β	R^2	R^2 adj (%)	Δ R^2	Tolerance
Model Summary	15.75	$p < .001$					
Communication Quality (Phone)		$p < .001$	.50	.25	23	.25	
Communication Quality (E-mail)		$p > .05$	.28				.47
Communication Quality (F-t-F)		$p > .05$	.02				.50

The second regression with profitability of the supply chain alliance as a dependent variable of interest was significant ($F(1,46) = 14.29$, $\beta = .48$, $R^2 = .23$, R^2 *adj.* = .22, $p < .001$), and the equation contained only one channel. The communication quality of electronic mail accounted for 22% of the total variance of the profitability of the supply chain alliance. The other two variables, the communication quality via telephone and of face-to-face communication, were excluded from this model. The results of this regression model can be seen in Table 7 below.

Table 7

Summary of Step-wise Regression Analysis for Variables Predicting Profitability in Supply Chain Relationships (N = 46)

Variable	F(1,46)	Sig.	β	R^2	R^2 adj (%)	Δ R^2	Tolerance
Model Summary	14.29	$p < .001$					
Communication Quality (E-mail)		$p < .001$	.48	.23	22	.23	
Communication Quality (Phone)		$p > .05$	-.02				.47
Communication Quality (F-t-F)		$p > .05$	.10				.75

The third regression with the satisfaction with the supply chain alliance as a dependent variable produced a significant equation ($F(2,45) = 19.84$, $\beta = .52$, $\beta = .25$, $R^2 = .46$, R^2 *adj*. $= .44$, $p < .001$), and two channels were part of that model. However, the quality of communication via electronic mail alone accounted for 40% of the variance of the overall satisfaction with the relationship in a supply chain. The quality of communication via face-to-face channels explained nearly an additional 5% of the variance. A summary of this regression's results can be seen in Table 8 below.

Table 8

Summary of Step-wise Regression Analysis for Variables Predicting Satisfaction in Supply Chain Relationships (N = 45)

Variable	F(1,46)	Sig.	β	R^2	R^2 adj (%)	Δ R^2	Tolerance
Model 1 Summary	F(2,45)= 19.84	$p < .001$					
Communication Quality (E-mail)		$p < .001$	.64	.42	40	.42	
Communication Quality (F-t-F)		$p < .05$	.25	.46	44	.04	.75
Communication Quality (Phone)		$p > .05$	.20				.31

The final regression with interorganizational trust in the supply chain relationship as a dependent variable of interest had a significant model ($F(1,46) = 26.60$, $\beta = .60$, $R^2 = .36$, R^2 *adj.* $= .35$, $p < .001$) and the equation contained only one channel as a significant predictor. The quality of communication via electronic mail accounted for 35% of the variance in the levels of trust found within the relationship in a supply chain. The results of this regression model can be seen in Table 9 below.

Table 9

Summary of Step-wise Regression Analysis for Variables Predicting Trust in Supply Chain Relationships (N = 46)

Variable	F(1,46)	Sig.	β	R^2	R^2 adj (%)	Δ R^2	Tolerance
Model Summary	26.64	$p < .001$					
Communication Quality (E-mail)		$p < .001$	.60	.36	35	.36	
Communication Quality (Phone)		$p > .05$	-.02				.47
Communication Quality (F-t-F)		$p > .05$	.10				.75

Research question three (RQ3) asked how do interorganizational communication quality, identification with multiple organizations in the supply chain, and identification with a parent organization affect (a) alliance performance of the supply chain, (b) profitability of the supply chain, (c) satisfaction with the supply chain, and (d) trust. To answer this question I conducted a multiple step-wise regression using the independent variables measuring the overall communication quality, organizational identification with the parent organization and with the partner firm, and the dependent variables of interest. The first regression with the performance of the alliance in a supply chain as a dependent variable was significant ($F(1,46) = 12.34$, $\beta = .46$, $R^2 = .21$, R^2 *adj.* $= .19$, $p < .01$). The

equation contained only one significant predictor. Overall communication quality accounted for 19% of the variance of the overall performance of the supply chain alliance. Identification with the parent organization and identification with the partner firm did not significantly account for any additional variance and were excluded from this model. A summary of this model can be seen in Table 10 below.

Table 10

*Summary of Step-wise Regression Analysis for Variables Predicting Alliance Performance in Supply Chain Relationship*s with Identification as a Predictor *(N = 46)*

Variable	F(1,46)	Sig.	β	R^2	R^2 adj (%)	Δ R^2	Tolerance
Model Summary	12.34	$p < .01$					
Communication Quality (Overall)		$p < .01$	.46	.21	19	.21	
Identification with Parent Organization		$p > .05$	.02				.99
Identification with Partner Firm		$p > .05$	.23				92

The second regression with profitability of the supply chain as a dependent variable of interest was significant ($F(1,46) = 8.92$, $\beta = .40$, $R^2 = .16$, R^2 *adj.* $= .14$, $p < .01$). The overall communication quality was a significant predictor, and it accounted for 14% of the variance in the profitability in a supply chain type relationship. Neither identification with the parent organization nor identification with the partner firm were significant predictors in this model. The findings of this regression can be seen in Table 11 below.

Table 11

Summary of Step-wise Regression Analysis for Variables Predicting Profitability in Supply Chain Relationships with Identification as a Predictor (N = 46)

Variable	F(1,46)	Sig.	β	R^2	R^2 adj (%)	Δ R^2	Tolerance
Model Summary	8.92	$p < .01$					
Communication Quality (Overall)		$p < .01$	.40	.16	14	.16	
Identification with Parent Organization		$p > .05$	.02				.99
Identification with Partner Firm		$p > .05$	.00				92

The third regression explored the relationship between the same independent variables and the satisfaction with the relationship in a supply chain. It was a significant model ($F(1,46) = 27.22$, $\beta = .61$, $R^2 = .37$, R^2 *adj.* $= .35$, $p < .001$), and it showed that only the overall communication quality was a significant predictor, which accounted for 35% of the variance in the amount of satisfaction with the relationship in a supply chain. Neither identification with the parent organization nor identification with the partner firm were significant predictors in this model and were both excluded. The findings of this regression can be seen in Table 12 below.

Table 12

Summary of Step-wise Regression Analysis for Variables Predicting Satisfaction in Supply Chain Relationships with Identification as a Predictor (N = 46)

Variable	F(1,46)	Sig.	β	R^2	R^2 adj (%)	Δ R^2	Tolerance
Model Summary	27.22	$p < .001$					
Communication Quality (Overall)		$p < .001$	.61	.37	.35	.37	
Identification with Parent Organization		$p > .05$	-.05				.99
Identification with Partner Firm		$p > .05$	-.07				92

The final regression explored the relationship between the same independent variables and interorganizational trust. It was significant ($F(1,46) = 17.72$, $\beta = .52$, $R^2 = .27$, R^2 *adj.* $= .26$, $p < .001$). This regression showed that only the overall communication quality accounted for 26% of the variance of the levels of trust found within the relationship in a supply chain. Neither the identification with the partner firm nor the identification with the parent organization significantly accounted for any variance in this regression, and both variables were excluded from this model. The results of this regression model are shown in Table 13 below.

Table 13

Summary of Step-wise Regression Analysis for Variables Predicting Trust in Supply Chain Relationships with Identification as a Predictor (N = 46)

Variable	F(1,46)	Sig.	β	R^2	R^2 adj (%)	Δ R^2	Tolerance
Model Summary	17.72	$p < .001$					
Communication Quality (Overall)		$p < .001$	.52	.27	.26	.27	
Identification with Parent Organization		$p > .05$	-.13				.99
Identification with Partner Firm		$p > .05$	.18				92

Post hoc Analysis

A *post hoc* analysis was conducted to further investigate additional relationships among variables. Identification with the partner firm was significantly correlated with the performance of alliances in supply chain relationships ($r = .38$, $p < .01$, $df = 63$) and with trust between partners in the supply chain alliances ($r = .33$, $p < .01$, $df = 56$). These two findings encouraged further exploration. Specifically, these findings beckoned the exploration of how much variance of the performance of the supply chain alliance and the trust in these alliances can be explained by regressing this variable along with the best channels of communication, namely phone and electronic mail. To do this, I ran two separate step-wise regressions in which SPSS selected the order in which the variables would be entered into the model based on the variance explained.

The first regression with the performance of the supply chain alliance as an outcome variable was significant ($F(1,54) = 12.19$, $\beta = .42$, $R^2 = .18$, R^2 *adj*. $= .16$, $p < .01$). It showed that only the communication quality found in the channel of the telephone was a significant predictor and it accounted for 16% of the variance of the performance

of the alliance in supply chain type relationships. The identification with the partner firm did not significantly account for any additional variance in this regression. The results of this regression are shown in Table 14 below.

Table 14

Summary of Step-wise Regression Analysis for Variables Predicting Alliance Performance in Supply Chain Relationships in a Post hoc Analysis (N = 54)

Variable	F(1,54)	Sig.	β	R^2	R^2 adj (%)	Δ R^2	Tolerance
Model Summary	12.19	$p < .01$					
Communication Quality (Phone)		$p < .01$	.42	.18	16	.18	
Identification with Partner Firm		$p > .05$	.20				.89

The second regression with the trust found in the supply type relationship as an outcome variable was significant ($F(1,52) = 25.28$, $\beta = .57$, $R^2 = .32$, R^2 *adj*. $= .31$, $p < .001$). It showed that only the communication quality found in the channel of electronic mail was a significant predictor and it accounted for 31% of the variance of the amount of trust in supply chain relationships. The identification with the partner firm did not significantly account for any additional variance in this regression. The results of this regression are shown in Table 15 below.

Table 15

Summary of Step-wise Regression Analysis for Variables Predicting Trust in Supply Chain Relationships in a Post hoc Analysis (N = 52)

Variable	F(1,52)	Sig.	β	R^2	R^2 adj (%)	Δ R^2	Tolerance
Model Summary	25.28	$p < .001$					
Communication Quality (E-mail)		$p < .001$	.57	.32	31	.32	
Identification with Partner Firm		$p > .05$	.20				.95

Summary and Preview

The results of the correlation and regression analyses presented in this chapter showcase the important role that communication, and particularly communication via electronic mail, plays in developing working supply chain partnerships. They also downplay the importance of organizational identification. The same findings are reinforced in the *post hoc* analysis, showing, again, that communication is a better predictor variable than organizational identification. The significant findings of all are displayed below in table 16.

Table 16

Summary of Significant Regression Analyses for Variables Predicting Profitability, Satisfaction, and Trust in Supply Chain Relationships (N = 45)

	Alliance Performance		Profitability		Satisfaction		Trust	
	B	R^2	β	R^2	β	R^2	β	R^2
Communication Quality (Overall)	.46	.19[b]	.40	.16[b]	.61	.35[c]	.52	.26[c]
Communication Quality (Phone)	.50	.23[b]						
Communication Quality (E-mail)			.48	.22[c]	.52	.40[c]	.48	.22[c]
Communication Quality (F-to-F)					.25	.04[a]		

[a] $p < .05$, [b] $p < .01$, [c] $p < .001$

The next chapter explains the implications of the results demonstrated in the present chapter. It reviews and explains the findings in greater detail. It then discusses the theoretical consequences of these findings, applications for practitioners who work in supply chains, and limitations of this study.

CHAPTER 5

DISCUSSION

Chapter Preview

The present chapter explains the implications of the results presented in the last chapter. It explains the findings in detail and then discusses the implications of these findings and the applications for practitioners who work in supply chains. It closes by describing the limitations of this study, opportunities for future research, and final conclusions.

Implications of Results

The results from this study not only support prior claims found in the general literature that communication is important in supply chain type relationships, but by focusing on the specific variables reflective of communication channels, these results have also helped to explain the quantitative contribution of each of the variables of interest to this study. Additionally, results underscore the role (or lack thereof) that identification with a partner firm plays in supply chains. A summary of the major findings of the regression analyses are given below in Table 17.

Table 17

Summary of the Most Significant Findings

Dominant Predictor Variables	Outcome Variable of Interest	Direction of Relationship
Communication Quality (Overall)	Alliance Performance	Positive
Communication Quality (Phone)	Alliance Performance	Positive
Communication Quality (E-mail)	Profitability, Satisfaction, & Trust	Positive
Communication Quality (F-t-F)	Satisfaction	Positive

Organizational Identification

The first major finding of this study clarifies the role that identification with multiple organizational targets plays in the setting of a supply chain and contributes to greater understanding of multiple identification in supply chains. This study showed that identification with the partner firm—the outside organizations *with* which the individuals sampled in this study worked but *for* which they did not work, and *from* which they did not typically receive a paycheck—plays in supply chain. The levels of organizational identification were positively correlated with the performance of the alliance in a supply chain, were positively correlated with the amount of trust, and were unrelated to the other two outcome variables, profitability and satisfaction with the relationship. Further exploration in the form of regression analyses clarified organizational identification's role as a predictor of alliance performance and of trust, and revealed that it was not a significant predictor variable of these two outcome variables. Identification with a partner firm might be a side effect of good communication and might indicate more cooperation. This finding that good communication trumps the effects of the phenomenon of organization identification is not surprising since there is literature supporting this claim. More specifically, Scott et al. (1999) empirically demonstrated that identification with a

given target is developed from communication. This finding was also confirmed by George and Chattopadhyay (2005) who insisted that identification was built upon "quality relations" within organizations (p. 89). For supply chain type relationships, this means that communication will help to build identification with the partner firm and inevitably with the parent firm, but these feelings of identification will remain side effects of the communication and will not absolutely predict how well the supply chain alliance will perform, how profitable the alliance will be, how much satisfaction both parties experience, and how much trust grows in the relationship developed between the two parties.

This study has also shown that identification with a parent organization—that is, the organizations for which the individuals in this study worked—is unrelated to the performance of an alliance in a supply chain, the profitability of that alliance, the amount of satisfaction, and the amount of trust. Simply put, the level of organizational identification with the parent organization does not affect supply chain relationships in any manner. This is not to say that one should not encourage identification with a given parent organization. Following this route would be severely misguided since numerous positive organizational related outcomes are associated with higher levels of identification with any given parent organization (or any organization in general). Organizational identification is related to higher employee retention rates (Cole & Bruch, 2006; Scott et al., 1999), is an indication of positive relationships at work (George & Chattopadhyay 2005; Scott et al., 1999), is associated with satisfying employees' higher order needs (Hall et al., 1970), and is related to job satisfaction (Scott & Stephens, 2005).

The findings associated with the lack of statistical importance of organizational identification are also not unexpected when one takes the sample used in this study into account. The present thesis obtained a sample of boundary spanners who were typically highly skilled and were employed as knowledge workers in various industries and firms. Although organizational identification is an important organizational phenomenon, it matters most to lower level employees and least to highly skilled knowledge workers who are typically employed at higher levels in the organization (Cole & Bruch, 2006). This means that identification is a better predictor variable for employees at lower levels of the organization and not as useful for higher level employees, such as the boundary spanners examined here. This is certainly the case for those involved in supply chain type activities.

Communication Quality in Communication Channels

The next major finding, perhaps the most significant finding of this study, highlights the importance of interorganizational communication quality of electronic mail. The results of the statistical analyses in this study showed that the communication quality of electronic mail plays an extremely important role when communicating with a partner firm. Of the four predictor variables measuring the communication quality in the four communication channels investigated in the thesis, communication quality in electronic mail consistently had the strongest relationship with the amount of satisfaction, the profitability, and the amount of trust between partners in supply chains. These findings indicate that the effective use of this channel is a good way to build trust, generate satisfaction, and become more profitable. People involved in these types of interorganizational relationships should therefore strive to develop high quality

communication when employing this medium, and if practitioners are forced to select one form of communication over others, then communication in the form of electronic mail is the one, provided that practitioners use it in a quality way. The literature concerned with this topic finds that although electronic mail may not be the best medium for reducing equivocation in complex tasks, for sending complex messages, or for developing fulfilling relationships, it is highly valued and often the channel of choice in organizations (Dimmick et al., 2000; Markus, 1994). This study supports this notion, finding that the participants use electronic mail more than any other form of communication, which may also be an indication that they come to trust this communication channel over others. It also supports El-Shinnawy and Markus' (1997 & 1998), Minsky and Marin's (1999), and Kettinger and Grover's (1997) notion that there are many factors that determine whether a particular communication channel is used in an organization. Additional empirical evidence supports some of these findings as well. Electronic mail use has also been shown to increase levels of trust in interpersonal relationships (Daiton & Aylor, 2002), and thus its use being strongly linked to the amount of trust in supply chains is not surprising.

The finding that quality electronic mail use is the best predictor of most outcomes in supply chains may be at least partially explained by the nature of supply chain relationships being remote and often built around constant maintenance of day-to-day occurrences, and may also be explained by the features available in e-mail. Electronic mail is a medium of rapid communication that is often task centered, brief, and to the point. Since supply chains require task centered and brief communication, electronic mail may simply be the most fitting form of communication for supply chains. The use of this

form of communication being empirically tied to these outcomes suggests that communication in a supply chain type relationship needs to be task centered and to the point. This is also in line with media richness theory, which finds that certain media are more appropriate for a given task (Daft & Lengel, 1986; Daft, Lengel, & Trevino, 1987). The tasks related to supply chain maintenance, at least on a day-to-day level, are typically brief and routine and do not require extensive human emotional development. This means that the media choice (i.e., electronic mail) fits the task, which has, by its very nature, low levels of equivocation.

The importance of electronic mail in this study may also be explained by how the participants view electronic mail. As previously mentioned, there are many factors that determine whether a particular form of communication is used (El-Shinnawy & Markus, 1997 & 1998; Kettinger & Grover 1997; Minsky & Marin, 1999), and those in managerial positions have been shown to often select electronic mail over other forms of communication (Markus, 1994). The participants in this study may view this form of communication as the most effective simply because others also view this form of communication as the most effective, and it has become the preferred medium and therefore the most effective medium simply because of social influence (Fulk, Schmitz, & Steinfield, 1990). This form of communication may also be a suitable substitute for business travel. Either way, the findings of this study support the prior findings that there are a host of social and other factors that determine why one selects and uses the channel of electronic mail over others in a professional setting.

Quality electronic mail use may be a good predictor of the amount of satisfaction, degree of profitability, and amount of trust, but it was not significantly tied to

performance of the alliance in supply chain relationships. Surprisingly, quality telephone use was the best predictor of alliance performance, the indicator of the overall performance of the supply chain relationship between two partners. This is an important finding since the scale for overall performance contained items about satisfaction, continuity, and financial success. The channel of the telephone was the second most used. Compared to electronic mail and other text-based forms of communication, telephone use contains more redundancy of social cues and presents less opportunity for equivocation. The nature of the telephone and of supply chains themselves suggest that this channel might be better suited for addressing non-routine and more complex occurrences that require redundant social cues, which is an idea supported by media richness advocates (Daft et al., 1987).

Besides being a richer form of communication than other text-based forms, the telephone also represents a synchronous form of communication, that is, it requires both communicators to be present using separate telephone apparatuses at the exact same moment in time in order for the communication to take place and for it to succeed. The findings of this study suggest that individuals who employ high quality communication within the channel of the telephone solve serious supply chain related issues in real time. This is a further indication that the performance of the supply chain alliance increases as a result of real time and intense problem solving that takes place within this particular communication channel.

Taking these three major findings into account, this study suggests that the best way to aide the overall performance of supply chain type relationships is by employing a mixed form of communication emphasizing the quality of using electronic mail and the

telephone. This diverse form of communication may also include some additional face-to-face communication since it makes a slight contribution to having a satisfying relationship, but the main emphases should be on the use of electronic mail and the telephone and on building quality communication within those two channels. The findings of this study and literature surrounding identification suggest that any additional organizational identification with outside targets will be the result of solid communication.

Another noteworthy factor of this study is the contributions that quality electronic mail use and quality communication in general make in enhancing trust. Higher levels of trust between firms have been linked to economic benefits and act generally to enhance the quality of interorganizational relationships (Krishna et al., 2006). A dependable technological infrastructure in interorganizational relationships has lead to greater levels of trust over time (Ratnasingam, 2005). In global virtual teams, early and frequent communication in a given team's lifecycle builds trust and feelings of cohesiveness among team members since communication assures team members that a given task is being accomplished (Jarvenpaa, Shaw, & Staples, 2004). This study supports these results. In this case, dependable technological infrastructure may even take the form of the quality and dependable communication found in electronic mail use. It has also clearly shown that trust in supply chain relationships is built upon electronic mail communication that is of high quality. Since trust is such an important variable itself, practitioners in supply chain relationships should work to build trust with quality communication through electronic mail.

This thesis has also made a contribution to the understanding of game theory in the context of the communication within supply chains. It has shown that quality communication (which may be an indication of cooperation) leads to positive outcomes, which take the form of improved performance, better profitability, higher levels of satisfaction, and greater amounts of interorganizational trust. It has also shown that inadequate communication, (which may be an indication of poor cooperation) has the opposite effect and leads to negative outcomes, which, in opposition to the former situation, take the forms of deteriorated performance, less profitability, lower levels of satisfaction, and lower amounts of interorganizational trust. The specific contribution of this thesis is that it illustrates that players—who in this case are supply chain partners—who play the game, which is the supply chain relationship, by contributing high quality communication are rewarded with better outputs, while the players who employ the opposite strategy and path contributing with low quality communication are rewarded with lower outputs.

The overall game theoretic finding of this study is that partners (or players) in supply chain relationships (or games) should play this particular game using high quality communication in the channels of electronic mail, of the telephone, and of face-to-face situations, to reap the benefits of better performance, improved profitability, higher amounts of satisfaction, and higher levels of trust. Otherwise, the alternative path of utilizing poor communication within these channels will lead to low performing alliances with lower profitability, lower levels of satisfaction, and lower amounts of trust, which will probably lead to supply chain failures and premature terminations of supply chain alliances.

The overall communication quality was an important factor in supply chain relationships and an important predictor variable in this thesis. It overshadowed the role that identification with multiple targets plays in supply chains. The overall communication quality was linked to better supply chain performance, greater supply chain profitability, greater amounts of satisfaction with supply chain relationships, and greater amounts of trust in supply chains. It should also lead to other additional positive outcomes. Since overall communication quality encouraged greater organizational identification and trust, overall communication quality should promote other positive effects that accompany identification and trust. Individuals who work in supply chains should become conscious of the powerful role that quality communication plays in supply chains and adopt communicative practices reflective of its importance.

Limitations and Future Directions

Although this study contributes to a communication perspective to the study of supply chains, the present thesis was limited in a number of ways. The first limitation was sampling procedures. Although the sample for this study focused on working individuals from a variety of positions and who were involved in supply chain activities, the sample size was small. This impacts the generalizability of this study. The sampling combination of both a small random sample and a snowball sample is also a contributing problem. This factor also negatively impacts the generalizability of this study, but it furthermore brings the validity of the findings into question since participants were selected from a network of individuals. Although there were significant findings, the small sample size also limited this study to less powerful statistical methods.

The present thesis was also limited in how the data was gathered. To collect data, it relied on an electronic survey, which was announced via a paper-based correspondence sent through the United States Postal Service or, in some cases, via electronic mail. This may have biased my sample in terms of who would respond and who would be able to complete the questionnaire. Less technologically savvy individuals may not have had a chance to complete the questionnaire. Thus, the sample used in this study may be biased toward those who are proficient in electronic mail and may call the findings which state that electronic mail is the best method of communication for these types of relationships into question.

The measures used to gauge the quality of the communication present additional problems. These scales were the only measures available that were useful to address communication between partners in a supply chain, and their limitations were numerous. They examined communication adequacy and were not the best measures of communication quality. They had also never been tested in the context of multiple communication channels and were not developed by those who study human communication. The limitations of using these scales were present in their need to be adapted to the use of channels and in the fact that items had to be removed to increase their reliability.

The present thesis raises many questions and sets the stage for future inquiries into the topic of communication in supply chains. To begin with, supply chains and other types of interorganizational relationships are simply understudied in the field of communication and represent a fresh area of exploration. They also represent a very important avenue in all forms of current day commerce and exchange and are often

unsuccessful because of communication problems. Scholars should exploit this opportunity and attempt to study supply chains from a solid communicative perspective. This will both help broaden and deepen the field of communication and increase its application. Deepening this exploration in supply chains, would also help promote better commerce and business practices by providing practitioners who work within the supply chains better ways of communicating with others in partner firms.

More specifically, future scholars should explore the major findings of this present study in greater detail. A deeper exploration of how the quality of communication within the channel of electronic mail contributes to enhancing profitability, trust, and satisfaction in supply chains would be beneficial. Related studies may also want to explore the intricacies of electronic mail use in interorganizational communication, how messages should be crafted, and what specifically works best when using this media. More inquiries into how quality communication in the channel of phone affects performance of a supply chain alliance are also fruitful fields. Inquiries of this nature may wish to study how the phone can be used to solve problems and how it is a good problem-solving tool in communication. Drawing from Stephens' (2007) theoretical work on combinations of communication technology, future studies may also want to explore how combinations of multiple communication channels are used in supply chain relationships, and how these combined communication channels affect performance, profitability, trust and satisfaction in supply chain relationships.

On a more logistical note, future studies will need to mitigate some of the more pragmatic problems endured in this study. Studies that address these topics following this thesis will first want to obtain larger samples of supply chain practitioners to expand

these findings and perform more powerful statistical analyses. They should also strive to have quality and consistent samples of a single type and avoid the hybrid type used here. Future studies should also strive to show causality and try to build upon the *ex post facto* design of the present thesis using a study with an experimental design.

Another area of interest for which this study opens a door is in scale development. Future studies can focus on developing better measures that can be used to measure supply chains and other forms of interorganizational communication. In addition to being a solid contribution, this would lay the foundation for repeated and improved inquiries into this type of communication. All of these future avenues of exploration will not only expand our knowledge of best practices in supply chains but will also expand our understanding of the complex phenomenon of human communication in multiple contexts.

Conclusion

This study illustrated that quality communication is critical for successful performance in supply chains. Specifically, the present thesis demonstrated that quality communication is positively tied to the performance of a supply chain alliance, the profitability of that alliance, the amount of satisfaction found within that alliance, and the levels of trust between allying partners. It also showed that the communication channel of electronic mail was the single best channel for communication in such relationships and that it was strongly linked to the profitability, satisfaction, and interorganizational trust found within these same types of alliances. Identification with the outside partner firms also played an important role, but it is easily overshadowed by the importance of communication. These findings suggest that encouraging communication and

identification with partner firms in interorganizational relationships like supply chains, has very positive outcomes for both partners but also that communication quality is the more important of the two variables.

The findings of this study empirically support the belief that quality communication is extremely important and absolutely necessary in supply chains. Members of partner firms should communicate with their counterparts to maintain healthy interorganizational relationships and to reap the benefits of the supply chain. As supply chains become increasingly important and as individuals find themselves communicating with others in partner firms outside of their own principal places of employment, quality communication will become an increasingly important key for success.

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APPENDIX A

A LIST OF DATA COLLECTION INSTRUMENTS

Identification with multiple organizations in strategic alliance networks and with parent organization (α =.73, .75, and .81, Scott & Stephens, 2005)

1. I feel I have a lot in common with others in my parent organization.
2. I find it easy to identify with my parent organization.
3. I find that my values and the values of those in my parent organization are very similar.
4. I view problems in my parent organization as my problems.
5. I feel I have a lot in common with others in our partner firm.
6. I find it easy to identify our partner firm.
7. I find that my values and the values of those in our partner firm are very similar.
8. I view problems in our partner firm as my problems.

Interorganizational communication quality. (α =.76, Fynes, Voss, & de Búrca, 2005; Heide & John, 1992)

1. Exchange of information in this relationship takes place frequently and informally, and not only according to a pre-specified agreement.
2. In this relationship, any information that might help the other party will be provided for them.

3. Both parties in the relationship will provide proprietary information if it can help the other party.
4. Both parties keep each other informed about events or changes that may affect the other party.

(1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree)

Information exchange quality (α =.80, Krishna, Martin, & Noorderhaven, 2006)

1. Our partner firm has provided relevant information whenever we asked them for it.
2. We are promptly notified by our partner firm whenever any major change occurs at their firm.
3. We get clear information about the plans of our partner firm concerning the collaboration well in advance.

(1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree)

4. How often do senior managers from your firm communicate with their counterparts in your partner firm? (1 = daily; 5 = once a month or less)
5. How often do senior and middle managers in your company make business trips to your partner firm? (1 = twice a month or more; 5 = once a year or less)

Alliance performance (α =.90, Krishha, Martin, & Noorderhaven, 2006)

1. The objectives for which the collaboration was established are being met.
2. Our firm is satisfied with the financial performance of the collaboration.

3. Our partner firm seems to be satisfied with the overall performance of the collaboration.
4. Our firm is satisfied with the overall performance of the collaboration.
5. Our partner firm seems to be satisfied with the overall performance of the collaboration.

(1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree)

* = reverse coded.

Profitability (α =.96, Bstieler, 2006)

1. This project was a financial success. (0 = way below expectations, 5 = met expectations, 10 = way above expectations)
2. The profits met the acceptable return for projects like this in your company.
3. The product met the company's sales objectives/expectations.
4. The product met company's profit objectives/expectations.

(1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neither agree nor disagree, 5 = somewhat agree, 6 = agree, 7 = strongly agree)

* = reverse coded.

Satisfaction with the supply chain (α =.97, Bstieler, 2006)

1. The results and benefits of this partnership met expectations.
2. This partnership realized the goals we set out to achieve.
3. The time and effort spent in developing and maintaining this relationship was worthwhile.
4. Our relationship with the partner company was productive.

5. We were satisfied with this working relationship.

(1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neither agree nor disagree, 5 = somewhat agree, 6 = agree, 7 = strongly agree)

* = reverse coded.

Interorganizational trust (α =.76, Zaheer, McEvily, & Perrone, 1998)

1. Our partner firm has always been evenhanded in its negotiation with us.
2. Our partner firm may use opportunities that arise to profit at our expense.*
3. Based on past experiences, we cannot with complete confidence rely on our partner firm to keep promises made to us.*
4. We are hesitant to transact with our partner firm when specifications are vague.*
5. Our partner firm is trustworthy.

(1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neither agree nor disagree, 5 = somewhat agree, 6 = agree, 7 = strongly agree)

* = reverse coded.

APPENDIX B

THE FIELD INSTRUMENT

For this entire questionnaire, please think of a single relationship that you had or have with one specific person who is your main contact at a specific partner firm (a firm that operates outside of your parent organization). This may be a successful or unsuccessful relationship. The following questionnaire will ask you questions about your parent organization (the organization that you work for) and your partner firm (the organization that you have chosen for responding to the following questions). Circle the number that best indicates the degree to which you agree or disagree with each of the following statements, using this scale:

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral , 4 = Agree, 5 = Strongly Agree

Section 1: Connection with Parent Organization and Selected Partner	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I feel I have a lot in common with others in my parent organization.	1	2	3	4	5
2. I find it easy to identify with my parent organization.	1	2	3	4	5
3. I find that my values and the values of those in my organization are very similar.	1	2	3	4	5
4. I view problems in my parent organization as my problems.	1	2	3	4	5
5. I feel I have a lot in common with others in my partner firm.	1	2	3	4	5
6. I find it easy to identify with my partner firm.	1	2	3	4	5
7. I find that my values and the values of those in my partner firm are very similar.	1	2	3	4	5

Section 1 Continued: Connection with Parent Organization and Selected Partner	Strongly	Disagree	Neutral	Agree	Strongly Agree
8. I view problems in my partner firm as my problems.	1	2	3	4	5
9. The objectives for which the collaboration was established are being met.	1	2	3	4	5
10. My organization is satisfied with the financial performance of the collaboration.	1	2	3	4	5
11. My partner firm seems to be satisfied with the financial performance of the collaboration.	1	2	3	4	5
12. My organization is satisfied with the overall performance of the collaboration.	1	2	3	4	5
13. My partner firm seems to be satisfied with the overall performance of the collaboration.	1	2	3	4	5

Section 2: Percentage of Communication Channels

1. Thinking of your main contact from your partner firm, estimate the amount of time you communicate using telephone, e-mail, instant messaging, and in face to face situations. The total amount of time should equal 100%.

For example if you communicate 25% of the time over the phone, 25% of the time with e-mail, 25% of the time using instant messaging, and 25% in face to face situations you would write:

25 %phone 25 %e-mail 25 %instant messaging 25 %face-to-face

_____ %phone _____ %e-mail _____ %instant messaging _____ %face-to-face (all four should total 100%)

Section 3: Communicating over the Phone

Circle the number that best indicates the degree to which you agree or disagree with each of the following statements, using this scale:

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral , 4 = Agree, 5 = Strongly Agree

When I communicate with my main contact from my partner firm over the phone…	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. he / she has provided enough relevant information whenever I asked for it.	1	2	3	4	5
2. I am promptly notified whenever any major change occurs at their firm.	1	2	3	4	5
3. I get enough clear information about the plans of my partner firm concerning the collaboration well in advance.	1	2	3	4	5
4. exchange of information in this relationship takes place frequently.	1	2	3	4	5
5. exchange of information in this relationship takes place informally, and not only according to a pre-specified agreement.	1	2	3	4	5
6. we exchange enough information.	1	2	3	4	5

Section 4: Communicating over E-mail

Circle the number that best indicates the degree to which you agree or disagree with each of the following statements, using this scale:

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral , 4 = Agree, 5 = Strongly Agree

When I communicate with my main contact from my partner firm over e-mail…	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. he / she has provided enough relevant information whenever I asked for it.	1	2	3	4	5
2. I am promptly notified whenever any major change occurs at their firm.	1	2	3	4	5
3. I get enough clear information about the plans of my partner firm concerning the collaboration well in advance.	1	2	3	4	5
4. exchange of information in this relationship takes place frequently.	1	2	3	4	5
5. exchange of information in this relationship takes place informally, and not only according to a pre-specified agreement.	1	2	3	4	5
6. we exchange enough information.	1	2	3	4	5

Section 5: Communicating in face-to-face situations

Circle the number that best indicates the degree to which you agree or disagree with each of the following statements, using this scale:

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral , 4 = Agree, 5 = Strongly Agree

When I communicate with my main contact from my partner firm in face-to-face situations...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. he / she has provided enough relevant information whenever I asked for it.	1	2	3	4	5
2. I am promptly notified whenever any major change occurs at their firm.	1	2	3	4	5
3. I get enough clear information about the plans of my partner firm concerning the collaboration well in advance.	1	2	3	4	5
4. exchange of information in this relationship takes place frequently.	1	2	3	4	5
5. exchange of information in this relationship takes place informally, and not only according to a pre-specified agreement.	1	2	3	4	5
6. we exchange enough information.	1	2	3	4	5

Section 6: Communicating over Instant Messaging

Circle the number that best indicates the degree to which you agree or disagree with each of the following statements, using this scale:

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral , 4 = Agree, 5 = Strongly Agree

When I communicate with my main contact from my partner firm using instant messaging…	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. he / she has provided enough relevant information whenever I asked for it.	1	2	3	4	5
2. I am promptly notified whenever any major change occurs at their firm.	1	2	3	4	5
3. I get enough clear information about the plans of my partner firm concerning the collaboration well in advance.	1	2	3	4	5
4. exchange of information in this relationship takes place frequently.	1	2	3	4	5
5. exchange of information in this relationship takes place informally, and not only according to a pre-specified agreement.	1	2	3	4	5
6. we exchange enough information.	1	2	3	4	5

Section 7: Supply Chain Relationship Outcomes

Circle the number that best indicates the degree to which you agree or disagree with each of the following statements, using this scale:

1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neither agree nor disagree, 5 = somewhat agree, 6 = agree, 7 = strongly agree

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat agree	Agree	Strongly Agree
1. The results and benefits of this partnership met expectations.	1	2	3	4	5	6	7
2. This partnership realized the goals we set out to achieve.	1	2	3	4	5	6	7
3. The time and effort spent in developing and maintaining this relationship was worthwhile.	1	2	3	4	5	6	7
4. My relationship with my main contact from my partner company was productive.	1	2	3	4	5	6	7
5. I am satisfied with this working relationship with my main contact from my partner firm.	1	2	3	4	5	6	7
6. This person from my partner firm has always been evenhanded in his / her dealings with me.	1	2	3	4	5	6	7
7. My main from my partner firm used opportunities that arise to profit at my company's expense.	1	2	3	4	5	6	7
8. Based on past experiences, I cannot with complete confidence rely on my main contact from my partner firm to keep promises made to us.	1	2	3	4	5	6	7
9. I am hesitant to transact with my main contact from my partner firm when specifications are vague.	1	2	3	4	5	6	7

Circle the number that best indicates the degree to which you agree or disagree with each of the following statements, using this scale:

1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neither agree nor disagree, 5 = somewhat agree, 6 = agree, 7 = strongly agree

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat agree	Agree	Strongly Agree
10. My main contact from my partner firm is trustworthy.	1	2	3	4	5	6	7
11. The profits met the acceptable return for projects like this in your company.	1	2	3	4	5	6	7
12. This project met the company's sales objectives/expectations.	1	2	3	4	5	6	7
13. This project met company's profit objectives/expectations.	1	2	3	4	5	6	7

0 = way below expectations, 5 = met expectations, 10 = way above expectations

14. This project was a financial success.	0	1	2	3	4	5	6	7	8	9	10

Section 8: Frequency of Contact

Estimate the amount of working time that you spend at your partner firm, at your parent firm, and at other organizations. As with the above question, your total time should equal 100%.

_____ % at Parent Firm _____ % at Partner Firm

_____% at other organizations

Section 9: Frequency of Communication

Using the following scale, answer these questions by circling the number that best represents your answer:

1 = daily, 2 = about twice a week, 3 = about once a week, 4 = about twice a month, 5 = once a month or less

	Daily	About twice a week	About once a week	About twice a month	Once a month or less
1. How often do you communicate with this person from your partner firm over the phone?	1	2	3	4	5
2. How often do you communicate with this person from your partner firm via e-mail?	1	2	3	4	5
3. How often do you communicate with this person from your partner firm using instant messaging?	1	2	3	4	5
4. How often do you communicate with this person from your partner firm in face-to-face situations?	1	2	3	4	5

Using the following scale, answer the following questions by circling the number that best represents your answer:

1= twice a month of more, 2 = about once a month, 3 = about once every three months,

4 = about once every six months, 5 = once a year or less

	Twice a month or more	About once a month	About once every three months	About once every six months	Once a year or less
5. How often do senior and middle managers in your company make business trips to your partner firm?	1	2	3	4	5
6. How often do you make business trips to your partner firm?	1	2	3	4	5

Please continue to the last page.

Section 10: Final Questions

Please answer the following questions:

1. Was this your first joint project between your firm and your partner firm?

   Please circle: *yes* or *no*

2. Approximately how long has your firm and this partner firm had an alliance or relationship?

_____

3. Approximately how many employees work at your firm?

1-50_____ 51-100_____ 101-150____ 151-200____ 201-300____ 301-500____

501-700____ 701-900_____ 901-1100____ 1101-1500_____ More than 1500_____

4. Approximately how many employees work at your partner's firm?

1-50_____ 51-100_____ 101-150____ 151-200____ 201-300____ 301-500____

501-700____ 701-900_____ 901-1100____ 1101-1500_____ More than 1500_____

5. What designation best reflects your job title?

Buyer_____ Purchasing Agent_____ Purchasing Manager_____ Procurement Manager_____ Vendor_____ Sales Manager_____ Supply Chain Management Specialist_____ Warehouse Manager_____

Other (please write in)_____

6. Which employment sector best describes the area in which you work?

Accommodation and food services_____ Agriculture, forestry, fishing and hunting_____ Arts, entertainment, and recreation_____ Construction_____ Government_____ Healthcare and social assistance____ Information_____ Management of companies and Administrative services_____ Manufacturing _____ Mining_____ Other services, except government_____ Professional, scientific, and technical services_____ Real estate and rental and leasing_____Retail trade_____ Transportation and warehousing_____ Utilities_____ Wholesale trade_____ Other (please write in)_____

7. In what year were you born?_____

Thank you for participating in this study

VITA

George Edward Higbie III was born in Lexington, Kentucky on February 22, 1979, the son of George Edward Higbie Jr. and Deborah Anne Higbie. After completing his work at Thomas Jefferson High School, in Port Arthur, Texas, in 1997, he entered Texas State University-San Marcos. During the summer of 1998, he attended Lamar University-Beaumont. He received the degree of Bachelor of Arts from Texas State University-San Marcos in May 2001. He then entered the University of Texas in 2001, and received the Master of Arts degree from The University of Texas-Austin in 2004. During the following year, he was employed as an adjunct professor of Spanish at multiple colleges in Central Texas. In August 2005, he entered the Graduate College of Texas State University-San Marcos.

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This thesis was typed by George E. Higbie