BEHAVIORAL ASPECTS OF SUPPLY CHAIN INTEGRATION: MACRO AND MICRO LEVEL PERSPECTIVES

A Dissertation

by

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ABSTRACT

Supply chain integration (SCI) among customers and suppliers is widely touted as a panacea that can resolve a variety of supply chain challenges and create new opportunities. Yet, there is little understanding about SCI. My first research question pertains to identifying the idiosyncratic behavioral nuances associated with SCI. I employ Grounded Theory (GT) methodology to analyze data obtained from interviews with individuals at seven companies. This work suggests that firms engaging in SCI exhibit a set of six behavioral patterns, which vary in degree. I then conjecture that SCI might exist at three different levels: coordination, collaboration, and internalization.

Furthermore, very few studies have examined SCI's antecedents from the supplier's standpoint. I examine the role of *customer leadership behavior* which has hardly been the subject of empirical inquiry in this domain. I also empirically study the operant sequence that relates customer leadership behavior to SCI. I develop a theoretical framework and test it using data obtained from 207 firms via survey methodology. My results suggest that a customer's transformational leadership behavior appears to positively influence trust which impacts affective commitment. Affective commitment is found to engender high levels of SCI.

Also, the extant empirical research on SCI is examined from an organizational, and rather impersonal level, as if an invisible hand calls the shots. The role of individual in decision making in largely ignored. I synthesize the Behavioral Agency Model (BAM) and Behavioral Approach and Inhibition Model (BAIM), specify two variables (i.e.,

Variability in Pay and Socioemotional Wealth) as potential explanatory variables of executive decision making. The main findings reported in this study are based on 125 usable responses obtained by employing a 2x2 experimental design. I find evidence to suggest that only the main effect of variability in pay is positive and statistically significant. This suggests that individuals experiencing high levels of variability in pay are more likely to seek the highest level of SCI A post-hoc analysis, which involved splitting the sample by age (i.e., low & high) groups, yielded interesting findings as the results varied significantly between the two age groups.

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CHAPTER I

INTRODUCTION*

Firms that poorly manage their supply chain relationships incur significant costs. As an example, auto parts suppliers find that supplying to General Motors (GM) costs them 8% more than what it costs to supply a similar part to Toyota or Honda (Chappell, 2004). More often, GM's suppliers attempt different means to transfer this cost to GM. A study by Dyer (2002) also finds that GM's transaction costs with its suppliers are six to eight times higher than what is incurred by Toyota. Recent research reports have demonstrated that poor supplier relationships not only translate to high monetary costs, but have resulted in fatalities. For instance, thirteen fatal crashes involving GM cars due to faulty ignition switches had been reported by December 2013 (Hoffman, 2014). GM blamed the faulty ignition switches on its parts supplier, Delphi. Delphi depended on GM for more than 90% of its business, and when GM began to squeeze Delphi's profit margins, it resulted in strained relationships between Delphi and GM (Naughton, Welch, Green, & Kimes, 2014). GM and Delphi's strained relationship prevented them from working together in designing and developing the ignition switches for their new car models, which could have perhaps prevented some tragic events. According to John Henke, president of

* Part of this chapter is reprinted with permission from "The relationships between external integration and plant improvement and innovation capabilities: The moderation effect of product clockspeed" by Peng, D. X., Verghese, A., Shah, R., & Schroeder, R. G, 2013. *Journal of Supply Chain Management*, 49(3): 3-24, © 2013 Institute for Supply Management, Inc.

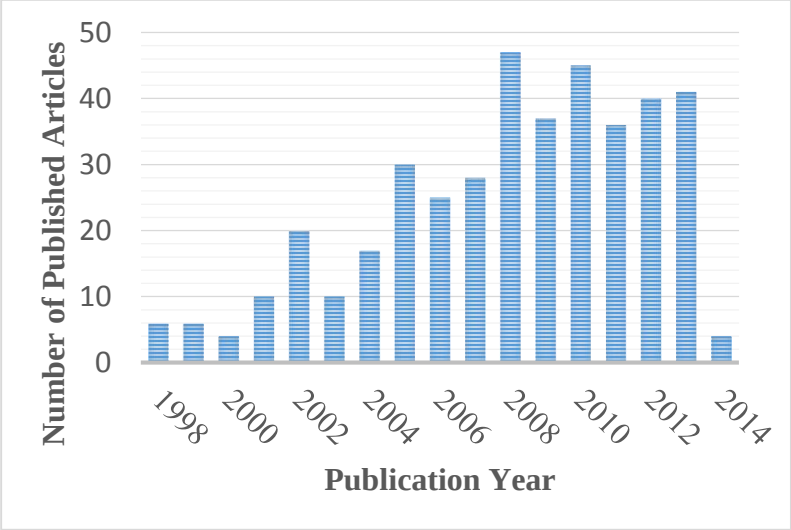
Planning Perspectives Inc., a firm that tracks relationships between automakers and its suppliers, "the two companies had so much hatred for each other that if one was working as a Delphi engineer, he/she didn't want to get out of bed in the morning" (Hoffman, 2014).

On the other hand, effectively managing supply chain relationships can yield substantial benefits for companies (e.g., new product development capabilities). As an example, in 2007, Research In Motion (RIM) had 10.9% of the worldwide smartphone market share while Samsung had 1.8% (Roberta, Nguyen, Gupta, Vergne, & Sato, 2009). However, this situation has changed since then, and currently Samsung has acquired 32% of the global smartphone market share while RIM has roughly less than 1% of the market share (Ganos, 2013). One plausible explanation for this downward spiral of RIM and upward spiral of Samsung is their supply chain relationships and how they are managed (Greve, Rowley, & Shipilov, 2013). During the time period 2007 to 2011, Samsung developed over 25 strategic supply chain relationships while RIM had developed about four (Greve et al., 2013). In 2008, during one of the worst economic crises since World War I, RIM considered it as an opportunity to increase its profit margins by exercising its purchasing power and bargaining for lower costs with its suppliers. Jim Balsillie, Co-Chief Executive Officer of RIM Inc., is quoted saying, "Being a strong growth company in a challenging environment makes you an important customer" (Miller, 2013). Instead of collaborating with suppliers in challenging situations, and finding means to reduce costs and increase market share, RIM was keen on bargaining for a lower price by exercising its purchasing power (Miller, 2013). Samsung, on the other hand, collaborated with its

suppliers and determined ways to reduce its overall costs and gain market share. Samsung values long-term strategic relationships and determines ways to expand the scope of its business with its supply chain partners (Manna, 2011). Often, this commitment by Samsung is reflected in its suppliers' actions. For example, Praxair, a supplier of bulk and process gasses necessary for the production of liquid crystal displays, purchased an 18,000 square-foot area close to a Samsung facility to serve it better (Manna, 2011).

Considering the importance of interfirm relationships (i.e., supply chain integration), supply chain scholars have paid increased levels of attention to supply chain integration (SCI) over the past two decades (see Figure 1-1). Typically supply chain researchers have ascribed SCI with positive attributions. Furthermore, the impact of SCI has predominantly been examined in the context of new product development (Koufteros, Rawski, & Rupak, 2010; Rai & Bajwa, 1997; Saeed, Malhotra, & Grover, 2005) and various operational performance metrics such as delivery, quality, cost, and flexibility performance (Paulraj & Chen, 2005; Schoenherr & Swink, 2012; Wagner, Coley, & Lindemann, 2011; Watson, 2001). A recent meta-analytic study conducted by Leuschner, Rogers, and Charvet (2013) found evidence to suggest that SCI has a positive impact on firm performance. Frohlich and Westbrook (2001) demonstrated that firms with wider "arcs of integration" have higher performance improvement. That is, firms with greater supplier and customer integration exhibit higher operational performance improvement. Overall, consensus exists that SCI is a viable means to compete in today's highly competitive environment (Dyer & Singh, 1998; Leuschner et al., 2013)

Figure 1-1 SCI Publication Trend (searched using the keywords supply chain integration, collaboration, coordination from EBSCO Business Source Complete)



Despite the vast number of studies on SCI, ambiguity still persists regarding the theoretical conceptualization and operationalization of the term SCI (Barratt, 2004; Cao & Zhang, 2011). The term *SCI* is often used interchangeably with terms such as *coordination* and *collaboration*. There is no clear distinction between these three terms in the literature, although researchers have argued that coordination, collaboration, and SCI represent different levels of interfirm relationships. For example, Cao and Zhang (2011) suggest firms that have an integrated relationship have stronger ties with their supply chain partners than those firms that collaborate, and Barratt (2004) argued that collaborating firms have stronger ties than coordinating firms. Earlier studies suggest that there are

inconsistencies in the operationalization of the behavioral characteristics exhibited by firms while engaging in SCI (Mackelprang, Robinson, & Webb, 2012).

Additionally, there is a paucity of studies that examine antecedents of SCI (Goo, Huang, & Hart, 2008). This paucity limits our understanding of the factors that can perhaps explain failure or success in supply chain relationships. The extant research regarding antecedents of SCI has primarily focused on studying the role of power, relationship commitment, and supplier attributes such as performance and capabilities (Petersen, Handfield, & Ragatz, 2005) while ignoring other critical issues such as leadership behavior within a supply chain. Leadership can foster supply chain partner actions and can shape supply chain relationships (Defee, 2007; Sharif & Irani, 2012). Furthermore, most studies on SCI have looked at it from a customer's perspective but not from a supplier's perspective. The lack of empirical research and respective evidence regarding the antecedents of SCI limits our understanding of how effective SCI can be attained.

SCI can result in sustained competitive advantage at large (Dyer and Singh, 1998). However, SCI requires substantial investment into a relationship in terms of time, effort and costs. Failure in SCI can result in substantial costs. Recently, Tiffany & Co. had to pay Swiss watchmaker Swatch Group AG the equivalent of $449.5 million in damages due to their failed partnership (Linebaugh, 2013). In another instance, Dow Chemical Co., the largest U.S. chemical maker by sales, was awarded $2.48 billion from Petrochemical Industries Co. of Kuwait for a canceled joint venture (McDonald & Kaskey, 2013). The governance mechanisms within organizations are structured in a manner that risks are transferred from firms to executives (Wiseman & Gomez-Mejia, 1998). Agency theorists

have argued that an executive who bears high risk engages in risk-averse behaviors (Wiseman & Gomez-Mejia, 1998). Thus, if supply chain executives (SCEs) who make decisions related to SCI perceive high levels of risk, they might decide not to pursue SCI (Villena, Gomez-Mejia, & Revilla, 2009). The decision making behaviors of supply chain executives in the realm of SCI decisions have not been a topic of empirical inquiry.

In addition, much of the extant SCI literature has examined SCI at the firm level (Koufteros et al., 2010; Lau, Tang, & Yam, 2010), strategic business unit level (SBU), and plant level (Peng, Verghese, Shah, & Schroeder, 2013). The examination of SCI at the firm, SBU, and plant level provides valuable insights into the performance implications of engaging in SCI. However, our understanding of the phenomenon is limited as we fail to consider the role of individuals in SCI (Villena et al., 2009). Organizations are a mirror of the respective executives' strategic choices within them (Hambrick & Mason, 1984), and ignoring the role of executives can hamper our understanding of the phenomenon of SCI.

1.1 Research Objectives

Although a large number of studies have examined SCI, several questions remain largely unanswered. First, there is ambiguity pertaining to the theoretical underpinnings of the SCI construct. One of the primary objectives of this dissertation is to understand the idiosyncratic behavioral nuances of SCI. Furthermore, I seek to develop a theoretical framework for SCI serving as the basis upon which future deductive research can be conducted.

While much of the empirical literature on SCI has focused on examining the outcomes of SCI, relatively little research has been conducted to understand the antecedents of SCI. The second objective of this dissertation is to examine the impact of customer leadership behaviors/styles on the supplier's willingness to engage in SCI. Contingent on the leadership behavior(s) exhibited by a customer, a supplier might respond in different ways. Examining whether and how customer leadership behavior ultimately heightens the propensity of a supplier to engage in interfirm relationships will be fruitful and informative for both academia and practice.

In addition to the lack of studies examining the antecedents to SCI, hardly any attention has been directed towards understanding the individual role of executives within organizations in the realm of SCI. Although a firm level perspective provides useful insights on how firms engage in SCI, ignoring the role of individuals in SCI research is being increasing questioned (Villena et al., 2009). There is no invisible hand that makes strategic decisions; rather individuals who carry their own biases, preferences, and interests make such decisions.

1.2 Literature Related to Supply Chain Integration

This section first elaborates on the two broad perspectives that have been used to examine SCI, and subsequently discusses the literature related to the conceptualization and antecedents of SCI. This review serves the purpose of more effectively illustrating the potential gaps in the literature that are addressed in this dissertation. The two broad perspectives used to explain external SCI are *customer* integration and *supplier* integration. It is not practical to review all the vast SCI literature in this study, and thus

only a representative sample of the literature is reviewed here (see van der Vaart & van Donk (2010)).

1.2.1 Supplier Integration

Increasingly, firms are relying on their suppliers for their valuable inputs while developing new products (Petersen, Handfield, Lawson, & Cousins, 2008). In other terms, suppliers are treated as strategic collaborators by the focal firm (Koufteros, Vonderembse, & Jayaram, 2005). Supplier integration is an important task when it comes to supplier management (Wagner, 2003). Das, Narasimhan, and Talluri (2006, p.564) defined supplier integration as "a state of syncretism among the supplier, purchasing, and manufacturing constituents of the organization." A synergetic relationship between the supplier and its focal firm allows partnering firms to work closely together in developing new products with high quality and at low cost while both companies reap the benefits of the emerging product. Supplier integration enables partner firms to combine their efforts in meeting customer requirements effectively and efficiently.

Supplier integration serves as a medium for sharing information and knowledge among suppliers and focal firms, and as a means of applying that information and knowledge for the joint benefit of the members involved in a relationship (Das et al., 2006). An integrated supplier relationship is often characterized by high levels of trust and commitment among the involved firms. Furthermore, joint problem solving, seamless transfer of information, relationship duration, and constant feedback are distinct characteristics of an integrated supplier relationship. When integrated with suppliers, manufacturers invest time and other resources in developing the capabilities of suppliers.

Supplier integration improves a focal firm's relationship with its integrated suppliers and enables a smooth relationship in the future (Petersen, Ragatz, & Monczka, 2005; Ragatz, Handfield, & Petersen, 2002).

Supplier integration has positive benefits for the performance of supply chain. For example, it has a positive impact on the reduction of lead time for new product development (Primo & Amundson, 2002). Lau et al. (2010) demonstrate that supplier integration is a means to improve product innovation and product performance for a focal firm. From a supplier perspective, Klioutch and Leker (2011) identify that supplier involvement in their customer is new product development activities has a positive impact on new product development for the customer. Perols, Zimmermann, and Kortmann (2013) maintain that supplier process integration enables the manufacturing firms to achieve quicker time-to-market and thereby provides them a competitive advantage.

1.2.2 Customer Integration

Relative to supplier integration, customer integration (CI) has not received much attention in the SCI literature. Customer inputs can also serve as a valuable source of information for continuous improvement and innovation activities (Peng et al., 2013). According to Bowersox et al. (1996), CI derives from coordination with critical SC customers. The few studies pertaining to CI have identified that information sharing, coordination, and synchronization of processes are some of the critical activities in CI (Zhao, Huo, Flynn, & Yeung, 2008) that help build a long-term relationship with customers of choice (Closs & Mollenkopf, 2004). CI involves several activities that promote stronger interfirm relationships with customers, such as frequent customer

contacts, communication of satisfaction surveys, and formal and informal direct employee–customer interactions (Swink, Narasimhan, & Wang, 2007). By engaging in CI, focal firms are able to obtain information regarding the required changes to product specifications and process design in a timely and accurate manner (Stump, Athaide, & Joshi, 2002). Since product modification and improvements are often triggered by changes in customer needs, frequent inputs from customers become increasingly important in a highly competitive environment. Customers can help improve suppliers' product design processes by providing technical support for and training on product design methodologies and tools (Hartley & Choi, 1996). CI not only helps the focal firm obtain additional design information but also helps clarify information ambiguity, which frequently arises when a product is introduced under significant time pressure. CI has a positive impact on reducing glitches in product development and increasing the chances of a product's market success (Koufteros et al., 2010).

Developing an integrated relationship with customers provides tacit knowledge and insights that cannot be achieved without that close relationship. Such knowledge can be used to enhance operational effectiveness and cost efficiency (Eckes, 2001). Furthermore, developing intimate relationships with customers insulates suppliers from market competition, at least to a certain degree (Stank, Keller, & Closs, 2001a).

Customers are often a source of innovative ideas and can help suppliers improve their products and service design (Flint, Larsson, Gammelgaard, & Mentzer, 2005). Utilizing customer ideas is a major source of innovation (Ulwick, 2002). Furthermore, CI

serves as a means to provide individualized products to customers by helping suppliers develop key capabilities (Peng et al., 2013).

1.2.3 Definitions of SCI

Supply chain scholars often measure interfirm relationships using the construct of supply chain integration (SCI) (Frohlich & Westbrook, 2001; Schoenherr & Swink, 2012). The term SCI is characterized by inconsistent definitions and dimensions (Tate et al., 2010). Some scholars treat SCI as a single construct (Cox, 2001), while others focus on multiple dimensions of SCI (Leuschner et al., 2013; Nahapiet & Ghoshal, 1998; Peng et al., 2013; Rai & Bajwa, 1997), in particular internal-, customer-, and supplier-integration. More recently, Van der Vaart & van Donk (2010) suggest that the term SCI is captured by various practices, patterns, and attitudes. They suggest that supply chain practices are characterized by tangible activities, or technologies that play a critical role in the collaboration of a focal firm with its suppliers and/or customers. Examples include the utilization of Electronic Data Interchange (EDI) and Vendor Managed Inventories (VMI). Moreover, they suggest that related to supply chain practices are supply chain patterns, or interaction patterns, between the focal firm and its suppliers and/or customers. Examples of interaction patterns include regular visits to the supplier's facility, and frequent face-to-face communication. Attitudes, they suggest, measure the feelings of buyers and/or suppliers towards each other or towards SCI in general. For instance, one such feeling is a customer's view of their suppliers as an extension of their company. These categories help us group pre-existing measures of SCI in an effective fashion. While these dimensions and classifications offer significant insights into the research on SCI by

examining their role in improving firm performance (Schoenherr & Swink, 2012) and innovation capabilities (Peng et al., 2013), the extant literature falls short in explaining the term SCI in relation to coordination and collaboration (Barratt, 2004; Cao & Zhang, 2011).

SCI is confounded with the terms coordination and collaboration. Several studies suggest that there is a difference between coordination, collaboration, and integration (Cao & Zhang, 2011; Lee, 2000), but the differences between them are still very ambiguous. According to a report by Boston Consulting Group & Wharton (2006), having supply chain coordination and collaboration amongst two parties alone may not be sufficient to address the primary goal of supply chain management: having the right product at the right place, at the right time, and at the right price. The report recommends that successful firms have now embraced SCI. It is important to note that they suggest that there is a difference between supply chain coordination, collaboration, and integration without however really delineating the differences between them. In addition, Lee (2000) suggests that there is variance between being coordinated and being integrated. According to Lee (2000), coordination reflects information sharing, exchanging decision rights, work realignment, and resource sharing, while integration encompasses coordination and additional organizational linkages which facilitate sharing of risks, costs, and gains. The differentiation made by Lee (2000) is significant, however, the term collaboration is lost in the expressions of coordination and integration. Also, a number of scholars have illustrated that collaboration is different from coordination (Bowersox, Closs, & Stank, 2003; Zaheer, McEvily, & Perrone, 1998b). Jap (1999) carried out a seminal study towards this account. Jap (1999) suggests that collaboration is the combination of coordination

efforts and joint investments in idiosyncratic resources. Although scholars acknowledge that there is a difference between the terms of coordination, collaboration, and SCI these terms are frequently used interchangeably. This difference promotes confusion, leads to inconsistent findings, and hampers meaningful additive research. A plausible reason for this confusion is the lack of an unambiguous definition for the constructs of supply chain coordination, supply chain collaboration, and SCI.

1.2.4 Antecedents of SCI

Although several studies have sought to explain the link between SCI and performance, relatively few studies have examined the antecedents of SCI (Zhao et al., 2008). Bensaou and Anderson (1999) investigated the relationship between different task and supplier characteristics on the willingness of a customer to engage in SCI by investing in idiosyncratic investments. Using a sample of 388 complete observations regarding matched buyer-supplier relationships, they empirically demonstrate that several factors such as, task complexity, interdependency, and supplier trustworthiness serve as enablers of SCI from a buyer's perspective. Supply chain scholars have successfully identified generalizable constructs from other disciplines such as sociology and psychology and metaphorically examined their impact on SCI. For instance, studies have examined the effects of factors such as social embeddedness, i.e. relational linkages or ties among other supply chain partners (Koufteros, Edwin Cheng, & Lai, 2007) and reputation (Wagner et al., 2011) on SCI.

Several studies have also sought to explain the role of trust and commitment in SCI (Cannon, Doney, Mullen, & Petersen, 2010; Das et al., 2006; Doney & Cannon, 1997;

Johnston, McCutcheon, Stuart, & Kerwood, 2004; Zhao et al., 2008). As an example, Cannon et al. (2010) study the role of a buyer firm's trust of its supplier and the supplier firm's operational performance on a buyer's long-term orientation towards its supplier. They further argue that these relationships are contingent upon the culture of the buying firm. For the purpose of comparing the differences in relationships across cultures, the study was undertaken across three different countries using a total of 561 usable responses. In their study, they find that trust and supplier performance positively affect the long-term orientation of buyers, thereby inducing them to be more inclined towards SCI. Furthermore, in collectivist cultures they find that the effect of trust on long-term relationships is greater than the effect of supplier performance.

More recently, SCI scholars have focused their attention on inciting mechanisms that foster trust and commitment among supply chain partners, which can serve as effective facilitators of SCI. For instance, studies have examined the role of power in achieving SCI and superior performance (Handley & Benton Jr, 2012; Terpend & Ashenbaum, 2012; Zhao et al., 2008). Zhao et al. (2008) examined the relationship among two different types of power (i.e., mediated and non-mediated sources of power) on CI. They generally find that the non-mediated power bases (e.g., expert power, referent power, and legitimate power) positively influence SCI using a sample of firms from five major cities in China. While extant studies have examined power as an influence mechanism in achieving SCI, current research falls short in adequately addressing the role of (customer) leadership behavior, another effective rousing mechanism (Avolio, Gardner, Walumbwa, Luthans, & May, 2004a; Sharif & Irani, 2012), in enabling SCI.

Furthermore, most of the prior work on SCI has examined its antecedents at the firm level and ignores the role of executives who have the ability to influence strategic decisions pertinent to their organizations. Increasingly researchers question whether this is prudent given the level of power executives hold (Villena et al., 2009).

1.3 Research Questions and Expected Contributions to the SCI Literature

The review of relevant literature has identified and underlined some of the gaps in the current SCI literature, and highlighted some important questions that remain largely unanswered. First, there is a clear need for a theoretical framework of SCI that explains what it is and what it entails; there is a need to define SCI and delineate its domain and idiosyncratic attributes. Furthermore, the SCI literature has not considered the role of customer leadership behavior in achieving SCI. Specifically, there is a need for a nomological network that relates customer leadership behaviors to the extent a supplier pursues SCI with its customer. Moreover, it is imperative to examine SCI from an individual's perspective to gain a holistic understanding of antecedents of SCI. In essence, the interest centers here on the question of whether the personal interests of executives' influence their decisions pertaining to the type of relationship they would seek with supply chain partners. I address these questions through three studies in my dissertation, which are briefly discussed below.

1.3.1 Study-1

Overall, consensus exists that SCI has a positive influence on firm performance. However, some recent evidence suggests that SCI might not have the desired impact on operational performance (Hong & Hartley, 2011; Schoenherr & Swink, 2012) and new

product development capabilities (Wagner, 2012). Such evidence cannot be simply dismissed. A plausible explanation for these contradictory findings is that the theoretical meaning for SCI is highly inconsistent. Extant literature suggests that there is no consistency in the operationalization of SCI (Van der Vaart & van Donk, 2008). To adequately capture the term SCI, the nuances in behaviors associated with SCI a qualitative approach is employed.

Several interviews are conducted across several industries. The data were obtained through semi-structured interviews and was analyzed using Nvivo10 employing a Grounded Theory (GT) methodology. Central themes and their relationships were identified using different coding mechanisms (i.e., open, selective, and axial) proposed by GT methodology (Birks & Mills, 2011). The results indicate that SCI captures a set of six different behaviors namely, monitoring, joint activities, knowledge sharing, relational investments, vision sharing, and adaptability in relationships. Furthermore, the results suggest, firms can be grouped into three different levels SCI based on the behaviors exhibited namely, coordination (i.e., firms are transactional in orientation), collaboration (i.e., firms are cooperative in nature), and internalization (i.e., firms exhibit an intrinsic desire to be associated in a relationship).

1.3.2 Study-2

In this study, two theories are employed (i.e., Transformational Leadership Theory (TLT) and Social Exchange Theory (SET)) to develop the hypotheses that link customer leadership behaviors and the extent to which a supplier pursues SCI with its customer. TLT identifies two distinct leadership behavior styles, transformational (TL) and

transactional leadership (TRL). Furthermore, this theory suggests that TL is a second-order factor comprising of three first-order factors which include charisma/inspirational leadership, intellectual stimulation, and individualized consideration. On the other hand, TRL can be reflected by two distinct nuances, namely contingent reward and management by exception. SET on the other hand provides the theoretical framework to explain how these two leadership behavior styles influence SCI as viewed from the supplier perspective. Specifically, SET suggests that TL and TRL affect the level of SCI pursued through trust and commitment. Based on the extant literature, commitment is operationalized using two dimensions, affective and continuance commitment.

The nomological network is empirically tested using 207 observations obtained from different industry sectors. The analysis is carried out using Mplus 6.0. The results suggest that TL positively influences trust while both nuances of TRL fail to explain trust. Furthermore, my analysis suggests that trust positively influences affective commitment but there was no evidence to attest that trust and continuance commitment are related. The analysis also revealed affective commitment was a significant predictor of SCI, and contrary to the expected relationship, continuance commitment also had a positive and significant impact on SCI, after controlling for relationship duration, product type, competition, and the location of the customer.

1.3.3 Study-3

SCI may fail due to poor executive decision choices regarding the specific type of relationship they seek to establish with supply chain partners (Villena et al., 2009). Much of the extant research has assumed that firms will engage in integration if an organization's

external (e.g., industry structure in terms of suppliers available for a product) and internal (e.g., culture) factors are favorable for integration while largely ignoring the role of managerial decision making. The lack of knowledge regarding managerial decision making with respect to SCI restricts our ability to devise appropriate incentive schemes to align the interests of managers with their respective firm's interests. A significant proportion of the early work on operations and supply chain management (OSCM) has been built on certain behavioral assumptions regarding decision makers (e.g., rationality of the decision maker and constant risk aversion). However, increasing evidence has suggested that accounting for the behaviors of decision makers will help attain better solutions for OSCM challenges (Grewal & Slotegraaf, 2007). Understanding and incorporating behavioral factors can yield informative findings (Grewal & Slotegraaf, 2007). Scholars from management and cognitive psychology have found that compensation (Jensen & Murphy, 1990) and the cognitions, perceptions and values of individuals can influence their behaviors (Anderson & Galinsky, 2006; Carpenter, Geletkanycz, & Sanders, 2004).

In this study, I argue that SCI exists at three different levels: coordination, collaboration, and internalization. I further suggest that internalization is the riskiest decision for SCEs and coordination is the least risky, while collaboration lies in between internalization and coordination. I employ two behavioral theories in order to frame the research questions regarding SCEs decision making behaviors. The Behavioral Agency Model (BAM) theory predicts that individuals are in general loss averse and will engage in risky behaviors in loss situations to mitigate losses or to totally avoid them. BAM

particularly examines the role of variability in pay in decision making and suggests that higher levels of variability in pay are associated with increased risk seeking behaviors. On the other hand, the Behavioral Approach and Inhibition Model (BAIM) theory posits that individuals possessing more power (socioemotional wealth in this context) are more risk seeking vis-à-vis individuals with low power. I synthesize the two theories and specify two variables (i.e., Variability in Pay and Socioemotional Wealth) as explanatory variables for SCE decision making in the context of SCI.

I postulate that SCEs experiencing high variability in pay and possessing low socioemotional wealth will be more likely to seek high levels of supply chain integration. Furthermore, I also hypothesize that SCEs experiencing low variability in pay but possessing high socioemotional wealth are also likely to opt for high levels of SCI. Although these predictions are consistent with the expectations of BAM and BAIM respectively, I hypothesize that the interaction between socioemotional wealth and variability in pay may generate counterintuitive results. For instance, I predict that the interaction between high socioemotional wealth and high variability in pay will result in lower risk taking behavior, and hence managers will be less likely to pursue high levels of SCI. I test my predictions using a 2x2 between-subjects experimental design where socioemotional wealth and variability-in-pay are each varied at two levels (i.e., low & high), and I examine the hypotheses in light of multiple studies (i.e., with students and practitioners) and several control variables. The study was piloted with roughly 400 undergraduate students in two different spells. The findings reported in this study are based on 125 usable responses obtained from practitioners via Qualtrics. With the overall

practitioner sample I find evidence to suggest that only the main effect of variability in pay is positive and significant, suggesting that individuals experiencing high levels of variability in pay are more likely to seek high levels of SCI. This result did not completely support my predictions, and my earlier results obtained by relying on students. Therefore, I conducted a post-hoc analysis by grouping the sample into two, based on age (i.e., low age & high age), and subsequently found significant differences in the results between the two groups. For instance, in the sample with younger individuals, I find evidence to support all of my hypotheses. However, with the high age group sample I find evidence to suggest that socioemotional wealth had a significant negative impact on SCI, alluding that older individuals with higher levels of socioemotional wealth are less likely to seek high levels of SCI.

1.4 An Overview of the Dissertation

Chapter II focuses on developing a theoretical framework for SCI. The first part is aimed at motivating the need for a new theoretical framework for SCI. The second part reviews some of the relevant literature on the conceptualizaion of SCI. In the next few sections, I elaborate on the research design for this study, data collection, and illustrate the analyses. Subsequently, I summarize the results of the analyses, and provide the discussion of the within-firm narratives. The final sections provide the discussion of the findings and develop a proposition. I conclude the chapter by highlighting the contributions of this study along with some directions for future research.

Chapter III examines the explanatory role of customer leadership behaviors on SCI. Chapter III is subdivided into several sections. The first part motivates the research

question while the next section provides a brief account of SET and its application in the context of customer-supplier relationship. The subsequent part describes the different constructs used in this study, such as leadership behavior styles, trust, commitment, and SCI. Furthermore, this part focuses on TLT to identify and discuss the different leadership behavior styles examined in this study. Then I develop the hypotheses to be tested in this study. The following few sections postulate the research design and the instrument development process. The instrument development process is followed by the testing of hypotheses using structural equations modeling (SEM), and the last part discusses the results and suggests directions for future research.

Chapter IV addresses the role of variability in pay and socioemotional wealth on managerial decision making in the realm of SCI. The initial part motivates the research question, specifically by considering the role of variability in pay and socioemotional wealth. Then, I discuss the primary dependent variable used in this study-SCI, and follow it up with the review of some the related literature on SCI (i.e., behavioral agency theory, and socioemotional wealth in the context of decision making). Subsequently to this, I develop the hypotheses to be tested. In the next few sections, I present the experimental design approach for this study, the methodology used, and subsequently present the results. Finally, I summarize the results and recommend directions for future research.

Chapter V provides a general discussion of the results that emerged from chapters II, III, and IV. Furthermore, this chapter synthesizes the results and discusses the implications of the findings to both theory and practice. The limitations of this dissertation and directions for future work are also discussed toward the end of this chapter.

CHAPTER II

A QUALITATIVE PERSPECTIVE OF SUPPLY CHAIN INTEGRATION

2.1 Introduction

Supply chain integration (SCI) characterizes the strength of ties among supply chain partners (Lee, 2000; Leuschner et al., 2013). Supply chain researchers have argued that firms seek to achieve high levels of SCI, recognizing that it helps to improve their overall performance (Cooper, Lambert, & Pagh, 1997; Molm, Takahashi, & Peterson, 2000; Rice & Hoppe, 2001). Several studies have shown that SCI is a critical factor in the success of new product development (Rai & Bajwa, 1997; Saeed et al., 2005) and for competitive advantage at large (Droge, Jayaram, & Vickery, 2004; Kahn & Mentzer, 1998; Rosenzweig, Roth, & Dean Jr, 2003; Wong, Boon-itt, & Wong, 2011). Frohlich and Westbrook (2001) demonstrated that firms with wider 'arcs of integration' have higher performance improvement. That is, firms with greater supplier and customer integration exhibit higher operational performance improvement when compared to firms that have lower integration levels with their supply chain partners.

In the past two decades, firms have been aggressively engaging in SCI, as is apparent from the 57,000 SCI initiatives that were undertaken from 1996-2001 in the United States (Anderson & Jap, 2012). While the trend has endured, recent studies indicate that nearly 30-50% of the SCI initiatives undertaken by firms end up in failure (Chao, 2011; Park & Ungson, 2001). Prior studies indicate that achieving high levels of SCI require substantial investments into a relationship in terms of time, commitment, and

resources (i.e., both financial and non-financial) (Doz, 1996; Dwyer, Schurr, & Oh, 1987; Vanpoucke, Vereecke, & Boyer, 2014). Failure in SCI can significantly impact the performance (i.e., both financial and operational performance) of firms involved in a relationship (Villena, Revilla, & Choi, 2011). Anderson and Jap (2012) stressed that failed relationships have one common factor, "Characteristics that were put in place to enable and empower a relationship became the weakest link through which problems began" (p.77). While a large number of studies have been published on SCI, there is little understanding about the characteristics of SCI, in both academia and practice (Mackelprang et al., 2012).

Although supply chain scholars have typically conceptualized and operationalized interfirm relationships through the construct of SCI (Schoenherr & Swink, 2012), there is no consistent conceptualization or operationalization of the term *SCI* across studies (Cao & Zhang, 2011; Leuschner et al., 2013; Van der Vaart & van Donk, 2008). This inconsistency has often led to confounding results with respect to SCI. For instance, several researchers have suggested that SCI has a positive influence on firm performance (Cousins & Menguc, 2006; Koufteros et al., 2007; Peng et al., 2013; Rosenzweig et al., 2003; Stank et al., 2001a) and engenders overall competitive advantage (Dyer, 2002; Dyer & Singh, 1998) while others dispute the positive qualities attributed to SCI. For instance, Littler, Leverick, and Wilson (1998) find that engaging in SCI with suppliers can increase cost and product development lead times while Hong and Hartley (2011) illustrated that there is no positive association between supplier integration and new product development efficiency.

A comprehensive review of the empirical SCI literature by Van der Vaart and Donk (2008) indicates that there has been significant differences in constructs that have been used to measure SCI. For instance, Carr and Pearson (1999) and Gimenez and Ventura (2005) both study the impact of SCI on performance. However, Carr and Person (1999) measured SCI using a six item measure that captures behaviors such as loyalty, face-to-face interactions, and establishing direct computer links with exchange partners. On the other hand, Gimenez and Ventura (2005) operationalized SCI using items that measured behaviors such as informal teamwork, shared information, and joint logistical processes. Such differences in behaviors are pervasive in the extant SCI literature, which thwarts meaningful additive research.

Mohr (1982) suggested that the lack of consistent theoretical meanings across studies poses a major problem when building and testing theories. It causes inconsistency of focus regarding the theoretical question being addressed. Furthermore, Kaplan and Norton (2008) noted that what cannot be measured adequately cannot be managed and improved. Kaplan (1973) argued that a construct's systemic meaning depends upon the underlying theory. SCI appears to lack consistency in its systemic meaning across studies. SCI is often confused with terms such as *coordination* and *collaboration* (Mackelprang et al., 2012). Although several studies have suggested that there are differences between coordination, collaboration, and SCI (Barratt, 2004; Cao & Zhang, 2011; Lee, 2000), these differences remain ambiguous. A plausible reason for this confusion is the lack of adequate understanding of the term *SCI*.

Typically, SCI studies have examined it employing cross-sectional survey research while several scholars have called for an examination of SCI employing a qualitative approach (Vanpoucke et al., 2014). Lewicki, Tomlinson, and Gillespie (2006) also indicate that little attention has been given to understanding the behavioral characteristics exhibited by firms engaging in SCI.

In this research, I address the primary research question that needs attention in the SCI literature: What are the idiosyncratic behavioral nuances exhibited by firms engaging in SCI? I attempt to respond to this question using a qualitative approach. Edmondson and McManus (2007) suggest that when the goal of data analyses is pattern identification, qualitative research is well suited. In addition, if the constructs of interest (i.e., SCI in my study) are not adequately developed in the prior literature, the use of qualitative research is recommended. The lack of clear understanding of the theoretical underpinnings of the term SCI in the literature prompts the use of qualitative research in this study. My research question is primarily directed toward addressing the "what" questions in theory-building related to SCI, which again leads me to employ qualitative research (Eisenhardt, 1989).

Qualitative data for this research is obtained by interviewing several individuals across seven companies affiliated with four different industries. Companies from multiple industries were targeted to improve the generalizability of my findings. My qualitative research involved interviewing subject experts via a semi-structured interview protocol (see Table A-1 in Appendix-A). I focus on SCI across supply chain partners, which may include customers as well as suppliers. I do not necessarily distinguish between *customer* and *supplier* perspectives as it relates to SCI.

Furthermore, the qualitative data obtained via interviews were transcribed and coded in NVivo10, and subsequently addressed based on Grounded Theory (GT) methodology. Data analysis was performed by continually comparing the themes/categories identified in one interview with those from other interviews. Constant comparison is a fundamental technique of the GT methodology (Strauss & Corbin, 1994; Strauss & Corbin, 1990).

In Section 2, I present a brief review of the relevant literature on the conceptualization of the term SCI. Then in section 3, I discuss the research design, research methods, and analysis used in the study and Section 4 presents the data collection process. Section 5 illustrates the data analysis and section 6 will provide the summary of the results. Section 7 produces the within-firm narratives while section 8 and 9 offer the discussion of the findings and develop a proposition. Finally, section 10 provides the conclusion for the chapter.

2.2 Related Literature

2.2.1 Conceptualization of SCI

There is consensus in the extant literature that the term SCI is not adequately understood or operationalized (Fawcett & Magnan, 2002; Mackelprang et al., 2012). Croom, Romano, and Giannakis (2000) examined the SCI definitions and operationalizations prior to the year 2000 and concluded that the term is inconsistently defined and operationalized. Chen and Paulraj (2004) also reached a similar conclusion as Croom et al. (2000). Recent studies have also indicated that SCI is not defined and operationalized effectively (Mackelprang et al., 2012; Van der Vaart & van Donk, 2008).

For instance, Frohlich and Westbrook (2000) operationalize SCI using measures encompassing access to information systems and sharing of logistical capabilities while Vickery, Jayaram, Droge, and Calantone (2003) address SCI using indicators reflecting supplier partnering, closer customer relationships, and cross-functional teams. There is no consistency in the behavioral patterns that are used to capture SCI.

Lee (2000) recommended that SCI can exist at two different levels: coordination, and integration, where integration involves coordination and organizational linkages. Lee (2000), asserts that coordination entails information sharing, exchanging decision rights, work realignment, and resource sharing, while integration encompasses coordination and organizational linkages which facilitate sharing of risks, costs, and gains. However, Lee (2000) does not address collaboration explicitly. Leuschner et al. (2013) advocate that collaboration exists at a different level than integration. Also, a number of scholars have illustrated that collaboration is different from coordination (Bowersox et al., 2003; Zaheer et al., 1998b). A seminal manuscript from Jap (1999) suggests that collaboration is coordination combined with idiosyncratic investments into a relationship. Mackelprang et al. (2012) argue that SCI might encompass constructs such as coordination and collaboration. Clearly, there is no clarity and consensus regarding the term SCI.

Furthermore, van der Vaart & van Donk (2010) also indicate that the term *SCI* has been operationalized inadequately in the extant literature. They articulate that SCI has been captured using a different set of practices, attitudes, and patterns across the literature. They demonstrate that supply chain practices are characterized by tangible activities, or technologies that play a critical role in the collaboration of a focal firm with its suppliers

and/or customers. Examples include the utilization of Electronic Data Interchange (EDI) and Vendor Managed Inventories (VMI). Moreover, they highlight that related to supply chain practices are supply chain patterns, or interaction patterns, between the focal firm and its suppliers and/or customers. Examples of interaction patterns include regular visits to the supplier's facility, and frequent face-to-face communication. Attitudes, they report, measure the feelings of buyers and/or suppliers towards each other or towards SCI in general. For instance, one such feeling is a customer's view of their suppliers as an extension of their company. These categories help us group pre-existing measures of SCI in an effective fashion. The classification advanced by Van der Vaart & van Donk (2010) affords a useful classification of SCI measures, yet it does not adequately resolve the ambiguity of the term SCI relative to coordination and collaboration.

Ho et al. (2002) survey the empirical literature on SCI, and report that there is discrepancy in the conceptualization and operationalization of the term SCI among earlier studies. This discrepancy has often led to mixed findings related to SCI (Van der Vaart & van Dunk, 2008). Recent studies call for a closer examination of the construct of SCI to identify the behavioral patterns that are exhibited by firms that engage in SCI (Leuschner et al., 2013; Mackelprang et al., 2012).

In summary, earlier studies have suggested that SCI can exist at different levels without clearly delineating the behavioral patterns and their nuances. I attempt to understand the behavioral patterns of firms by employing a qualitative approach. Once the nuances of these behavior patterns are understand and structure, I propose to explore

whether the notion of different levels of SCI as provided in the literature is accurate and useful.

2.3 Research Design

I use a qualitative approach using interviews to respond to the research question due to its inductive theory building nature. Qualitative research methods are useful in inductive research where the constructs or theories used to explain a phenomenon are not adequately developed (Edmondson & McManus, 2007; Eisenhardt, 1989a; Eisenhardt, 1989b). Qualitative research helps answer questions of "what," "why," and "how" (Barratt, Choi, & Li, 2011). Unlike most cross-sectional survey studies on SCI that fail to adequately capture the characteristics of SCI, I employ a qualitative methodology.

The data obtained via interviews are analyzed using the Grounded Theory (GT) methodology proposed by Strauss and Corbin (1990). Theoretical sampling technique is employed in selecting firms for this research. A theoretical sampling involved selecting firms according to their perceived level of relationships with their supply chain partners. Initial data analysis also guided firms' selection, as theoretical sampling is used to "illuminate and extend relationships and logic among constructs" (Eisenhardt & Graebner, 2007, p. 27). As Birks and Mills (2011) also noted, theoretical sampling focuses on finding new data sources (persons or things) that can best explicitly address specific theoretically interesting facets of the emergent analysis.

On the basis of industry affiliation, product type, firm size, and subsequently relying on telephonic interviews and e-mail responses, I assessed whether a firm would be a candidate for participation for my study. Within each selected firm, I identified

participants by contacting a sponsor who assumed the responsibility of providing me with the appropriate contacts. Such participants included individuals at the level of vice president, director, or senior manager working in the functional area of operations and supply chain management at large. I then obtained some elemental information regarding the types of interfirm relationships each firm maintains with its supply chain partners. Furthermore, it was critical for the participants in my study to have adequate knowledge regarding interfirm relationships. I verified this during my correspondence with the participants over the phone or via e-mail. Once I identified a potential candidate in a firm, I briefed the participant in detail regarding my study, and obtained consent for a face-to face interview. I collected data from individuals using a semi-structured interview technique (see Appendix A). The interviews were semi-structured to guide participants in the necessary direction, but at the same time to allow for free flow of information from the participants. The questions for the interview were designed to elicit responses vis-à-vis my primary research question. Digression from the interview questions was purposefully permitted in situations where it helped to clarify the questions of interest and discuss concepts that emerged during the course of the interview. Qualitative data was obtained in a retrospective manner regarding the questions of interest. This approach to qualitative data provides in-depth understanding of a specific phenomenon as it accrues retrospective data by reflecting upon events that have occurred in the past. Notes were taken during the interviews to capture the emotions of the participants, and the broad ideas emerging during the interviews. The interview was also recorded using a digital voice recorder for subsequent data analysis. Another expert in the domain of interfirm

relationships assisted me with the data collection process. This assistance proved to be very effective, as one researcher asked the questions, and the other ensured substantive notes were taken, which were later used for illuminating the recorded data. In addition, memos (i.e., notes to myself on ideas and concepts emerging from data) were taken after each interview to assure key details from the interviews were not lost.

Based on GT methodology, the qualitative data obtained through interviews are analyzed using open (i.e., breaking down qualitative data into smaller thought units), axial (i.e., relating the small thought units based on their properties), and selective coding (i.e., identifying the overarching categories and their relationships) (Birks & Mills, 2011; Strauss & Corbin, 1990). A constant comparison is ensued among different interviews to ascertain the relationships among the concepts uncovered during the open, axial, and selective coding procedure.

2.4 Data Collection

I obtained Institutional Review Board (IRB) approval prior to the data collection process. Data were collected through semi-structured interviews using an instrument that was developed and approved by the IRB for this specific study (see Table A-1 in Appendix-A). A question and probe approach ensued using a protocol which enabled me to ask questions of primary interest and at the same time permit new ideas and thoughts to flow from the participants (Krueger & Casey, 2000). I conducted individual face-to-face and focus-group type interviews. The participants for the interviews ranged from senior managers to vice presidents of operations and supply chain management. In total, I interviewed 13 individuals across seven firms (see Table 2-1). The participants' work

experience ranged from 5 to 28 years within a particular organization. Profiles of the companies and the respondents' job titles are provided in Table 2-1. The questions were asked in a retrospective manner allowing for a focused data gathering process (Vanpoucke et al. 2014). The questions were asked based on the "interview tool" that was developed to specifically identify the behavioral patterns of SCI.

Ascertaining theoretical saturation is an effective guideline to stop the data collection process when employing GT methodology (Birks & Mills, 2011). Theoretical saturation occurs when no addition insights are obtained by increasing the sample size. I concluded that theoretical saturation had been achieved in this study after several interviews with seven companies, since examining all seven firms did not reveal a single instance of more than three levels for interfirm relationships and recurring themes were emerging during data analysis.

Table 2-1: Overview of Companies and Individuals for Interviews

Firm	Focal Company Description	Ownership Type	Annual Revenue	Ownership	Interviewees
Oil_One	Major producer of oil and gas	Public	>$20 billion	Domestic	Vice President of Supply Chain Management (1)
Electronics_One	Major electronics contract manufacturer	Public	>$20 billion	International	Material Planning & Purchasing Managers (3)
Net_One	Major electronics component provider	Public	>$30 billion	International	Vice President of Operations (1)
Ret_One	A large supermarket chain	Private	>$15 billion	Domestic	Director of Global Sourcing (1), Director of Logistics (1) Purchasing Manager (1)
Comp_One	Leading computer manufacturer	Private	>$10 billion	Domestic	Vice President of Supply Chain Management (1)
Ser_One	Leading service provider for oil and gas companies	Public	>$20 billion	Domestic	Director of Supply Chain Management (1)
Oil_Two	Major drilling contractor	Public	>$3 billion	International	Purchasing Managers (2), Director of Sourcing (1)

2.5 Data Analysis

The qualitative data obtained were first transcribed, which resulted in approximately 250 pages of text. Data analyses employing the GT technique followed three distinct steps: open coding, axial coding, and selective coding. These three steps provided by Birks and Mills (2011) are comparable to the GT technique suggested by Corbin and Strauss (1990).

Using the GT technique (Birks & Mills, 2011), the analyst initially codes the data by a process labeled as open coding. Open coding is performed word-by-word, or segment-by-segment, or thought-unit-by-thought-unit. In this study, open coding was performed thought-unit-by-thought-unit as it results in more meaningful codes (Birks & Mills, 2011). However, these codes are not interpreted during the open coding phase. Collectively, this process resulted in 1,082 open codes generated from interviews from seven companies. In the axial coding process, I determined whether the codes generated from one data source (i.e., interview) also appeared in other sources, and then aggregated related codes by ascertaining their relationships. Strauss and Corbin (1990) define axial coding as "a set of procedures whereby data are put back together in new ways after open coding, by making connections between categories. This axial coding is done by using a coding paradigm involving conditions, context, action/interactional strategies, and consequences" (p. 96). The coding framework provides the means to relate the open codes. The axial coding process was carried out iteratively as I obtained more data through additional interviews. Through the axial coding process, the 1,082 open nodes were reduced to several axial codes, which were then further reduced to overarching categories that were explicitly integrated to form a theoretical framework of SCI using selective coding. During the axial and selective coding procedure, I performed constant comparison. Taylor and Bogdan (1984) suggest that "in the constant comparative method the researcher simultaneously codes and analyses data in order to develop concepts; by continually comparing specific incidents in the data, the researcher refines these concepts, identifies their properties, explores their relationships to one another, and integrates them into a

coherent explanatory model" (p. 126). The data analyses resulted in the identification of six different behavioral patterns namely, monitoring, relational investments, knowledge sharing, joint activities, vision sharing, and adaptability in relationships. An overview of the major characteristics of SCI exhibited by firms is presented below.

2.5.1 Monitoring

Firms engage in monitoring activities to ensure that they have sufficient control over the activities of their exchange partners. Exchange partners "tend to be more confident about their partners' cooperation when they feel that they have adequate control over them" (Das and Teng, 1998, p. 493). In line with the extant literature, I define monitoring to represent those activities carried out by supply chain partners to ensure that they are not subject to the opportunistic behaviors of other supply chain members. Table 2-2 illustrates that the construct of monitoring is comprised of six different axial codes. The axial codes that represent monitoring are: constantly checking for deviations, enforcing contracts, setting a framework for operation, estimating cost structure, hard bargaining, and seeking control.

Firms employ contracts to develop a framework for operation, which is subsequently used to closely monitor the activities of exchange partners. Firms hold their partners accountable to any deviations from the set rules and standards. For example, the Director of Sourcing at Oil_Two mentioned that "We do have several key contracts in place. We try to set some framework agreement based on pricing with some baseline options," while the Vice President of Supply Chain Management at Oil_One noted that "all contracts have performance expectations for providers by which they are assessed."

Firms also exhibit monitoring behavior in an attempt to gain control over pricing by acquiring the cost structure for products obtained from exchange partners, and subsequently use this information to engage in hard bargaining. The Vice President of Supply Chain at Comp_One stated "We go through all the designs and come up with their bill of materials. Subsequently, we start doing all our cost stuff on that, and estimate what it should cost us. They [suppliers] are saying this is what it costs us, we go 'oh wait a second', we agree on this or we do not agree on this. If they are not meeting the cost, we are going to talk to the component supplier and see if we can get a better price. If we can find a better price, we are going to buy this part, and you [suppliers] are going to buy it from us. We then buy and sell it." The logic of engaging in control is to ensure that the desired goal can be achieved in a predictable manner.

2.5.2 Relational Investments

Jap (1999) suggests that firms involved in a relationship can improve their combined benefits by making relational investments. Dyer and Singh (1998) also suggest that making asset specific investments in a relationship is likely to reduce transaction costs in relationships. I define relational investments as those that are made to specifically enhance the value of a particular relationship. Williamson (1985) notes that there are three types of investments that can be made specific to a relationship. The investments are dedicated assets, physical asset specific investments, and human asset specific investments. The qualitative data obtained from this study also suggests that firms engage in three types of relational investments, as proposed by Williamson (1985) (see Table 2-2). Dedicated assets are typically huge discrete investments made by a supplier to meet

the specific requirements of a buyer. There will be substantial costs if the buyer decides not to purchase from the specific supplier as there will be substantial excess capacity. For instance, the Director of Global Sourcing at Ret_One noted that one of their strategic suppliers "is building its factory nearby to serve us better. They are that committed." On the other hand, physical asset specificity refers to the equipment and machinery that are designed to produce inputs specific to a particular customer. As an example, one of the Material Planning Managers at Electronics_One provided an analogy for their investment in equipment and machinery, "When you get awarded a part for a car, that is a platform that is going to last for about 5 years, you are going to make multimillion dollar investments to produce it. Let's say you are going to award me the car body, I have to go out and build all the tooling for it, I have to make a huge investment… it's not a transactional cost." Human asset specificity represents the skill sets that are particularly developed to work with a specific exchange partners. The Vice President of Supply Chain at Comp_One commented that "We have a 'Technology Division' where individuals with specific skills focus on the technology advanced by specific suppliers." Collectively, I find that firms tend to make different types of relational investments in their relationships.

Table 2-2: Behaviors Exhibited by Firms Engaging in SCI

Construct	Definition	Axial Codes Derived from Data	Frequency	Frequency Percentage
Monitoring	Monitoring represents those activities carried out by supply chain partners to ensure that they are not subject to the opportunistic behaviors of others.	• Constantly monitoring for deviations • Enforcing contracts • Set frameworks for operation • Estimate cost structure • Hard bargaining • Seeking control	7	100%
Knowledge Sharing	Knowledge sharing refers to the transfer of know-hows and data among supply chain partners in a relevant, accurate, complete, and confidential manner.	• Frequency of reporting • Multiple input sources • Codified information sharing • Tacit information sharing	7	100%
Relational Investments	Relational investments are those that are made to specifically enhance the value of a particular relationship.	• Site specific investments • Human asset specific investments • Physical asset specificity	6	87%
Joint Activities	Joint activities represent the combined efforts of supply chain partners in performing various tasks such as forecasting, new product development, and problem solving.	• Engage in joint new activities • Human resource sharing • Capital equipment sharing • Collaborative forecasting • Jointly explore new markets • Joint problem solving	7	100%
Vision Sharing	Vision sharing by firms involves sharing their long-term plans with supply chain partners and ensuring the alignment of their goals, priorities and values.	• Common goals • Providing direction • Stating priorities • Merging values	6	87%
Adaptability in Relationships	Adaptability represents the ability of firms to sustain long-term relationships by adjusting to circumstances.	• Demonstrating commitment during crises • Flexibility to changes in the environment • Risk sharing • Profit sharing	7	100%

2.5.3 Knowledge Sharing

I define knowledge sharing as the transfer of know-hows and data among supply chain partners in a relevant, accurate, complete, and confidential manner. Several scholars have acclaimed the importance of sharing knowledge for successful interfirm relationships. For example, Min et al. (2005) reckon that knowledge sharing is an essential ingredient for effective interfirm relationships. Knowledge sharing represents the transfer of codified information and tacit know-hows among exchange partners. Furthermore, the knowledge sharing construct in this study also captures the frequency and the sources of knowledge input (see Table 2-2). Transfer of codified information refers to the exchange of "tactical data such as inventory levels, forecast information, sales promotion, strategies, and marketing strategies" (Cao & Zhang, 2011, p.166). In this research, I find that firms transfer codified information to their exchange partners to enable to synchronization of the flow of goods between them. For instance, the Vice President of Operations at Net_One suggested that with one of their major customers, "It used to be that our (Net_One) customer would have just have some matrix that we would report on to coordinate." Besides transferring codified information, firms also transfer tacit information with their exchange partners. As an example, the Director of Supply Chain Management at Ser_One noted that "We [Ser_One] use some of the things we learned and share it with our suppliers." The frequency and the sources from where knowledge is obtained to share with exchange partners also play a significant role in the exchange of information among firms. The Vice President of Operations at Net_One noted that "Our

customer was seeing the benefit of having communication with our company at different levels on a frequent basis."

2.5.4 Joint Activities

Table 2-2 suggests that joint activities, in this study, represent tasks such as forecasting, new product development, problem solving, exploring new markets, human resource and capital equipment sharing. Several studies have cited the benefits of working closely together with supply chain partners. For instance, working closely with a supplier has a positive impact on the reduction of lead time for new product development (Primo & Amundson, 2002), and provides a means to improve product innovation and product performance for firms (Lau et al., 2010).

Firms work collaboratively to help improve the scope of their business. The Vice President at Ret_One commented "This supplier was innovative, cutting edge, very creative, and very flexible… as both [Ret_One and Supplier] were looking for a long-term relationship, we began to extend to cookies, pastries, and now they also do other products." Firms work jointly on forecasting by exchanging information, and correcting forecasts based on the inputs of exchange partners after deliberation. For instance, the Director of Supply Chain Management at Ser_One mentioned that "Forecasts are bad the minute they are printed, we can be of assistance to our suppliers, and they can respond back to us and provide valuable information based on what they see going on in the market." I also find that firms engage in new product development by sharing designs and innovative ideas. The Vice President of Supply Chain Management at Oil_One noted that with one of their providers in the development of a new product "We will work with them on the lab and

their technology, we will also do pilots and testing, and so forth with them." At times, firms share human resources and technological capabilities to assist their exchange partners in developing new products. The Vice President of Supply Chain Management at Comp_One commented "Like if our [Comp_One] suppliers don't have the human resources, say we [Comp_One] are going to go and design a product with them." Finally, I notice that as firms recognize their bounded rationality, they engage other firms in the hopes of gaining their insights towards a particular problem. Supply chain partners are often a source of innovative ideas that can help firms overcome their challenges (Flint et al., 2005). The Vice President of Operations at Net_One suggested that "Our customers understand that our problem is their problem, so they work with us on resolving it."

2.5.5 Vision Sharing

Supply chain scholars suggest that there needs to be an agreement on the strategic vision for supply chain partners to proceed in their relationships (Lambert, Stock, & Ellram, 1998). Furthermore, Ross (1998) argues that the creation and communication of vision among exchange partners is necessary before any project begins. Creating a vision and sharing it among firms involved in a relationship provides them with "specific goals and strategies on how they plan to identify and realize the opportunities they expect" (Lambert, 2002, p. 13). In line with the extant literature, I suggest that vision sharing involves firms sharing their long-term plans with supply chain partners and ensuring the alignment of their goals, priorities and values. Goals provide a sense of objectivity in relationships, and are necessary to ensure the success of firms involved. For instance, the Vice President of Supply Chain Management at Oil_One suggested that "Looking at our

goals and their goals, one thing I can say is our relationship has been extremely accruable." Goals help firms create a strategic plan to achieve it. Providing direction ensures that firms involved are aware of appropriate steps necessary to move ahead and achieve their goals. Also, stating priorities clearly enables firms to focus on specific tasks and ensures that firms involved are working towards a common vision coherently. For example, the Vice President of Supply Chain Management at Oil_One noted that "Our job is to figure out what is right for the business and push the agenda for it." Finally, aligning the values of the firms involved is necessary to ensure that they are focused on the same goals and have a similar vision of the future of their relationship. As an example, the Director of Supply Chain Management at Ser_One noted that "We need to ensure that our values are compatible with our exchange partners to ensure success," by working towards similar goals.

2.5.6 Adaptability in Relationships

Lee (2004) refers to adaptability as the willingness of firms to reshape supply chains based on the changes in the environment. In this study, I define adaptability in relationships as the ability of firms to sustain long-term relationships by adjusting to circumstances. Dwyer et al. (1987) suggest that firms which adapt to changes in circumstances are likely to engender durable relationships. In this study, I find that a firm's adaptability in a relationship is characterized by its commitment to work with exchange partners during challenges, willingness to adapt to changes in the environment, and exhibiting risk and profit sharing behaviors. To demonstrate their commitment during challenges, firms are willing to work with their partners by providing additional resources

and sharing relevant know-hows. As an example, the Director of Supply Chain Management at Ser_One noted that "If we see our supplier struggling with scheduling or any other industrial processes, we will take an expert in there to assist them with scheduling or any other industrial process that they are doing, be it welding or machining."

With respect to shaping relationships based on changes to the environment, I find that firms are more flexible to the initial terms and conditions that were laid out as they comprehend the environmental changes better. For instance, the Vice President of Supply Chain at Oil_One suggested that "We generally look at situations…, so contracts become more of guidelines as opposed to hard and fast rules." During adverse times, I find firms that try to preserve a relationship engage in activities to ensure the profitability of their supply chain partners (e.g., sharing profits and risks). Again, the Vice President of Supply Chain Management at Oil_One provided an excellent example of sharing one of its suppliers' risks in which it was stated "The knee-jerk reaction would have been to throw most of that relationship away because other guys would do the work for 30% less, we (Oil_One) did not do that."

2.6 Summary of Behavioral Patterns Exhibited by Firms Engaging in SCI

In summary, I find when firms engage in SCI they exhibit a set of six behaviors namely, monitoring, relational investments, knowledge sharing, joint activities, vision sharing, and adaptability in relationships. From Table 2-2, it is evident that several of the behaviors were repeated across most of the firms interviewed, rendering reliability. Relational investments and vision sharing had roughly 87% representation among all firms interviewed while the other behavioral constructs had a 100% representation across firms.

Although firms exhibit different behavioral characteristic for SCI, the exact manner in which they are exhibited by firms might vary. In order to better comprehend the behavioral nuances, within-firm narratives are employed.

2.7 Within-Firm Narratives

The within-firm narrative of each firm is employed to gain insights about the behaviors exhibited by firms in their relationships with exchange partners. The narrative for each firm is presented below.

2.7.1 Oil_One

Oil_One is one of the largest oil and natural gas producers in the United States. Oil_One partners with several firms to produce oil and natural gas. The participant for this interview was the Vice President of Supply Chain Management. Most of Oil_One's relationships with its supply chain partners evolve over time. Relationships generally evolve from being transactional to a more integrated relationship. For example, the participant noted that "The duration of the contract, the type of commitment, and the degree of integration and so forth, yes, it does evolve over time." The participant provided an example of Oil_One's service providers for rigs. The participant suggested that the market for providing service for rigs is highly competitive with a large number of providers. However, Oil_One tends to develop close relationships with a few providers over a period of time due to the perceived positive value proposition.

Early on in Oil_One's relationship with its providers, very limited commitment and investments are made. Furthermore, providers are continually assessed against certain performance metrics. At the beginning of their relationship, Oil_One provides all the

necessary information for its service providers, but does not engage in knowledge sharing activities with the service provider. Similarly, at this level, service providers are tightly bound to contractual obligations, and failing to adhere to specifications in their contract might cause Oil_One to exit their relationship.

Contingent upon their performance and value proposition, as the number of positive interactions between the service provider and Oil_One increased, the scope of its business gradually increased. Even at this level, Oil_One is willing to exit a relationship if its partners' performance does not meet expectations. On the other hand, as service providers sustain their performance over time and both firms see the value proposition of doing business together, they develop a close relationship which is characterized by high levels of commitment and investment. The participant also added that besides what they do with their transactional and next level service providers, they were willing to take short-term losses for sustaining their relationship with their strategic partners, with whom they have developed a close relationship. For instance, when Oil_One's profitability waned due to inefficiencies with its close strategic supply chain partner, Oil_One stuck with its partner to help the partner improve its efficiency and develop a strong relationship, which both parties benefited from later. The participant noted the following:

> "People were willing to pay us as opposed to us paying them, but we had a long-term relationship with this company that has provided us with both operational and commercial hedging against, you know, the other side of the market. We eventually worked with this company with job efficiency expectations and caps on

the hours per job that resulted in a significant reduction in costs and preserved the elements of a long term relationship."

Oil_One shares its long term vision with its close strategic partners and does not do so with other service providers. As an example, the participant commented "We will give them [our strategic providers] insight into where we are going in the next 3 to 5 years." Furthermore, with respect to joint activities the participant stated "We will conduct joint efforts." Moreover, when Oil_One and one of its service providers develops a close relationship, contracts are still in place, but hardly ever used. Conflicts are resolved amicably over a conversation. For instance, the participant commented, "I will be honest, the reality where we litigate the contracts and enforcements is usually in my office."

With respect to the factors that helped shape their relationships with service providers, the respondent noted that the type of relationships developed depends upon several factors such as industry structure, product type, value proposition, cost, reliability, culture, and management acumen. Industry structure and product type (i.e., strategic or commodity) also suggest whether a possibility for close strategic relationships exists. Industry structure here refers to the number of providers in the market. Once firms decide to engage in a relationship, the participant added, cost structure always plays an important role in the evolution of a relationship, but as firms try to improve the scope of business with their partners their value proposition and performance become as critical as cost. Furthermore, the importance of the compatibility of management acumen and culture were highlighted as important factors engendering close strategic relationships. With respect to management acumen and culture for a close strategic relationship, the participant stressed

that “Their [Service provider’s] advantage is driven by management acumen and culture is also very important.” Oil_One expected their culture and management acumen to be compatible with their strategic providers prior to engaging in close relationships.

2.7.2 Electronics_One

Electronics_One is one of the largest electronics contract manufacturers in the world. It offers design, manufacturing, and distribution services to several original equipment manufacturers in the United States. This facility caters to a small number of fairly large customers in the electronics industry. A significant proportion of its sales revenue is generated by working with one major customer, however it is currently in the process of diversifying its customer base. The participants for this study were three Material Planning and Purchasing Managers. Electronics_One’s relationship with this major customer has evolved over the past several years. Early on, the relationship could be described as being transactional in nature. A participant being interviewed commented “I feel like there is a maturity level cycle that goes through for all the customers.” Electronics_One believes that new customers should be constantly monitored. However, as the business evolves they feel that it becomes self-sustaining and not much monitoring is required. The participant stressed “You can really leave it [matured relationship] on its own to grow, like seeing a couple of e-mails here and there from them.” They believe that relationships transition to a more trusting relationship. The participant added “I think they [major customer] understand what we can do, and we appreciate their work as a customer, so we are working together to grow some more business.”

In what the company termed as a "matured" relationship with its major customer, they do some joint activities in terms of working on forecasts, but there is very limited vision sharing by their customer with them or vice-versa. With regards to sharing a vision, the participant noted "To a lesser degree, kind of, here is where we want to be. We don't get a lot of, like, directional type communication from them." Also, Electronics_One does not voluntarily assume temporary losses for its major customer but occasionally exceeds contractual obligations in order to maintain their business value proposition with their customer. The participants also noted that there is not a great level of knowledge sharing, however, some cross training takes place with their major customer. Electronics_One and its major customer are constantly trying to grow their business.

The participants further suggested that sales volume, relationship duration, and product type are the three primary factors that drive business relationships from a transactional level to one of more substance. The level of sales revenue between the companies provides a proxy for the interdependence or rather the value proposition that firms offer to each other.

A participant suggested that product type determines whether firms need to evolve to the next level and provided an analogy of Toyota:

> "When you get awarded a part for a car, that is a platform that is going to last for about five years, you are going to make multimillion dollar investments to produce it. Let's say you are going to award me the car body, I have to go out and build all the tooling for it, I have to make a huge investment, you are going to be working with me on the design the whole time. We are then going to produce this together

for five years and then after that you hope that I am going to do the next one, it's not a transactional cost."

Thus, product type can influence the transition of a relationship between firms beyond a mere transactional relationship.

2.7.3 Net_One

Net_One provides electronics components to several large telecommunication companies in the United States. It is a mature firm with over 70 years of experience serving the industry. The participant for this interview was Net_One's Vice President for Operations. Net_One maintains a unique relationship style with each of its customers. These relationships varied from being highly transactional to being very cooperative. The participant provided an example with two of its major customers with whom it started doing business at the same time. It was noted that the two major customers had different ways of interacting with Net_One. One of the customers was very difficult to deal with while the other was very cooperative. The participant added that the collaborative relationship began as a transactional relationship, however this customer saw the value in collaborating and working together and this helped their relationship evolve. The other customer did not really see the value of working closely together, and thus the relationship has remained transactional. For example, the participant mentioned that with respect to its cooperative customer, "they have progressively added more resources and progressively increased the interface that they have with us." At the same time, the transactional customer "does not feel it is necessary to put resources toward doing that [solving

problems], it is our problem we need to go take care of it, and we can end up not supplying to them as well because they are not as collaborative with us."

The participant then provided details about the distinctive aspects of the two relationships in terms of their contracts, commitments, and joint activities. With respect to the contracts, the participant noted "There is definitely an arrogance with one and more flexibility with the other organization." The difference in commitment of Net_One towards the cooperative and transactional customers is very subtle: "We may give the cooperative customer some advantage in terms of attention but not a whole lot." The data from the interview also suggested that they work jointly together in product development but not to the extent that they lose their competitive advantage, as the participant stressed "You can come up with collaborative ways to develop products, but you cannot lose your competitive advantage as a result of doing that."

Net_One's relationships with its transactional and cooperative customer are to a great extent driven by profitability. Although relationships are important, profitability determines the outcome of relationships. When I questioned whether Net_One had made any sacrifices in their relationship with their cooperative customers, the participant responded, "If you find a customer who you are more profitable with, you should do it based on profitability more than based on whom you would like to do business with." Net_One was willing to switch customers based on profitability.

2.7.4 Ret_One

Ret_One is one of the largest family-owned supermarket chains in the United States. The company was started several decades ago and has grown gradually over the

years. It has many tens of thousands of employees working in hundreds of stores. It sells over 100,000 SKUs across a variety of store formats. The participants for this study included the Director of Global Sourcing, the Director of Logistics, and a Purchasing Manager. Ret_One purchases products from over 6,000 foreign suppliers and 27,000 domestic suppliers. Ret_One prides itself on developing unique products for its customers that are not typically available through other supermarket chains. The company's primary goal is to serve its "boss," which Ret_One says is its customers. To achieve this goal, Ret_One works with its suppliers. Ret_One does not share the same type of relationship with all of its suppliers. Although the company is very transactional with some suppliers, it is very strategic with others. On further investigation, it was revealed that its strategic relationships started at a transactional level by sharing only transactional information necessary to run the operations; however, the relationships tended to evolve over time. For instance, one of the participants in the interview suggested that with a close supplier, "We started with cookies, but again as we are cutting purchase order after purchase order for this type of product it was really changing the relationship to the next level." Ret_One and its supplier (which was international) jointly determined ways to increase the scope of business to other products as it found value in doing business together. A participant I interviewed noted that as the relationship was evolving into a more mature one, they were making investments into the relationship in terms of human resources. However, after repeated interactions, Ret_One liked working with this supplier as their cultures were compatible and the management acumen of both companies was quite compatible – they were thinking and acting similarly. This compatibility led to further evolution of their

relationship and prompted significant idiosyncratic investments and a great deal of vision sharing by the companies. As an example, the strategic supplier recently made an idiosyncratic investment in the relationship by opening a new facility in the United States to serve Ret_One more effectively and more efficiently. Furthermore, the overall evolution of this relationship occurred in a span of approximately two years. Ret_One was their only customer in the United States. Furthermore, Ret_One does not engage in close strategic relationships with firms that have a short-term organizational vision. In addition to sharing their strategic vision, the exchange partners started jointly working on developing new products. Ret_One has also established a "university" for its strategic suppliers where Ret_One's knowledge is transferred to them besides constant transfer of knowledge that takes place during business interactions. This knowledge transfer illustrates Ret_One's commitment developed towards its close suppliers.

Initially, Ret_One was merely coordinating activities with its international supplier; however, driven by increased product sales (and respective profits) and relationship duration, the company decided to expand its scope of business. The increased level of interactions over a period of time and compatibility of cultures between the companies helped the development of trust between them. This trust resulted in a close strategic relationship between Ret_One and its international supplier.

Ret_One also sought cost and quality products from all of its suppliers. As an example, one of the participants said about choosing suppliers, "We cannot compromise on quality as that is non-negotiable." Profitability is also an important consideration for Ret_One; however, the company wants its suppliers also to be profitable. To ensure

competitive pricing, Ret_One assessed the cost structure of the company's suppliers on the basis of global pricing information for raw materials. However, with more strategic suppliers they looked for flexibility and responsiveness. As a participant stressed "Our strategic supplier is very responsive."

2.7.5 Comp_One

Comp_One revolutionized the computer industry through its supply chains. The company is one of the leading producers of personal computers in the world. It currently has more than 10% of the worldwide market share for personal computers. The participant for this study was the Vice President of Supply Chain Management. My interviewee suggested that the relationships with suppliers evolve through three distinct levels. For instance, the company initially begins its relationship with its suppliers at a transactional level. The participant noted that such relationships are very discrete at this point. At this level, suppliers are provided with specific instructions on how the product needed to be manufactured, and the product design is done in-house. However, as the firms' relationships evolved over time, they appear to transition into a more collaborative relationship in which they design and develop products jointly, and begin investing in their relationship. However, after doing business with a particular supplier for 12 to 13 years, Comp_One and some of the suppliers developed a very good understanding of each other, culminating in handing over product development completely to the supplier. A significant amount of knowledge is transferred from Comp_One to suppliers before handing over the development of the product. Trust is built between Comp_One and its suppliers before

they enable their suppliers to produce their products. Trust played a major role in interfirm relationships, especially at the highest levels. As an example, the participant mentioned,

> "Joint development does take place in a way, and then the relationship tends to evolve even further where you get to use the term *the true marriage stage*. There are some products that you just say you are doing this and you know how, you know what we want, so that is kind of the last evolution, I would say."

As the relationship matures, the suppliers provide visibility to their supply base and to the cost structure of their products. Furthermore, as the relationship between Comp_One and its suppliers matures, the company is more willing to share its knowledge and strategic vision with them. In addition, at this level Comp_One exhibits flexibility in its relationships with exchange partners contingent upon circumstances. Also, Comp_One trust's its suppliers, which reduces the enforcement of contracts. As the participant commented "We don't use penalty laden contracts."

Although Comp_One finds that their culture percolates into the way they manage their suppliers, several external factors also play a critical role in the development of its relationship with its suppliers. For instance, the participant added the following:

> "The industry is a major determinant in our relationship with our suppliers. As an example, whether you end up in a transactional or strategic relationship depends a lot on the industry that you are dealing with, and when I say industry, I mean are you dealing with, in our case, a PC or systems manufacturer, or are you dealing with memory industry, or are you dealing with the hard drive industry, or are you

dealing with a structural commodity type industry, an engineered commodity industry. That begins to dictate."

The participant was referring to the number of suppliers in the market for specific products when discussing industry structure.

2.7.6 Ser_One

Ser_One is one of the largest players in the oil and gas service industry. It is a global company with over 1,000 locations in 50 countries. It provides most of the necessary equipment and components the oil and gas industry uses, and it prides itself on delivering its products across the globe on time. My participant for this interview was the Director of Supply Chain Management. Many of its products are engineered-to-order, which requires close relationships with its suppliers. Although Ser_One has several close relationships with its suppliers, it perceives that these relationships were built over a period of time through three distinct phases. The participant in the study stated that the company's relationships with selected suppliers begin via discrete transactions, during which it continuously measures the relationship against specific performance metrics such as delivery, responsiveness, and cost. The scope of the business increases according to the relationship performance over time, providing the suppliers with additional work while developing trust between them. The level of trust developed enables them to work jointly on new product development and confidently invest in their relationships. At this level, Ser_One is willing to work collaboratively on forecasts with their suppliers. After collaborating with a given supplier for several years, which might vary from supplier to

supplier, Ser_One might decide to engage with their suppliers to a greater extent. For example, the participant noted,

> "So when we do start with the vendor, there is a lot of capitalization they have to do to be able to do business with, so we want that initial phase to be 2 [or] 3 years, and then we want 10 [to] 15 years of good solid business with them to go ahead and absorb the capital expenses and be able to go ahead and increase their capability and capacity so that we can capitalize on them."

Once Ser_One develops close strategic relationships, the participant indicated that Ser_One might assume short-term losses to sustain their long-term relationship with a few of its strategic suppliers, which subsequently improves the commitment of those suppliers. The participant stressed that the improved relationship enables Ser_One to "place a call in the middle of the night and say, 'I have got a problem,' and know that they will respond in a positive manner." Moreover, the trust developed with among exchange partners over the years ensured lower monitoring behavior and enhanced communication of their strategic goals. Also, at this level, Ser_One was willing to share their knowledge with their exchange partners to overcome their problems, as the participant noted "We [Ser_One] use some of the things we learned and share it with our suppliers."

2.7.7 Oil_Two

Oil_Two is a very large oil and natural gas drilling contractor in the United States, which also has global presence. It has hundreds of rigs being operated in the United States and Canada. Oil_Two also has operations in several other countries around the globe. The capital-equipment sourcing at Oil_Two is primarily carried out with a few major suppliers

because its customers want to use these name-brand products in their operations. Oil_Two has worked with several of these customers for many years but often changes suppliers depending upon the requirements. The company's relationships with its suppliers are very transactional in nature. It does not appear that Oil_Two engages in any kind of significant collaborative activities with its suppliers. Its relationships with suppliers tend to depend on its suppliers' capacity availability, and pricing at a given point in time. The requirements, especially during the early phase of drilling a rig, are very uncertain, and hence forecasting requirements is a challenge. In the early phase of developing the rig, the company is looking for suppliers that can provide it with the product in the shortest lead times possible. When the company has some certainty in demand, it seeks to go to its large suppliers. Again, there is no long-term relationship orientation with these suppliers as they can be governed by the customer's directed requirements of suppliers to be selected, which can vary from rig to rig. Even then, conducting business with any large supplier is contingent on the capacity availability of its suppliers along with pricing. Having a transactional orientation with its suppliers, Oil_Two enforces contracts to the maximum extent. As an example, one of the participants noted, "We do have several key contracts in place with our big suppliers… we have had to use it at times to get things done."

Based on the interviews with several individuals from diverse purchasing departments, it did not appear that Oil_Two engages in joint product development with any of their suppliers. As a participant stated "We don't do a lot of joint activities." They essentially send the requirements to a supplier who then designs and develops a product

for them. For instance, as the participant noted, “Traditionally, we would say, ‘I want something that would do this, build this for me.” We have done that a lot.”

2.8 Discussion of Within-Firm Narratives

Based on the within-firm narratives, it appears that the behaviors exhibited during SCI vary. Table 2-3 lists the extent to which firms exhibit specific behavioral patterns associated with SCI. From inspection of Table 2-3, it is evident that firms share some combinations of behavior patterns. For instance, firms such as Oil_One, Ret_One, Comp_One, and Ser_One appear to share a very trusting relationship with their close strategic supply chain partners. They exhibit low levels of monitoring, and high levels of relational investments, knowledge sharing, joint activities, vision sharing, and adaptability in relationships; whereas Oil_Two engages in high levels of monitoring, and hardly exhibits other behavioral patterns associated with SCI. On the other hand, Electronics_One and Net_One tend to exhibit most of the behavioral patterns associated with SCI at a moderate level expect adaptability in relationships, which is hardly exhibited. These recurring behavior combinations map into what the literature refers to levels of SCI. In the last column of Table 2-3, I categorize the behavioral intensity associated with SCI into coordination, collaboration and internalization. Collectively, the firms in this study, give the impression that SCI is pursued at three different levels (i.e., coordination, collaboration, and internalization) based on the behavioral nuances exhibited. Table 2-4 provides a summary of the different behaviors across the three levels of SCI. For instance, at the coordination level, firms behave in a transactional manner. There is low trust among exchange partners at the coordination level, and they exhibit a

high degree of monitoring. At the collaboration level, they assume a cooperative posture. They exhibit moderate levels on most behaviors exhibited by firms engaging in SCI (e.g., relational investments), but are not willing to compromise on profitability. They exhibit low adaptability in relationships. At the internalization level, firms go beyond mere cooperation and engage in activities such as risk sharing and shaping their strategic vision collectively to a great extent. The firms that were involved in internalized relationships had an intrinsic desire/liking to pursue the long-term relationship with their respective supply chain partners.

I speculate that firms progress to the highest intensity of SCI through three levels, which I term as coordination, collaboration and internalization (see Figure 2-1). However, not all firms in this study pursued an internalized relationship. Specifically, I find that Electronics_One and Net_One had their relationships evolve to collaboration while Oil_Two never evolved from being transactional in its relationship orientation. All the other firms had evolved to internalization with their close strategic supply chain partners (see Figure 2-2). In summary, I conjecture that SCI might involve three levels of interfirm relationships: coordination, collaboration, and internalization. Furthermore, based on the within-firm narratives, it appears that the behaviors exhibited by the firms vary in degree depending upon the intensity of SCI the firms are pursuing, which are briefly discussed below.

Table 2-3: SCI Behavioral Patterns and Level of SCI Pursued by Firms

Firms	Monitoring	Relational Investments	Knowledge Sharing	Joint Activities	Vision Sharing	Adaptability in Relationships	Level of SCI
Oil_One	Low	High	High	High	High	High	Internalization
Electronics_One	Moderate	Moderate	Moderate	Moderate	Moderate	Low	Collaboration
Net_One	Moderate	Moderate	Moderate	Moderate	Moderate	Low	Collaboration
Ret_One	Low	High	High	High	High	High	Internalization
Comp_One	Low	High	High	High	High	High	Internalization
Ser_One	Low	High	High	High	High	High	Internalization
Oil_Two	High	Low	Low	Low	Low	Low	Coordination

Table 2-4: Nuances in Behavioral Patterns across SCI Levels

Behavioral Patterns of SCI	Coordination	Collaboration	Internalization
Monitoring	High	Moderate	Low
Relational Investments	None	Moderate	High
Knowledge Sharing	Low	Moderate	High
Joint activities	Low	Moderate	High
Vision Sharing	Low	Moderate	High
Adaptability in Relationships	Low	Low	High

Figure 2-1: Levels of Interfirm Relationships

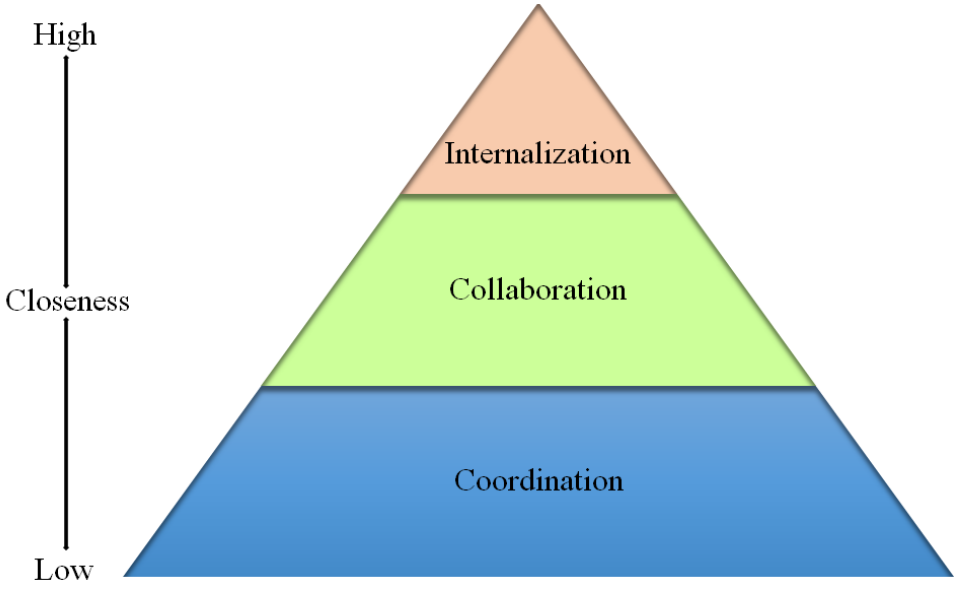
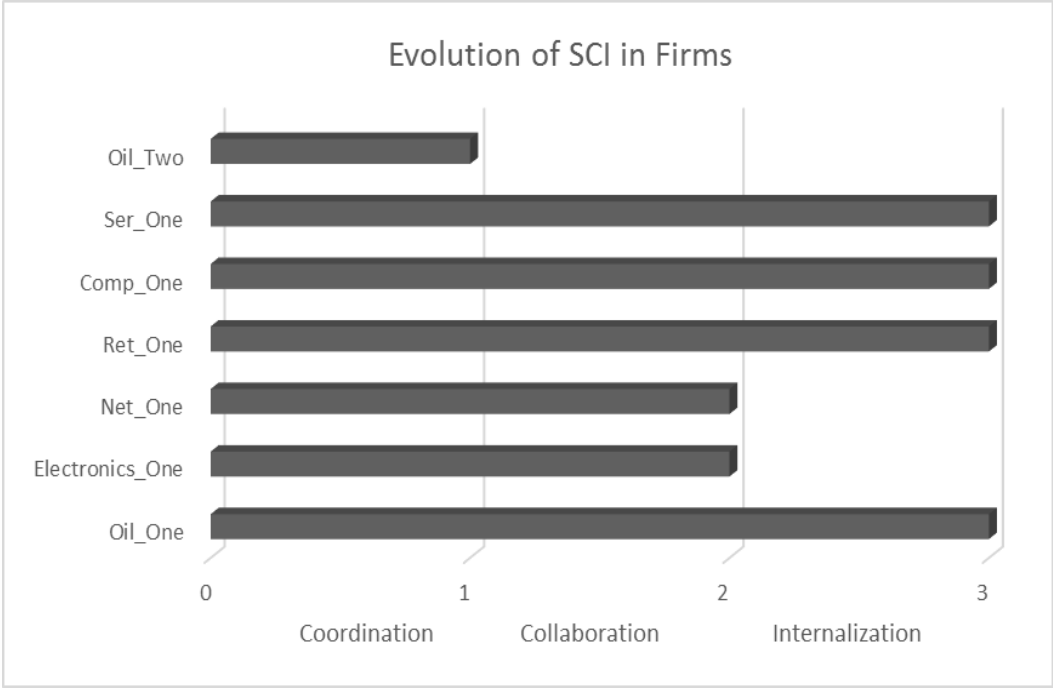


Figure 2-2: Level of SCI Pursued by Firms



2.8.1 Monitoring

Table 2-5 produces a sample of representative quotations regarding monitoring across the three different levels of SCI. The coordination level is characterized by low levels of trust where there is constant monitoring by the members involved in the relationship. For instance, a materials planning manager in Electronics_One suggested that early on in a relationship, firms need to be continuously monitored. The primary activity that takes place during this phase is the synchronization of the flow of goods between firms. This level of SCI is also described by very rigid relationships and firms are more than willing to switch partners on the basis of cost. On the other hand, collaborative relationships are considered to possess a certain amount of trust because firms at this level of SCI have worked constructively together for a period of time. This level entails a lesser degree of monitoring as firms do not survey their supply chain partners as closely as they do during the coordination level. Finally, internalization is typified by high levels of trust. Trust in itself acts as a control mechanism and the fear of opportunistic behavior does not arise. Prior work on trust has also indicated that it can serve as an effective control mechanism in buyer-supplier relationships (Das & Teng, 1998). Sometimes firms do not employ formal contracts, and even if they do, they are never utilized. As a participant from Ret_One noted, "For the vast majority of our strategic relationships we don't have to enforce contracts."

Table 2-5: Quotes Representing Monitoring at Different Levels of SCI

SCI Level	Representative Quotations
Coordination	"The new customer is where we (Electronics_One) have to have all our attention." "We (Oil_Two) have several key contracts in place with our big suppliers."
Collaboration	"Once in a while, we (Ser_One) do send people to visit our customers and ensure they are okay."
Internalization	"Contracts! We (Ser_One) don't use them." "The vast majority of our (Ret_One) strategic relationship we don't have to enforce contracts." "We (Com_One) don't have penalty laden contract."

2.8.2 Relational Investments

Table 2-6 presents a sample of representative quotations to depict the extent to which relational investments are made across different levels of SCI. As firms enter into a relationship through coordination, they refrain from making relational investments as these investments are likely to bind firms to a particular relationship. Such firms perceive their relationships to be transactional in nature and are ready to switch customers based on cost and quality. As an example, the VP of Oil_One suggested that they refrain from making significant investments with transactional suppliers. However, when firms start collaborating in a relationship, they see the value proposition in the relationship, and make relational investments. Firms understand that making relational investments deepen their inter-dependence and so their relationship will be sustained for longer time periods. They also believe that the benefits of making such relational investments can be recovered over the course of their relationship. Jap (1999) also proposes that the primary difference between coordinative and collaborative efforts is the investment in relational investments.

Relationships at the internalization level are characterized by high levels of trust and commitment, and hence firms are willing to make substantial investments into their relationship. Firms at this level of relationship do not fear that opportunistic behavior will emerge by their partners as at this level their relationship is characterized by high levels of trust. I also find that firms make larger investments as opposed to in a collaborative relationship.

Table 2-6: Quotes Representing Relational Investments at Different Levels of SCI

SCI Level	Representative Quotations
Coordination	"Our (Net_One) customer does not feel it is necessary to put resources in our relationship." "Our (Oil_One) supplier was not making investments in technology." "With short term suppliers our (Oil_One) investment and commitment is much more reduced."
Collaboration	"I (Electronics_One) have to go out and build tooling for it, I have to make a huge investment…it is not a transactional cost."
Internalization	"Our (Ret_One) supplier made their decision that they want to build a factory in the United States to serve us better."

2.8.3 Knowledge Sharing

Table 2-7 illustrates the differences in knowledge sharing behavior across the three levels of SCI. Firms that are merely coordinating activities do not typically share their knowledge, but rather share only codified information that is necessary to conduct business. This level is characterized by low levels of trust, and firms fear opportunistic behavior, which restricts the sharing of knowledge among firms. However, as firms evolve into the collaboration level, there is some degree of trust that develops due to repeated interactions, which promotes knowledge sharing. At the collaboration level,

knowledge sharing occurs through increases in telephonic and internet-enabled conversations, or face-to-face interactions fostered through trust.

Internalized relationships involve high levels of trust, and firms readily gain access to some of the know-hows of their partnering firms. Tacit knowledge is willingly shared between the partners. Dwyer et al. (1987) also propose that firms in relationships characterized by high levels of commitment provide meaningful inputs into their relationship.

Table 2-7: Quotes Representing Knowledge Sharing at Different Levels of SCI

SCI Level	Representative Quotations
Coordination	"Before it used to be that our (Net_One) customer would have just have some matrix that we would report on." "Traditionally we (Oil_Two) would say, we want this and they would go build it for me. There is hardly any knowledge sharing."
Collaboration	"Our (Electronics_One) customer is entrenched in a lot of our data." "Our (Net_One) customer now wants to have a bi-weekly calls or once a month calls where we go through, we talk in detail about the matrix."
Internalization	"Because we (Oil_One) have a good relationship with them and this was something they shared with us." "We have a university for suppliers, and we (Ret_One) teach them good supplier practices and we (Ret_One) teach them global food safety initiatives." "We (Ser_One) use some of the things we learned and share it with them."

2.8.4 Joint Activities

Table 2-8 provides some of representative the quotes regarding joint activities during each level of SCI. At the coordination level, firms do not necessarily engage in joint activities with their supply chain partners as they do not envision having a long-term relationship with their supply chain partners. However, as firms observe the value proposition of working together, as opposed to working independently, they begin

collaborating. Firms engage in activities such as collaborative planning and forecasting. As an example, Ser_One engages in collaborative planning and forecasting with its collaborative suppliers (see Table 2-8).

The joint initiatives truly bloom at the internalization level as exchange partners trust each other even further. At this level of SCI, firms willingly share tacit information with their exchange partners that helps in jointly developing new products. The extent and scope of joint activities is higher in an internalized relationship when compared to a collaborative relationship. As an example, the VP of Supply Chain Management at Comp_One suggested that in an internalized relationship they work together with their suppliers to test and design new products, and provide them with necessary resources to develop new products, while in transactional relationships they do not engage in such activities.

Table 2-8: Quotes Representing Joint Activities at Different Levels of SCI

SCI Level	Representative Quotation
Coordination	"Our (Net_One) transactional customer believes that it is our problem, and we need to go work it out."
Collaboration	"The forecast is bad the minute after we (Ser_One) printed it, we can be of assistance to our suppliers, and they can respond back to us and provide valuable information based on what they see going on in the market."
Internalization	"We (Oil_One) do pilots and testing and so forth with them." "Like if our (Comp_One) suppliers don't have the resources, Say we (Comp_One) are going to go and design a product with them." "I (Ser_One) will take an expert there to assist our supplier with scheduling, and with actual industrial processes they are doing."

2.8.5 Vision Sharing

Table 2-9 provides some representative quotations from participants indicating the extent to which firms share their vision during different levels of SCI. I find that during the coordination level firms are very myopic in their focus and thus do not necessarily share their vision with their supply chain partners as they are not committed to a long-term relationship with their exchange partners. However, as the degree of trust and inter-dependence among supply chain partners increase over repeated interactions, firms begin developing a long-term orientation with their exchange partners. The long-term orientation with the exchange partners motivates firms to provide some visibility into their planning with their exchange partners. Long-term strategic planning and shaping of goals and vision together only occurs when firms are highly committed towards each other and share a high degree of trust. Firms that have an internalized relationship implicitly and explicitly pledge towards relationship continuity, thus sharing long-term plans becomes critical to the sustenance of their relationship. I find that firms involved in an internalized relationship have a better understanding of their supply chain partners' long term objectives.

Table 2-9: Quotes Representing Vision Sharing at Different Levels of SCI

SCI Level	Representative Quotation
Coordination	"Even though I (Oil_Two) manage them, they are not in my radar. I don't pay much attention to them." "Some of our (Ret_One) suppliers don't share their vision"
Collaboration	"Our (Net_One) customers have a vision of what they want and how they want…they say to us, 'this is the plan, we will want a product to go do this,' and we come up with products to be able to go and match those desires."
Internalization	"We (Oil_One) sit down with our strategic partners, we lay out what we are trying to do on a business plan, we generally share what our plan looks like this year, and we will give them insight into where we are going in three to five years."

2.8.6 Adaptability in Relationships

Table 2-10 presents a sample of representative quotations depicting the adaptability in relationships firms assume at different levels of SCI. Firms at the coordination level try to maximize their own profits and have little or no consideration for what happens to their partners. Due to the discrete nature of these relationships, firms attempt to maximize their profit at every given opportunity with their supply chain partners. Even during collaboration, firms are concerned about their relationship's profitability and might be willing to exit a relationship in case performance expectations within relationships are not met and their profitability is adversely affected. They are unwilling to adapt in order to sustain the relationship at the collaboration level. However, when relationships are internalized firms are willing to endure short-term losses to preserve their long-term relationships. Furthermore, these firms are not only willing to take losses, but they work with the supply chain partners to improve their current predicament. For instance, the VP of operations and supply chain management at Ser_One

suggested that they try to maintain their relationships even during a crisis and help their suppliers to overcome challenges.

Table 2-10: Quotes Representing Adaptability in Relationship at Different Levels of SCI

SCI Level	Representative Quotation
Coordination	"Competition is the name of our (Net_One) game, and so everybody has to remain competitive." "We (Oil_Two) select vendors based on pricing."
Collaboration	"Relationships are very important for us (Net_One), but profitability also has a part to play in the competition."
Internalization	"The knee-jerk reaction would have been to throw most of that relationship away because these other guys would do the work for 30% less, we (Oil_One) did not do that." "We (Ret_One) have introduced our suppliers to other regional supermarket chains."

2.9 Discussion

In summary, I find that firms exhibit a set of behaviors when engaged in SCI, and conjecture that there are some behavioral nuances based on the extent to which firms are engaged in SCI.

2.9.1 Theoretical Framework for the Behavioral Patterns of SCI

Based on the data analyses and within-firm narratives, I conjecture a theoretical framework for SCI as presented in Figure 2-3. It depicts that as firms begin to interact with each other at the coordination level, they share basic information necessary to synchronize the flow of goods. The within-firm narratives reveal that firms at the coordination level are more likely to enforce contracts and hold their partners strictly accountable to them. Coordination is characterized by rigid relationships with minimal

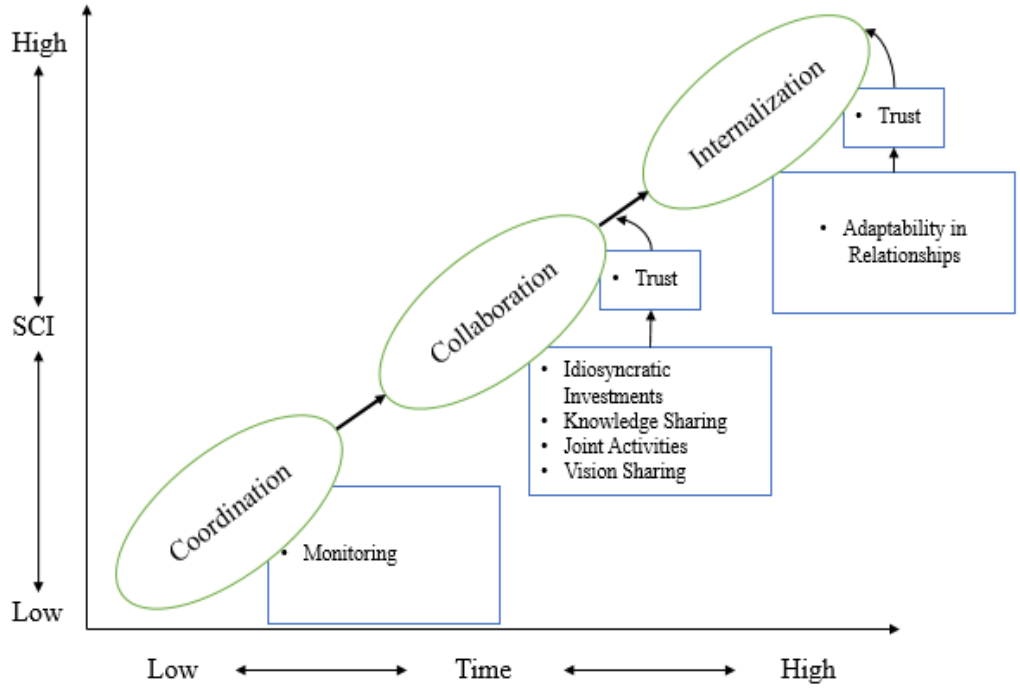
commitment and trust describing such relationships. At the coordination level, firms are less likely to engage in activities such as knowledge sharing, relational investments, joint activities, and vision sharing as it is described by low levels of trust. Firms fear that exchange partners might engage in opportunistic behavior during coordination.

However, repeated positive interactions at the coordination level might engender trust, which enables the evolvement of relationships from coordination to collaboration. The collaboration level of SCI is characterized by some degree of trust. Exchange partners at this level trust but try to also verify each other through some measures of surveillance. However, monitoring occurs to a lesser degree in collaboration as compared to coordination. At the collaboration level, firms also recognize the benefits of working together, and engage in relational investments, knowledge sharing and collaborative activities, and share their short term vision with their exchange partners. These activities in turn increase the inter-dependency among firms, and also enable the development of trust among exchange partners.

The increase in trust due to the activities at the collaboration level creates a desire to develop a closer relationship (i.e., internalization) among firms. Internalization is characterized by high levels of trust and commitment among exchange partners. As relationships evolve into the internalization level, contracts are hardly used, and disputes are settled amicably over conversations. At the internalization level, exchange partners are more willing to make relational investments, because they tend to believe that their partners would not engage in opportunistic behavior. Furthermore, exchange partners at this level engage in a high degree of knowledge transfer, joint activities, and share their

strategic vision as they believe in the continuity of their relationships and do not fear opportunistic behavior. In addition, firms that are involved in an internalized relationship

Figure 2-3: SCI Theoretical Framework



appear to stick with their supply chain partners in times of crises and are willing to work with them to overcome their challenges. The behaviors of firms exhibited during internalization are found to be self-reinforcing. It should be also noted that firms can terminate their relationship at any of the levels of SCI. Based on my findings, I propose the following:

Proposition 1. As firms evolve from coordination to internalization via collaboration, they increasingly engage in relational investments, knowledge sharing, joint initiatives, vision sharing, and exhibit adaptability while engaging to a lesser degree in formal monitoring.

2.10 Conclusion

This study contributes to academic research and practice alike. Several studies have examined SCI using cross-sectional surveys (Flynn, Huo, & Zhao, 2010; Koufteros et al., 2007; Leuschner et al., 2013) but SCI has had relatively no theoretical underpinnings. The supply chain literature is fraught with ambiguous conceptualizations of SCI (Van der Vaart & van Donk, 2008), preventing any meaningful additive research from being conducted on SCI. In this study, I have proposed a theoretical model for the behavioral patterns exhibited by firms while engaging in SCI via qualitative research, and thus ground my framework on data unlike earlier studies of Dwyer et al. (1987).

I have provided a framework for the development of SCI measures by listing the behavioral nuances exhibited by firms during SCI, while Mackelprang (2012) argues that the behaviors exhibited by firms engaging in SCI are not clearly understood. The behavioral patterns of SCI identified through this study should also serve as guidelines for practitioners to engage in SCI. Furthermore, the study provides a foundation to develop a consistent measure for the behaviors exhibited by firms during SCI, which is currently lacking in the extant literature (Van der Vaart & van Donk, 2008),

Like any study, this one also has limitations. I have provided an inkling in this research that SCI can evolve through three levels. Additional research is required to examine the levels through which SCI evolves, and the specific characteristics exhibited

at those levels. Furthermore, I speculate that several factors such as relationship duration, product type, supplier concentration, cost, quality, value proposition, and culture and management acumen can influence the evolution of SCI. However, the exact role of these triggers in the evolution of SCI is unclear. Future studies should explore the role of these triggers in the evolution of SCI.

I concluded that firms can engage in relationship termination at any level of SCI. However, how firms terminate relationships is still unclear. Future research should seek to examine the decline of relationships across different levels of SCI. In other words, how does the relationship regress from one level to a lower level? Or, is it possible that the relationship regresses across multiple levels simultaneously? These areas of inquiry will be particularly useful to provide insights about mitigating the negative impacts of failure in SCI.

Furthermore, I have not explicitly addressed trust in relationships but I have rather suggested that trust develops over time through repeated positive interactions. Sako and Helper (1998) suggest that interfirm trust exists at three different levels—contractual, competence, and goodwill trust. Future research should seek to deepen our understanding of the nature of trust developed while engaging in increasing extent of SCI.

In this study, I considered the relationships of large firms while ignoring how small firms build relationships. Koufteros et al. (2007), employing a cross-sectional survey study, demonstrate that firm size can influence SCI. Small firms might not have the resources and abilities of large firms to enable the achievement of high levels of SCI. Hence, it will be interesting to ascertain how my findings might differ based on firm size.

My research indicates that SCI is a very complex phenomenon, which is very dynamic in nature. A system dynamics perspective can provide valuable insights by simultaneously examining the interplay of factors involved in the evolution of SCI. As another limitation, this study is still restrictive in its understanding of the role of individuals within organizations. Executives within organizations can influence strategic decisions, and organizations can be seen as reflections of their top executives (Carpenter et al., 2004; Hambrick & Mason, 1984). Examining the role of individuals within organizations on SCI may therefore be a fruitful research direction. Finally, a single individual coded and analyzed the data. To lend the findings more credibility, however, it is imperative that more researchers code and analyze the data. Moreover, despite my rigorous methodological approach to data collection and analysis—that is, using multiple informants and theoretical sampling and writing memos—it is still possible that, because of the study's retrospective nature, it did not capture certain aspects of SCI.

CHAPTER III

SUPPLY CHAIN LEADERSHIP

3.1 Introduction

Despite the perceived benefits of working closely together (i.e., supply chain integration (SCI)), some firms tend to exhibit adversarial behaviors with their supply chain partners (Swinney & Netessine, 2009). For instance, in the 1990's, Ford, under pressure to reduce its costs imposed a 5% price reduction on all its suppliers (Swinney & Netessine, 2009). This led to its suppliers complaining and reducing their commitment towards Ford. On the other hand, during the same time period, Toyota and Honda worked with their suppliers and reduced their manufacturing costs for the Toyota Camry and Honda Accord models by over 25% respectively (Choi, 2005). Subsequently, learning the importance and benefits of working constructively with suppliers, Ford has made the transition from working with several hundred suppliers to a few select suppliers over the last few years. Birgt Behrendt, vice president of global programs and purchasing operations at Ford, reports that Ford now spends a significant proportion of its purchasing budget on 104 preferred suppliers, a far smaller number than the 3,000 suppliers it boasted in 2005, and recently has moved to the top three auto manufacturers with respect to supplier relationships (Bunkley, 2013). According to the 2010 Working Relations Index (WRI), Ford has improved 24% in supplier relationships since 2009 (www.ppi1.com). Ford's suppliers attribute the improvement in relationships to Ford's new style of leadership in its supply chain (Burder, 2014). Ford's improved relationships with its suppliers have

made its suppliers more willing to work with them collaboratively on several new product development initiatives (Bunkley, 2013).

Firms increasingly view supply chains as conduits for innovation (Shipilov, 2013). Several scholars have also touted the benefits of working together with supply chain partners (Carr & Pearson, 1999; Droge, Jayaram, & Vickery, 2004; Koufteros, Rawski, & Rupak, 2010; Koufteros, Cheng, & Lai, 2007). For instance, Petersen, Handfield, and Ragatz (2005) find that working closely with suppliers can help in making significant improvements in product design performance. Parker, Zsidisin, and Ragatz (2008) find that early supplier involvement significantly enhances the chances of success for new product development. However, there is increasing evidence to suggest that firms often do not achieve the desired benefits of working together. The failure rates of SCI initiatives are as high as 70% (Anderson & Jap, 2012).

SCI initiatives that are poorly led are more likely to fail (Defee, 2007; Hult, Ferrell, Hurley, & Giunipero, 2000). Members of an integrated supply chain also need to be led in the same manner as organizations that operate as independent firms (Cooper, Lambert, & Pagh, 1997). An effective leadership style plays an important role in successfully managing and guiding an integrated supply chain. Mentzer et al. (2001) suggest that there needs to be a firm that assumes the *leader* role in a supply chain. Furthermore, Bowersox and Closs (1996) suggest that supply chains need leaders as much as individual organizations do. Effective leadership is required to lift barriers between supply chain members, to orchestrate the use of resources, and to allow seamless transfer of information (Avolio, Bass, & Jung, 1999; Hult, Ketchen, & Chabowski, 2007). Effective leaders in a

supply chain can develop a relationship which is built on shared goals and high commitment (Defee, Stank, & Esper, 2010). Effective leaders are those who adopt and practice the right leadership style to achieve desired outcomes.

Leadership style defines the manner in which power is exercised by an individual or an organization. The right leadership style needs to be exhibited in order to drive a change in supply chain relationships (Defee, 2007). Leadership can be an organizational quality (Ogawa & Bossert, 1995) as much as it is an individual quality. The leadership style exhibited by top management gradually becomes institutionalized throughout the entire organization (Ogawa & Bossert, 1995). Organizations are a reflection of their leaders (Hambrick & Mason, 1984). Ford's turn-around in its relationships with its suppliers in the last decade can be attributed to the leadership style it exhibits towards its suppliers (Burder, 2014).

Despite growing calls for rigorous empirical examination of the concept of supply chain leadership (SCL), only a small number of studies cover this topic. For instance, supply chain scholars have sought to examine SCL's role on performance and relationship commitment (Defee, 2007; Hult et al., 2000). However, the role of SCL in achieving high levels of SCI remains largely unexplored.

In order to understand the operant processes through which customers' leadership styles influence SCI behaviors exhibited by suppliers, Transformational Leadership Theory (TLT) and Social Exchange Theory (SET) are employed. TLT is used to inform us about specific leadership styles, and SET is utilized to explain the mechanism by which customer leadership influences and supplier behaviors. TLT proposes two broad

leadership styles namely, transformational leadership and transactional leadership (see Appendix-B for definitions).

Transformational and transactional leadership styles exhibited by customers transcend organizational boundaries and impact suppliers (Bass, 1997; Defee et al., 2010). TLT is robust across different levels of analysis, and this has made it a preferred choice amongst leadership theories for supply chain scholars (Hult et al., 2000). Transformational leaders in supply chains are shown to improve performance by enhancing information availability and relationship commitment (Defee, 2007; Hult et al., 2007). Additionally, some scholars argue that the transformational and transactional leadership styles exhibited by customers impact relationship outcomes differently (Zhu, Chew, & Spangler, 2005). There is, however, scant empirical evidence examining the mechanism through which transformational and transactional leadership styles affect SCI.

Towards this account, social exchange theory (SET) provides a useful theoretical framework to examine suppliers' responses to different customer leadership styles. The origins of SET can be traced back at least to the early 1920's (Molm, 2006) and SET still remains one of the most useful frameworks to explain inter-organizational behavior. Social exchanges comprise a number of interactions that generate obligations (Cropanzano & Mitchell, 2005). Firms engage in social exchanges to gain specific rewards and avoid certain punishments (Griffith, Harvey, & Lusch, 2006). SET suggests that the action of member 'A' towards member 'B' is contingent upon the action of B on A. Furthermore, one of the basic tenets of SET is that trust and commitment evolve over a period of time in social exchanges. This tenet is consistent with some of the explanations for the

evolution of inter-firm relationships (Ring & Van de Ven, 1994). According to SET, in the context of a customer-supplier relationship, the leadership styles of customers might evoke certain behavioral responses from suppliers which are mediated by the trust and commitment that is engendered during repeated interactions. The commitment-trust theory by Morgan and Hunt (1994) proposes that trust precedes commitment in a relationship.

Although leadership seems to be an important factor to be considered while examining SCI, supply chain scholars have largely ignored it. This study aims to do the following: (1) identify the most effective leadership style to achieve SCI, (2) examine the mechanisms by which leadership styles influence SCI, and (3) provide managerial insights on improving supply chain relationships through leadership.

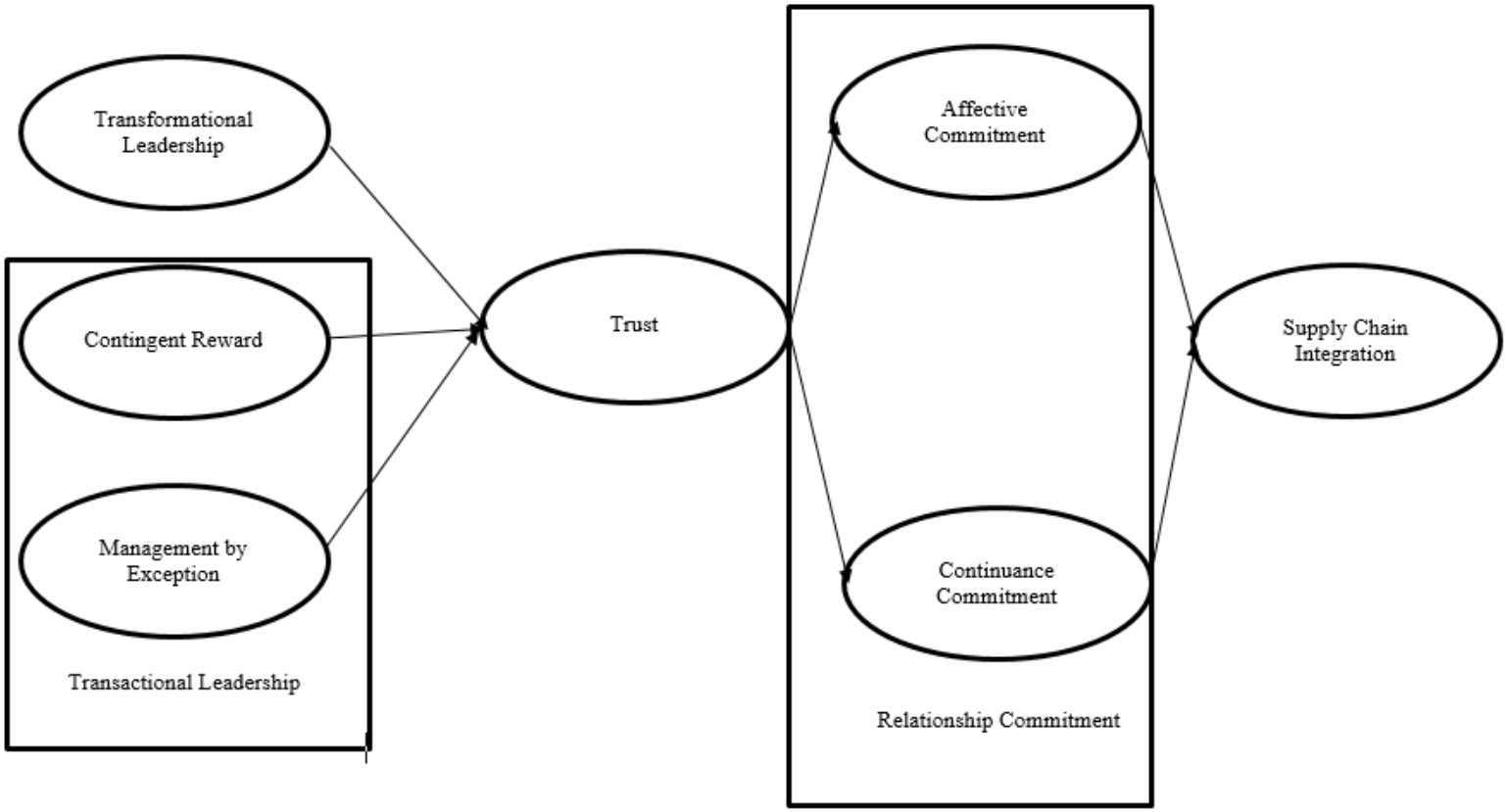
This examines the explanatory role of customer leadership behaviors on SCI. via several parts. The first part motivates the research question while the next section provides a brief account of SET and its application in the context of customer-supplier relationship. The subsequent part describes the different constructs used in this study, such as leadership behavior styles, trust, commitment, and SCI. Furthermore, this part focuses on TLT to identify and discuss the different leadership behavior styles examined in this study. Then I develop the hypotheses to be tested in this study. The following few sections postulate the research design and the instrument development process. The instrument development process is followed by the testing of hypotheses using structural equations modeling (SEM), and the last part discusses the results and suggests directions for future research.

3.2 Theoretical Development

SET provides a useful theoretical lens to study the interplay between leadership style, trust, relationship commitment, and SCI (See Figure 3-1). The roots of SET can be dated back to the early 1920s (Cropanzano & Mitchell, 2005), bridging disciplines such as anthropology, social psychology, and sociology (Molm, 2006). SET has been applied to diverse areas of research including leadership (Liden, Sparrowe, & Wayne, 1997) and social interactions. The use of SET in the context of supply chains is also steadily increasing (Griffith et al., 2006; Nyaga, Whipple, & Lynch, 2010; Zhao et al., 2008). This study utilizes SET to develop theoretical arguments suggesting that leadership style impacts integration with customers through trust and relationship commitment, while acknowledging that a direct link between customer leadership style and SCI may exist as well.

While classical theories of economic exchanges typically assumed that exchanges were independent, one-shot transactions between actors, social exchange theorists are primarily interested in relations of some length and endurance (Molm, 2006). Social exchanges involve a series of interactions that generate obligations (Emerson, 1976). These interactions are perceived to be interdependent and contingent on the actions of another entity (Blau, 1964). SET also emphasizes that these interactions are capable of high quality relationships between the interacting members (Cropanzano & Mitchell, 2005). Though primarily developed to study individuals, sociology researchers have recognized that the behavioral principles of individuals in a social group have strong

Figure 3-1: Hypothesized Structural Model



generalizability (Emerson, 1976) and can be applied to study inter-organizational behaviors (Choi & Wu, 2009).

The basic elements of social exchanges are the actors who engage in exchanges, the resources they exchange, the structures within which the exchange relations develop, and the dynamic process in exchange (Molm, 2006). The actors involved in an exchange can be an individual or an organization (Cook & Rice, 2006). It is not difficult to perceive firms as social actors embedded in a social network (Rai & Bajwa, 1997). The basic assumption about the actors is that they are self-interested, seeking to maximize outcomes that they positively value and to minimize outcomes that they negatively regard (Molm, 1990). Actors involved in social exchanges reciprocate resources (tangible or intangible) that are of value to others (Molm, 2006). Moreover, the process of exchange explains the mechanics of interaction within an exchange structure. The core assumption with respect to exchanges is that the benefits derived from exchanges are contingent upon the benefits provided in the exchanges (Molm, 2006).

SET is used to explain the followers' behaviors in response to leadership styles exhibited by the leader, though this phenomenon mainly has been examined at the individual level. Liden et al. (1997) examine the leader-member exchange within the purview of SET. They argue that social exchanges exist between leaders and members of an organization that result in reciprocal exchanges of resources (i.e., both tangible and intangible) amongst them. Several other scholars also consider the leader-member exchange to be governed by social exchange theory (Liden et al., 1997; Wang, He, &

Mahoney, 2009). The generalizability of SET across different units of analysis will help us examine the role of customers' leadership styles on suppliers' reciprocal behaviors.

Supply chain interactions are not only governed by economic elements stated in a contract, but also through social elements that are not explicitly specified in the contract (Shin, Collier, & Wilson, 2000). The social exchanges in supply chains often create future obligations (Masterson, Lewis, Goldman, & Taylor, 2000) that help develop relationships among firms involved. Several supply chain scholars have used SET to explain different phenomena in supply chains. For instance, Griffith et al. (2006) examine the role of procedural justice and distributive justice of suppliers in fostering a long term orientation and relational behaviors with distributors, which then reduces conflict and enhances satisfaction, leading to improved overall performance. They use SET to argue that the procedural and distributive justice exhibited by suppliers creates a sense of obligation with distributors which they then reciprocate by enhancing their commitment towards suppliers. In another study, Zhao et al. (2008) use SET to examine the role of different customer power bases on customer integration. They argue that suppliers exhibit their reciprocity in response to different customers' power bases through their relationship commitment.

Wang et al. (2009) argue that the nature of social exchanges governs the quality of relationship that is developed between the leader and the follower. Based on SET, the follower's reciprocity depends upon the action of the leader. Thus, the trust and relationship commitment developed by a supplier (follower) will be contingent on the leadership style of the customer (leader). The type and extent of trust and relationship

commitment developed by the supplier will then influence the relationship it is willing to engage in with the customer.

3.3 Variables of Interest

3.3.1 Supply Chain Leadership

Within the realm of inter-personal influence literature, leadership style is considered to be an important influence mechanism (Allred, Fawcett, Wallin, & Magnan, 2011). Effective leadership style has been shown to invoke high levels of trust and commitment by the follower (Defee, 2007). Supply chains are comprised of several firms acting interdependently. The supply chain management literature has repeatedly cited the importance of leadership in supply chains. Effective supply chain management requires a leader who has a strong sense of purpose and direction (Cooper et al., 1997). For example, an exploratory study of Chinese firms by Lockström, Schadel, Harrison, Moser, and Malhotra (2010) suggests that customer-side leadership impacts motivation, trust, and commitment among suppliers. The commitment developed by suppliers is then shown to be a key enabler of successful customer-supplier integration. Additionally, Defee (2007) finds empirical evidence to suggest transformational leaders in supply chains positively influence followers. Thus, leadership may be an influential factor to consider for achieving successful integration between a customer and a supplier.

Bass's (1985) Transformational Leadership Theory (TLT) is the most widely used and accepted leadership theory. Miner (2005) states, "TLT has remained remarkably stable over time" (p.366), which implies that the constructs of TLT are well established. Besides, TLT encompasses the virtues of most prior leadership styles such as the

"charismatic leadership style" (Miner, 2005). TLT encapsulates two broad leadership styles, i.e., transformational leadership and transactional leadership styles.

Within the context of an organization, transformational leaders create strategic goals, which they communicate effectively throughout the entire organization to build organizational commitment towards their vision (Defee, 2007). Moreover, transformational leaders are found to communicate strategic goals better than leaders who do not exhibit transformational leadership qualities (Kearns & Lederer, 2003). As a result, this enhanced communication ability allows them to achieve higher cohesion, trust, commitment and performance in new organizational settings (Kearns & Lederer, 2003).

Although TLT is primarily deployed at the individual level, Ogawa and Bossert (2010) have argued that leadership also is an organizational quality. More recently, scholars have used transformational leadership style to study inter-organizational relationships. For example, Hult et al. (2007) have demonstrated that transformational leadership positively moderates the relationship between the value of a corporate buying center and supply chain performance. Avolio et al. (1999) agree that leadership can be an organizational-level quality that is diffused into an organization's culture. They further contend that leadership can be extended beyond an organization's boundaries to influence external members in a supply chain.

The robustness of TLT across different organizational levels of analysis has made it an obvious choice among other leadership theories for supply chain scholars (Avolio & Bass, 1995; Bass, 1997; Defee, 2007; Hult, Ferrell, Hurley, & Giunipero, 2000). A transformational leader is characterized by (i) charismatic/inspirational leadership, (ii)

intellectual stimulation, and (iii) individualized consideration (Allred et al., 2011; Avolio, Waldman, & Yammarino, 1991). Studies have also shown that transformational leadership can be conceptualized as a higher-order factor (Ganesan, 1994; Zaheer, McEvily, & Perrone, 1998a) that captures the attributes of charismatic/inspirational leadership, intellectual stimulation, and individualized consideration.

Furthermore, transformational leadership style is often contrasted against transactional leadership style. Transactional leadership style is operationalized by the two primary dimensions of (i) contingent rewards, and (ii) management by exception. The use of contingent rewards involves a leader governing the actions of followers by articulating rewards, and recognizing the work accomplished and penalizing for failure. On the other hand, management by exception implies that a leader tends to micro-manage followers based on a set of rules and standards. Corrective actions are taken immediately if transactional leaders managing by exception find any deviation from their governing set of rules and standards.

3.3.2 Trust

Trust is a key element in cooperative relationships (Monczka, Petersen, Handfield, & Ragatz, 1998). Mayer, Davis, and Schoorman (1995) define trust as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other party will perform a particular action important to the trustor, irrespective of the ability to monitor or control the other party" (p. 712).

Trust is present at the inter-personal level and at the inter-organizational level. (Zaheer et al., 1998b) find that inter-organizational trust reduces the cost of negotiations

and conflict. The role of inter-organizational trust in soliciting desired outcomes out of inter-firm relationships is widely examined. For example, a study by Johnston et al. (2004) highlights the importance of suppliers' trust for effectively engaging in joint activities with customers. Specifically, they find that a supplier's willingness to be vulnerable to a customer's actions promotes shared planning and coordinating activities with its customer. Along similar lines, Corsten, Gruen, and Peyinghaus (2011) empirically examine the buyer-supplier relationships in the automotive industry. They find that trust is important to achieve the desired benefits out of inter-firm relationships. Specifically, they find that trust fully mediates the relationship between a supplier's sense of belonging with its customers, and the supplier's contributions in relationship specific investments and exchanging information with the customers.

Although several studies have sought to explain the benefits of inter-organizational trust, relatively fewer studies have sought to explain the antecedents of inter-organizational trust. The debate still continues regarding the antecedents of inter-organizational trust, since our knowledge about the emergence of trust in a relationship is very limited (Gulati & Nickerson, 2008; Gulati & Sytch, 2008). Currently, two broad perspectives for the origins of trust are identified in the extant literature (Poppo, Zhou, & Ryu, 2008). The first perspective proposed by Gulati (1995) argued that familiarity breeds trust, as firms interact with each other several times, trust develops between them. The second perspective is an economic explanation for the emergence of trust. The economic perspective suggests that trust originates from rational deliberation and that it is beneficial to act in a manner such that the other party in the relationship can be trusted, even when

exposed to vulnerabilities (Poppo et al., 2008). These perspectives provide useful insights into the origins of trust. However, they fail to delineate the specific organizational traits (e.g., leadership style) that can engender inter-organizational trust.

A supply chain necessarily involves interdependence where firms need to work together to achieve organizational goals. Building trust between partnering firms is vital for achieving alignment of interests between the buyer and the supplier (Blomqvist, 2002). Effective leadership styles are shown to invoke follower trust in the leader (Podsakoff, MacKenzie, Moorman, & Fetter, 1990) at the individual level; however, this phenomenon is yet to be empirically examined at the organizational level.

3.3.3 Relationship Commitment

The Organizational Behavior (OB) literature has widely examined the concept of organizational commitment. OB scholars recognize that organizational commitment is a multi-dimensional construct. However, debate continues regarding the dimensionality of the construct. Two widely used paradigms proposed by Meyer and Allen (1991) and O'Reilly and Chatman (1986) dominate the relationship commitment literature. Meyer and Allen (1991) develop their model based on the observation that the existing conceptualization of organizational commitment at that time did not adequately capture differences in the state of mind of individuals who remained with the organization. Meyer and Allen conceptualized organizational commitment as a three dimensional construct which they labeled as affective commitment, continuance commitment, and normative commitment. Affective commitment manifests the desire of an organization to stay in a relationship and the intrinsic desire to be associated in the relationship. Continuance

commitment suggests a lack of options where the relationship is driven by necessity, while normative commitment captures the obligated state of mind to remain within an organization. Several independent factor analytic studies support the three factor model (Meyer & Herscovitch, 2001). However, a very high correlation was reported between normative commitment and affective commitment causing some concern regarding the dimensionality of the construct (Meyer & Herscovitch, 2001).

Similar to the model advanced by Meyer and Allen (1991), O'Reilly and Chatman (1986) proposed a three factor model for organizational commitment. They developed their model based on Kelman's (1958) model regarding attitude and behavior change and labeled the three dimensions of organizational commitment as compliance, identification, and internalization. Compliance is the change in attitude and behavior in response to specific rewards or avoidance of certain punishments. Identification occurs when an individual accepts influence to maintain a satisfying relationship. On the other hand, internalization occurs because an individual's values are in line with that of the organization. Factor analytic approaches applied on this model failed to discriminate between the commitment due to internalization and identification. In a later model proposed by O'Reilly and Chatman, they combined the internalization and identification dimensions and created a new dimension which they labeled as normative commitment (Meyer & Herscovitch, 2001). This type of commitment is similar to the affective commitment proposed by (Allen & Meyer, 1990). They also termed compliance commitment as instrumental commitment. This commitment is similar to the continuance

commitment described by Allen and Meyer (1990). Ultimately, O'Reilly and Chatman specified a two-factor model.

Building on the work in OB, marketing and supply chain scholars have readily adapted the two-factor model of organizational commitment in order to examine the relationship commitment between supply chain members. Relationship commitment can be described as the desire to maintain relationships. More formally, (Morgan & Hunt, 1994) define relationship commitment as the willingness of a party to invest in financial, physical, or relationship-based resources.

In the context of buyer-supplier relationships, Gustafsson, Johnson, and Roos (2005) examine the role of affective commitment and calculative (i.e., continuance) commitment on customer retention. Within the realm of inter-firm relationships, affective commitment refers to the willingness to retain cohesive relationships based on emotions and values of the parties involved, while continuance commitment is strictly based on economic benefits. Zhao et al. (2008) also examine the impact of affective commitment and instrumental (i.e., continuance) commitment on customer integration. They find that affective commitment has a positive impact on customer integration, while continuance commitment has a negative impact on customer integration.

The trust-commitment theory proposed by Morgan and Hunt (1994) serves as a precursor to examining the relationship between trust and relationship commitment, but latter studies have failed to examine the link between trust, affective commitment and continuance commitment. Furthermore, the role of trust and relationship commitment as mediators in the context of inter-firm relationships development is yet to be examined.

3.3.4 Supply Chain Integration

Stevens (1989) suggested that "the main objective of managing the supply chain is to synchronize the requirements of the customer with the flow of materials from the supplier in order to maintain a balance between what are often seen as conflicting goals of high customer service, low inventory investment and low unit cost" (p.3). To achieve these goals one recognizes the necessity for buyers and suppliers to cooperate across various processes ranging from product design, market launch, promotions, and order-fulfillment and recycling (Kopczak & Johnson, 2003). Frohlich and Westbrook (2001) suggest that companies need to integrate activities across partners and supply chains to effectively deliver products to the market. The establishment and maintenance of such a relationship is a socialization process that facilitates a two-way process of information sharing, joint problem solving, and knowledge transfer between the buyer and supplier (Cousins & Menguc, 2006), the management process of which has been identified as SCI. In this study, SCI is captured from the perspective of a supplier towards its customer.

3.4 Hypotheses Development

3.4.1 Transformational Leadership and Trust- Transformational Leadership as an Enabler of Trust

Social exchanges do entail future obligations that serve as means to develop trust and commitment towards relationships with members involved. Unlike economic exchanges where the exact nature of returns is specified and there is limited potential for the development of trust, social exchanges result in the development of trust. Social exchanges offer a potential for the development of trust since exchanges are handled with

the assumption that exchange parties will fairly exercise their obligations in the future (Molm, 2005). Trust is absolutely necessary to sustain social exchanges (Konovsky & Pugh, 1994). The relational view of supply chains (Dyer & Singh, 1998) suggests that supply chains can increase their benefits by engaging in social exchanges instead of purely economic exchanges. Griffith et al. (2006) employ the theoretical lenses of social exchange theory to explain how the enacted procedural and distributive justice of a firm influences its partner's attitudes and behaviors. Contingent upon the behavior exhibited by a member in a supply chain, the behavior can either have a positive or negative impact on the social exchanges by engendering trust or endangering trust between the exchange members. SET suggests that trust is contingent upon the leadership style exhibited by a member in a relationship (Wang et al., 2005).

SET suggests that leadership styles exhibited by customers can influence suppliers' trust towards them. Burke, Sims, Lazzara, and Salas (2007) suggest that "the idea of trust is strengthened or weakened due to the experiences, interactions, and context within which the relationship exists…" (p.610). The leadership styles exhibited by customers towards their suppliers can influence the perceptions of suppliers. Followers' trust in leaders is one of the most important factors that determine the outcome of leadership styles. Yukl (2010) suggests that transformational leadership fosters trust in a relationship, which then creates high levels of commitment in a relationship. Pillai and Williams (2004) find evidence to suggest that trust mediates the relationship between transformational leadership styles and the follower's commitment.

Transformational customers try to induce their suppliers to look beyond their own needs and make them focus on broader goals and needs that will benefit the relationship (Defee et al., 2009; Yukl, 2010). In this process, transformational leaders take into account the individual follower's needs, goals, and interests (Bass, 1991). Transformational leaders do this through charisma/inspiration, intellectual stimulation, and individualized consideration. This, in turn, makes a supplier more willing to trust customers who exhibit transformational leadership.

Transformational customers exhibiting charisma/inspirational leadership, individualized consideration, and intellectual stimulation are likely to win the trust of their suppliers. Mayer et al. (1995) proposed one of the most influential models on trust. They argue that the antecedents of trust generally appeal to at least one of the three broad categories of trust; namely ability, benevolence, and integrity. The actions of leaders that appeal to these categories are likely to earn the trust of followers (Burke et al., 2007). Transformational leaders communicate and role-model their values and a shared sense of purpose (i.e., charisma/inspiration), and thereby demonstrate their ability and integrity to their followers. In a similar fashion, they inspire followers to achieve attainable goals (i.e., inspiration), and in this fashion exhibit their competence, which in turn facilitates trust (Bass, 1991). Likewise, through individualized consideration, transformational leaders understand the strength and weakness of followers and respect and demonstrate concern for them (Burke et al., 2007). Such individualized consideration is generally perceived as benevolence by followers, and this benevolence is empirically shown to develop trust in followers (Burke et al., 2007). Furthermore through intellectual stimulation,

transformational customers motivate their supplier to think of problems facing them from many different angles and support them throughout this endeavor. These actions reinforce the suppliers' perception regarding their customers' integrity and competence, which in turn enables the development of trust in suppliers. Therefore I hypothesize the following:

Hypothesis 1. High transformational leadership style exhibited by the customer engenders high levels of trust in the supplier.

3.4.2 Transactional Leadership and Trust- Transactional Leadership as a Deterrent of Trust

Shamir (1995) suggests that leaders honoring their transactional commitments over a period of time tend to win the trust of their followers. In their meta-analytic study, Dirks and Ferrin (2002) also find support to suggest that transactional leadership, through contingent reward and management by exception, has a positive influence on followers' trust of their leaders.

Unlike transformational customers, transactional customers are concerned only about short term outcomes (Avolio et al., 2004a; Avolio, Waldman, & Yammarino, 1991). Transactional customers exist within a series of give-and-take exchanges between the leader and the follower (Bass, 1997; Hult et al., 2007). In other words, transactional customers are only concerned about accomplishing tasks. Simply put, transactional customers expect work to be done and are willing to reward and recognize their suppliers for getting the work done while failure to get the work done results in punitive actions. Transactional customers also work within a set of rules and standards and take corrective actions if they find any deviations.

Contrary to Shamir (1995), Jung and Avolio (2000) argue that transactional leaders administering contingent rewards will not engender trust among followers. Furthermore, empirically (Pillai, Schriesheim, & Williams, 1999) demonstrate that transactional leadership through contingent reward can endanger trust among followers. The customer's transactional leadership style based on the usage of rewards and management by exception can negatively influence the suppliers' trust in customers. Therefore, I propose:

Hypothesis 2a. High levels of contingent reward leadership style exhibited by customers will diminish the level of trust developed by their suppliers.

Hypothesis 2b. High levels of management by exception leadership style exhibited by customers will diminish the level of trust developed by their suppliers.

3.4.3 Trust and Commitment- Trust as a Source of Relationship Commitment

SET suggests that firms are more likely to commit to a particular relationship if they trust that their exchange partner will reciprocate (Cropanzano & Mitchell, 2005). Trust in a relationship is highly valued because partners are willing to commit to a specific relationship when there is a high level of trust (Morgan & Hunt, 1994). Spekman (1988) regarded trust to be the "cornerstone of strategic relationships." However, Kwon and Suh (2004) argue that trust without actual commitment will not translate into actual gains for an organization. Prior studies also suggest that trust between organizations is a pre-requisite for relationship commitment (Ganesan, 1994; Morgan & Hunt, 1994; Zhao, Huo, Flynn, & Yeung, 2008). Ganesan and Hess (1997) suggest that trust enhances relationship commitment by reducing the risk of opportunistic behaviors, by enhancing confidence that short term profit asymmetries will be resolved in the long run, and reducing the transaction

costs in a relationship. While trust is necessary to achieve commitment, the type of commitment developed depends upon the level of trust that one has developed towards the other.

3.4.4 Trust and Affective Commitment- Trust as a Source of Affective Commitment

Affective commitment is based on emotions and values (Anand & Ward, 2004). In essence, firms that have affective commitment towards each other are tied to them based on emotions and values (Allen & Meyer, 1990) and are willing to make themselves vulnerable towards the actions of the other in a relationship (Morgan & Hunt, 1994). Since affective commitment exposes a firm to high vulnerability, a firm will develop affective commitment only if they trust its partner and recognize that its partner will be willing to go beyond contractual obligations for the sake of their relationship (Geyskens, Steenkamp, Scheer, & Kumar, 1996).

Furthermore as firms develop high levels of trust, the threat of opportunistic behaviors by their partners is decreased dramatically (Ganesan, 1994). Firms with high levels of trust are more inclined to make asset specific investments into a relationship because they do not perceive any opportunistic behavior exhibited by their partners. Trust fosters a long-term orientation in a relationship and induces firms to focus on long-term relationship continuance instead of short term benefits (Cannon, Doney, Mullen, & Petersen, 2010). In addition, the SET perspective argues that trust built through positive interactions develops a social bonding between the exchange partners (Cropanzano & Mitchell, 2005). The social bonding between firms is based on the emotional attachment

that one develops towards the other. The emotional ties developed between firms motivate them to enhance their relationship by investing even further into their relationship (Babakus, Yavas, Karatepe, & Avci, 2003; Zhao et al., 2008).

Hypothesis 3a. Trust is positively associated with affective commitment.

3.4.5 Trust and Continuance Commitment- Trust as a Deterrent of Continuance Commitment

Continuance commitment is based on rational and economic dependence towards a partner in a relationship (Anand et al., 2009). Firms exhibiting continuance commitment are primarily involved in a relationship purely for economic reasons (Iverson & Buttigieg, 1999). Relationships for economic reasons can arise because a firm believes that its partner is the only firm that has the competence to carry out a particular task, or due to contractual obligations and high switching costs. There is no social or emotional bonding between firms. Firms try to protect themselves from vulnerabilities by strictly adhering to contracts. Such relationships are characterized by their low levels of trust (Das & Teng, 1998). Such firms do not typically wish to pursue long-term relationships.

Firms exhibiting continuance commitment realize that their partners can exhibit self-serving behaviors (Zhao et al., 2008). Firms exhibiting continuance commitment may attempt to switch partners but find themselves in situations where there are no other viable partners. In such cases, firms are forced to stay with their existing partners as a part of their survival process until they find other suitable alternatives. Similarly, firms retain their partners despite the threat of opportunistic behavior due to their high asset specific investments, the costs of which have not yet been recovered. Firms exhibiting continuance

commitment are less likely to make any significant investments into a particular relationship as they recognize that they are not seeking to have a long term relationship with their partners. Taken together, I propose the following hypothesis.

Hypothesis 3b. Trust is negatively associated with continuance commitment.

3.4.6 Commitment and SCI- Commitment as a Source of SCI

Supply chain relationships are built on effective partnerships that require high levels of relationship commitment (Zhao et al., 2008). Very few studies have examined the role of relationship commitment on integration. Morgan and Hunt (1994) found that relationship commitment positively influences cooperation and acquiescence in relationships. In a similar fashion, Chen, Paulraj, and Lado (2004) also argue that relationship commitment is necessary for firms to integrate. Although these studies have sought to examine the role of relationship commitment on integration, they have failed to distinguish between affective and continuance commitment, because they measure commitment as a one-dimensional construct. To the best of our knowledge there are no studies that examine the role of different dimensions of commitment on customer integration from a supplier's perspective. Firms with the right type of commitment can enable integration by being willing to readily exchange knowledge and invest into a particular relationship going forward (Zhao et al., 2008).

3.4.7 Affective Commitment and SCI- Affective commitment as an Enabler of SCI

Affective commitment is built on emotional ties and common values. Suppliers that have affective commitment internalize the values of their customers and want to hang

on with their customers (Zhao et al., 2008). Shared values that motivate repeated interactions drive these long-term relationships. Suppliers that have affective commitment are willing to make themselves vulnerable towards the action of their partners in a relationship. These firms that have affective commitment are not only willing to do things required by their partners, but also go beyond contractual obligations and make sacrifices, if needed, for the sake of their relationship. Affective commitment reduces opportunistic behaviors (Williamson, 1975) and enhances cooperative, collaborative, and internalized behaviors in supply chain partners. Suppliers with affective commitment perform tasks since they appeal to their values and not necessarily because they are coerced into a relationship. Suppliers with affective commitment are more willing to share their knowledge, and work closely with their customers by investing into their relationships. Furthermore, since suppliers intrinsically favor working with their customers they are more likely to withstand short term losses to sustain their relationship. Thus, taken all together, I propose the following hypothesis.

Hypothesis 4a. Affective commitment is positively related to SCI.

3.4.8 Continuance Commitment and SCI- Continuance Commitment as a Deterrent of SCI

Continuance commitment is developed purely for economic reasons. Continuance commitment is not built on shared values or norms. Suppliers with continuance commitment are skeptical about their customers (Gruen, Summers, & Acito, 2000; Zhao et al., 2008). Such suppliers perceive their customers to be self-serving and opportunistic. Firms that have continuance commitment are not willing to make sacrifices for their

relationship, or make significant investments. A plausible explanation might be that they are ready to switch customers if they find suitable alternatives for their existing customers. Making significant investments might hold them hostage to a particular customer. Furthermore, since suppliers with continuance commitment are working with their customers due to necessity rather than desire, they are more likely to refrain from sharing their knowledge, and investing into their relationship. In general, suppliers with continuance commitment are less likely to achieve high levels of integration. Thus, I propose the following:

Hypothesis 4b. Continuance commitment is negatively related to SCI.

3.5 Research Design

This study examines the relationship between leadership styles exhibited by the customer on suppliers' trust and commitment. Furthermore, I examine whether commitment translates to varying levels of integration. The nomological network rests on the basic tenets of SET. This study tests a variance theory model based on a mature theory (i.e., SET) and the data collected are necessarily quantitative in nature (Edmondson & McManus, 2007). A suitably designed survey instrument is utilized for data collection purposes. Prior to finalizing the survey instrument, several procedures were undertaken to ensure the construct validity and reliability of the measures.

The research design, methodology, and implementation for this study is in line with Flynn, Sakakibara, Schroeder, Bates, and Flynn (1990), Edmondson and McManus (2007), and Koufteros, Droge, Heim, Massad, and Vickery (2014). The instrument was first developed based on a thorough literature review and an examination of pertinent

empirical studies. The instrument was then reviewed via 11 interviews with practitioners and two academics in order to assure its content validity. In other words, the research interest was to establish that the domain of each construct was properly defined and to assure that the content domain was adequately covered. Furthermore, the interviews were useful to differentiate between the numerous definitions of popular concepts (such as supply chain integration vis-à-vis supply chain collaboration) and to determine when such categories coincide with concepts utilized in the hypotheses (Flynn et al., 1990). Academics and practitioners were asked to review the survey items for ambiguity and clarity, and to evaluate whether individual items appear to be appropriate measures of their respective constructs (DeVellis, 1991)

Once the survey instrument was improved by modifying and dropping some items based on the initial set of interviews, the total number of items in the instrument was reduced from 83 to 52. The instrument was then piloted with a 34 of practitioners and preliminary data analysis, such as corrected item total correlations (CITCs) and Cronbach's alpha, was undertaken to ensure the validity and the reliability of the survey instrument. Survey questions are anchored on a seven point Likert type scale to obtain necessary variance. The unit of analysis for this research is the relationship between a supplier and its major customer. Based on this preliminary analysis and examining the CITCs and Cronbach's alpha several items were labeled as suspicious if they had a CITC less than 0.35 and if the overall Cronbach's alpha for each construct was lower than 0.70. The low value of 0.35 for CITC was selected considering the low sample size (i.e., 34 observations) based on which the preliminary data analysis was conducted. The items that

were labeled suspicious were then closely examined during the confirmatory factor analysis (CFA) with the final data set obtained through the large data collection process. The large scale data collection methodology targeted participants from SIC codes 20-39 which represents the manufacturing sector at a large as it better suits the context of this study. The usage of these SIC codes is consistent with the extant literature that have examined SCI in terms of their composition. The survey for the large scale study was administered online using a list of contacts obtained through an alumni database and employing Qualtrics panel services. Previous studies have used such panel services to obtain data for research (Hagtvedt, 2011). Furthermore, reminders were sent to about 600 participants based on a 'wave analysis' of the responses over a specific time period (Dillman, Smyth, & Christian, 2009).

Before the substantive hypotheses were tested, the data was subject to several tests. These tests include checks for normality, non-respondent bias, common-method bias, convergent validity, and discriminant validity. The normality assumption can be examined via P-P plots, Q-Q plots, and also through the Kolmogorov-Smirnov (KS) test. In this study, the KS test is used due to its objective nature. Another potential source of bias in survey research is common method bias. One of the procedures commonly utilized to test for evidence suggesting the presence or absence of common method bias in a data set is Harman's one-factor test (Podsakoff, MacKenzie, Jeong-Yeon, & Podsakoff, 2003). An exploratory factor analysis can be performed on the variables of interest. If a single factor is obtained or if one factor accounts for the majority of the covariance in the independent and criterion variables, then the threat of common method bias is high. Another more

robust approach to check for common method bias is by using a correlation-based marker variable technique. With this technique, a marker variable which is supposedly unrelated with the substantive variables of interest is used (Podsakoff, MacKenzie, & Podsakoff, 2012). Podsakoff et al. (2003) also provide a variety of ways by which common method bias can be avoided. These include structural mechanisms utilized while administering the survey, which were employed as part of my survey design. For instance, care was taken to space the measurement of the predictor and the criterion variables as much as possible, and the items in the instrument were carefully chosen. The measurement model was examined for the model fit, convergent validity, and the efficacy of a second-order factor. The discriminant validity of the constructs in this study was examined by comparing the average variance extracted (AVE) with the squared correlations among the factors used in this study (Koufteros & Marcoulides, 2006).

The structural or substantive model is tested using structural equations modeling (SEM) in Mplus 6.0. Specifically, the standardized beta coefficients that measure the association among the constructs, and the model fit indices such as comparative fit index (CFI), Tucker-Lewis Index (TLI), and standardized root mean square residual (SRMR) are used to examine the model fit.

3.6 Instrument Development

To test the theoretical model presented in Figure 3-1, reliable and valid measures need to be developed for each construct (see Appendix-B for tables for the definitions of constructs used in this study). This study develops and tests the measures for transactional and transformational leadership styles, trust, commitment, and SCI. The instrument

development is categorized into three distinct phases: first, item generation; second, structured-interviews and pre-test; and third, a pilot test (Churchill, 1979; Koufteros, Vonderembse, & Doll, 1998).

3.6.1 Item Generation

Content validity is an important criterion for developing good measures as it reflects whether the items for a construct capture its content domain (Churchill, 1979). Content validity is enhanced by undertaking a comprehensive review of the literature, and by interviewing practitioners and academic scholars. The list of items for each construct was identified through a comprehensive review of the literature and the measures were categorized into different groups based on the particular content domain. The literature reviewed for developing the constructs in the theoretical model is discussed below.

To develop the measures for transformational and transactional leadership styles, the literature on Transformational Leadership Theory (TLT) was reviewed (Avolio et al., 1999; Avolio et al., 1991; Avolio, Zhu, Koh, & Bhatia, 2004b; Bass, 1998; Jung & Avolio, 1999). Transformational leadership style is characterized by three different correlated factors: (a) charismatic/inspirational leadership, (b) intellectual stimulation, and (c) individualized consideration (Avolio et al., 1999). Similarly, transactional leadership style has two distinct factors: (a) contingent rewards, and (b) management by exception (Avolio et al., 2004a; Judge & Piccolo, 2004). An initial set of questions was generated by reviewing the relevant literature for transformational and transactional leadership styles (see Tables 3-1 & 3-2).

Table 3-1: Items List for Transformational Leadership

Item	Description	Construct
II1	Our major customer acts in ways that builds our respect.	Charismatic/Inspirational
II2	Our major customer displays a sense of confidence.	
II3	Our major customer has admirable practices which it shares with us.	
II4	Our major customer challenges us to do better in our processes.	
II5	Our major customer challenges us to push our technology frontier.	
II6	Our major customer articulates a compelling vision.	
IS1	Our major customer challenges us to improve our current practices.	Intellectual Stimulation
IS2	Our major customer talks optimistically about the future.	
IS3	Our major customer expresses confidence that our collective goals will be achieved.	
IS4	Our major customer talks enthusiastically about our relationship.	
IC1	Our major customer treats us as an individual firm rather than just another member of the group.	Individualized Consideration
IC2	Our major customer is ready to provide individual attention when needed.	
IC3	Our major customer helps us with our challenges.	

Table 3-2: Item List for Transactional Leadership

Item	Description	Construct
LCR1	Our major customer tells us what to do if we want to be rewarded for our efforts.	Contingent Reward
LCR2	Our major customer rewards our achievements.	
LCR3	Our major customer rewards us based on the effort that we put in.	
LME1	Our major customer manages our relationship only when failures are uncovered.	Management By Exception
LME2	Our major customer pays attention to us only when a crisis emerges.	
LME3	Our major customer only gives attention to us when mistakes are uncovered.	

To develop the measures for trust, the literature on inter-organizational trust was examined (Doney & Cannon, 1997; Ganesan, 1994; Geyskens et al., 1996; Sako & Helper, 1998; Zaheer et al., 1998a). The measures of trust developed through a comprehensive review of the literature is presented in Table 3-3. The measures of trust capture the willingness of suppliers to be vulnerable to the actions of the customer (Mayer et al., 1995).

Table 3-3: Items List for Trust

Item	Description	Construct
T1	This customer has always been evenhanded in its negotiations with us.	
T2	This customer uses opportunities that arise to profit at our expense (R).	
T3	Based on past experience, we cannot rely with complete confidence on this customer to keep its promises made to us (R).	
T4	We are hesitant to transact with this customer when the specifications are vague (R).	
T5	This customer is trustworthy.	Trust
T6	This customer is genuinely concerned that our business succeeds.	
T7	We are confident that this customer will look out for us even when it is costly to do so.	
T8	If a situation arises, this customer will stand by our side.	
T9	This customer will make sacrifices for us if needed.	
T10	This customer has superb processes.	
T11	This customer has superb capabilities.	
T12	This customer has great competencies across a variety of dimensions.	

Notes: (R) indicates the item has been reverse coded.

To develop the measures for commitment, the literature on relationship commitment (Allen & Meyer, 1990; Geyskens et al., 1996; Gruen et al., 2000; Zhao et al.,

2008) was examined. Relationship commitment is characterized by two distinct factors: (a) affective commitment and (b) continuance commitment (Zhao et al., 2008). An initial set of questions for commitment was developed and provided in Table 3-4.

Table 3-4: Items List for Relationship Commitment

Item	Description	Construct
AC1	We have a strong sense of loyalty towards this customer.	Affective Commitment
AC2	We like working with this customer.	
AC3	We are eager to continue working with this customer, even if we find other promising customers.	
AC4	We are proud to tell others about this customer.	
AC5	We have little, if any, emotional attachment to this customer (R).	
CC1	We are working with this customer because too much of our business will be disrupted if we decide to leave this customer now.	Continuance Commitment
CC2	It will be very difficult for us to leave this customer right now, even if we wanted to.	
CC3	Right now we do business with this customer because we have no other viable or suitable option.	
CC4	We do business with this customer only because of the high costs to switch.	

Notes: (R) indicates the item has been reverse coded.

To develop the measures for SCI, the literature on inter-firm relations (Cao & Zhang, 2011; Das et al., 2006; Lado, Dant, & Tekleab, 2008; Lee & Whang, 2000; Leuschner et al., 2013; Ring & Van de Ven, 1994) was critically assessed. The measures of integration captured the different nuances of integration such as the willingness to sacrifice for the customer and work jointly, the manner of dispute settlement, the extent of information and knowledge sharing, and the degree of internalization of values. The generated items are presented in Table 3-5.

Table 3-5: Items List for the Supply Chain Integration

Item	Description	Construct
I1	We overlook our firm's profit from individual transactions with this customer in the interest of our relationship.	Supply Chain Integration
I2	We set aside contractual terms in order to work with this customer when it faces serious challenges.	
I3	We develop an exclusive relationship with this customer at the expense of doing business with other potential customers.	
I4	We assume significant risk to maintain a long term relationship with this customer.	
I5	We share all relevant know-hows with this customer.	
I6	We sometimes bear the costs of this customer even if we are not contractually obliged to do so.	
I7	We make strategic changes to satisfy this customer's requirements.	
I8	We internalize this customer's values.	
I9	We have a unique or rare relationship with this customer.	
I10	We share only basic operational/transactional information with this customer (R).	
I11	We constantly monitor this customer's activities to ensure that they don't take advantage of us (R).	
I12	We drive our relationship with this customer primarily through contracts (R).	
I13	We have developed a mutually valuable relationship with this customer.	
I14	We invest significantly in our relationship with this customer (such as in product development, or technology, or manufacturing processes).	
I15	We shape our vision based on our relationship with this customer.	
I16	We plan our future together with this customer.	
I17	We settle disputes via non-contractual and amicable means.	
I18	We have compatible goals with this customer.	

Notes: (R) indicates the item has been reverse coded.

3.6.2 Structured Interviews and Pretest

It is critical to ensure the content validity of the measures used in this study before the large scale administration of the survey. To assure the content validity of the items

generated through the literature review, a structured interview and pre-test was conducted. In the structured interview process, 11 practitioners at the level of vice-presidents and directors were asked about the relevance and clarity of each construct definition. The interview participants were also asked to comment whether the proposed measures comprehensively covered the domain of each construct and whether the proposed constructs in fact measure what was intended based on the definitions I provided.

Benefitting from the results of the interview process, certain items were revised. The revised items were later presented to two faculty members and three doctoral students in operations and supply chain management for another round of review. The faculty members have extensive experience in developing measurement instruments in the respective domains. The primary objective of the second round of the review was to further refine the measures in the survey instrument. The participants of the second round were asked to review and make recommendations to modify or add new measures for each construct. After a few minor modifications to the survey items, a list of 52 items emerged and was utilized for pilot study purposes. The next few sections discuss the procedures and the results obtained from the pilot test.

3.6.3 Pilot Study

A pilot study serves its purpose by providing valuable information regarding the validity and reliability of the measurement items before the large-scale administration of the survey. A typical pilot study is conducted with a small sample (preferably larger than 30 participants) from a population similar to that of the large scale survey administration. Observations for the pilot study were chosen by randomly selecting a small group of

observations (i.e., slightly greater than 30) from the large data sample. Qualtrics was used to design and administer surveys to participants. Participants can be limited to a user's own database or one can make use of the panel service feature provided by Qualtrics. Through the Qualtrics panel feature, a user can specify and obtain a customized sample population that is well fitting for the purpose of the study. Similar Internet survey tools have been used previously in the literature (e.g., Hagtvedt, 2011). Participants for the survey were screened using several screening questions. Please see Appendix-B for the full set of screener questions. Individuals with three or more years of work experience were targeted for completing the survey. Furthermore, this study required individuals responding to the survey to have closely worked with customers and have a great deal of knowledge regarding their customer. The study targeted respondents to this survey from supply chain management, purchasing, sales, and operations departments. In addition to this, the respondents were targeted from small and large organizations. Furthermore, the survey was primarily targeted for the manufacturing industries with SIC codes 20-39. Firms that participated in this study belonged to manufacturing industries such as automotive or parts, fabricated metal products, electronics, electrical equipment, and others.

The analysis of the pilot test was conducted based on the results of 34 complete responses. The primary objective of this pilot study was to purify the items before the large scale survey administration, assess unidimensionality, and examine the reliability of the items. To achieve the objectives of the pilot study, using SPSS 21, the items were subjected to exploratory factor analysis (EFA) (Churchill, 1979) within block. Item

purification is carried out by examining the corrected item total correlation (CITC) for each measurement item (Koufteros et al., 1998) and the overall Cronbach's alpha. Items for which the CITC are lower than 0.35 are considered to be candidates for elimination, and subsequently the revised CITC and Cronbach's alpha are obtained after deleting poorly performing items in each scale. A minimum cut-off value of 0.70 (Nullally & Bernstein, 1978) for Cronbach's alpha is considered to be acceptable. Eliminating an indicator based on a high CITC cut-off value will be considered premature as the sample size used for the pilot was relatively small (i.e., 34). An exploratory factor analysis (EFA) with the initial set of items for each construct is conducted to assess the internal rule of unidimensionality of constructs used in this study. EFA within block provide a means to examine if items are loading on a single specified factor and to check whether unintended multiple dimensions exist within a hypothesized single factor. Items that are loading on multiple sub-dimensions within a factor were then closely examined. The subsequent sections present the pilot test results for the constructs in this study.

3.7 Pilot Test Results

3.7.1 Leadership Styles- Transformational Leadership Style

TLT suggests that Transformational Leadership style is represented by multiple dimensions namely charismatic/inspirational influence, intellectual stimulation, and individualized consideration (Avolio et al., 1999). Charismatic/inspirational influence was originally represented by six items, intellectual stimulation by four items, and individualized consideration by three items.

Table 3-6: Transformational Leadership: Charismatic/Inspirational - Item Purification Results

Items	Initial CITC	Final CITC	Alpha if Deleted	Cronbach's Alpha
II1. Our major customer acts in ways that builds our respect.	0.685	0.685	0.851	0.874
II2. Our major customer displays a sense of confidence.	0.651	0.651	0.857	
LII3. Our major customer has admirable practices which it shares with us.	0.644	0.644	0.860	
II4. Our major customer challenges us to do better in our processes.	0.684	0.684	0.851	
II5. Our major customer challenges us to push our technology frontier.	0.689	0.699	0.848	
II6. Our major customer articulates a compelling vision.	0.717	0.717	0.845	

Table 3-7: Transformational Leadership: Intellectual Stimulation- Item Purification Results

Items	Initial CITC	Final CITC	Alpha if Deleted	Cronbach's Alpha
IS1. Our major customer challenges us to improve our current practices.	0.858	0.858	0.842	0.900
IS2. Our major customer talks optimistically about the future.	0.789	0.789	0.867	
IS3. Our major customer expresses confidence that our collective goals will be achieved.	0.720	0.720	0.893	
IS4. Our major customer talks enthusiastically about our relationship.	0.751	0.751	0.881	

Table 3-8: Transformational Leadership: Individualized Consideration- Item Purification Results

Items	Initial CITC	Final CITC	Alpha if Deleted	Cronbach's Alpha
IC1. Our major customer treats us as an individual firm rather than just another member of the group.	0.789	0.789	0.868	0.900
IC2. Our major customer is ready to provide individual attention when needed.	0.828	0.828	0.834	
IC3. Our major customer helps us with our challenges.	0.790	0.790	0.868	

The initial purification of the items was undertaken by using SPSS 21. In SPSS 21, the scale reliability analysis routine was employed to compute the CTIC and Cronbach's alpha analysis. The CITCs and the Cronbach's alpha for charismatic/inspirational influence are reported in Table 3-6. The CITCs of all items were greater than 0.35 and the initial Cronbach's alpha is greater than 0.70, and hence none of the items were candidates for deletion. The lowest CITC was 0.74. The CITCs and Cronbach's alpha for intellectual stimulation are reported in Table 3-7. The CITCs of all items were greater than 0.35 and the initial Cronbach's alpha is greater than 0.70, and thus none of the items were considered candidates for deletion. The lowest CITC was 0.72. The CITCs and the Cronbach's alpha for individualized consideration are reported in Table 3-8. The CITCs of all items are greater than the threshold and the initial Cronbach's alpha is greater than 0.70, and similarly none of the items were eliminated from further investigation.

Table 3-9: Transformational Leadership: Charismatic/Inspirational- Exploratory Factor Analysis

Items	Factor 1 Loadings
II1	0.746
II2	0.700
II3	0.696
II4	0.740
II5	0.757
II6	0.777

Notes: Factor loadings below 0.4 are suppressed. Principal axis factoring, and direct oblimin rotation was performed

Table 3-10: Transformational Leadership: Intellectual Stimulation- Exploratory Factor Analysis

Items	Factor 1 Loadings
IS1	0.935
IS2	0.855
IS3	0.758
IS4	0.789

Notes: Factor loadings below 0.4 are suppressed. Principal axis factoring, and direct oblimin rotation was performed

Table 3-11: Transformational Leadership: Individualized Consideration- Exploratory Factor Analysis

Items	Factor 1 Loadings
IC1	0.847
IC2	0.904
IC3	0.848

Notes: Factor loadings below 0.4 are suppressed. Principal axis factoring, and direct oblimin rotation was performed

Subsequently an EFA was performed with the items for each construct using the dimension reduction routine in SPSS 21. In SPSS, EFA is carried out using principal axis factoring as an extraction method along with direct oblimin rotations. To ensure easy interpretation of the factor structure, factor loadings less than 0.40 were suppressed from presentation. The six items of charismatic/ inspirational influence all loaded onto one

factor respectively and had fairly high loadings (greater than 0.70), with the lowest factor loading being 0.79 (see Table 3-9). Similarly, items for intellectual stimulation and individualized consideration loaded onto their respective factors (see Tables 3-10 & 3-11) with the lowest factor loadings being 0.76 and 0.85 respectively. Hence the measures for the constructs of Transformational Leadership style are reliable (since there was no change, Cronbach's alpha measures remain the same as my prior analysis suggested) and valid.

3.7.2 Transactional Leadership Style

TLT suggests that transactional leadership style is represented by two distinct factors namely contingent reward and management by exception. Contingent reward is originally represented by three items, and management by exception is also measured by three items.

Table 3-12: Transactional Leadership: Contingent Reward - Item Purification Results

Items	Initial CITC	Final CITC	Alpha if Deleted	Cronbach's Alpha
CR1. Our major customer tells us what to do if we want to be rewarded for our efforts.	0.545	0.545	0.826	0.778
CR2. Our major customer rewards our achievements.	0.708	0.708	0.609	
CR3. Our major customer rewards us based on the effort that we put in.	0.646	0.646	0.686	

Table 3-13: Transactional Leadership: Contingent Reward- Exploratory Factor Analysis

Items	Factor 1 Loadings
CR1	0.596
CR2	0.905
CR3	0.780

Notes: Factor loadings below 0.4 are suppressed. Principal axis factoring, and direct oblimin rotation was performed

The initial CITCs for Contingent Reward are reported in Table 3-12. Since all the CITC's are above the threshold (0.35) and the Cronbach's alpha is greater than 0.70, none of the items were candidates for elimination. The lowest estimated CITC was 0.55 (CR1). Table 3-13 represents the factor loadings for the Contingent Reward items.

Table 3-14: Transactional Leadership: Management by Exception- Item Purification Results

Items	Initial CITC	Final CITC	Alpha if Deleted	Cronbach's Alpha
ME1. Our major customer manages our relationship only when failures are uncovered.	0.683	0.683	0.787	0.836
ME2. Our major customer pays attention to us only when a crisis emerges.	0.753	0.753	0.721	
ME3. Our major customer only gives attention to us when mistakes are uncovered.	0.661	0.661	0.810	

Table 3-15: Transactional Leadership: Management by Exception- Exploratory Factor Analysis

Items	Factor 1 Loadings
ME1	0.769
ME2	0.885
ME3	0.734

Notes: Factor loadings below 0.4 are suppressed. Principal axis factoring, and direct oblimin rotation was performed

Similar to the Contingent Reward construct, the purification results for the items of Management by Exception construct yielded high initial CITCs and a Cronbach's alpha value greater than 0.70 (see Table 3-14). The lowest CITC was 0.68, hence no items were considered for elimination. An EFA suggested that all the items loaded significantly on to a single factor with the lowest factor loading being 0.73 (see Table 3-15). Based on the analysis and results of the pilot test, the measures for transactional leadership appear to be reliable and valid.

3.7.3 Trust

The construct of trust was represented by twelve items as shown in Table 3-16. The CITCs and Cronbach's alpha are reported in Table 3-16. Three items of trust T2, T3, and T4 had negative CITC scores, and hence were potential candidates for deletion. If the items were dropped and the revised CITCs and Cronbach's alpha are computed, the lowest CITC was 0.62 and the revised Cronbach's alpha is 0.91 which are reported in Table 3-16.

Furthermore, an EFA was performed with all the items. The EFA yielded two factors (see Table 3-17). Indicators T2, T3, and T4 had negative loadings on factor 1 along with other items that had positive loadings on factor 1. In addition, indicators T1, T8, and T12 cross-loaded on factor 2. These items were not deleted but labeled as "suspicious" and will revisited more closely during the CFA with the larger data set.

Table 3-16: Trust- Item Purification Results

Items	Initial CITC	Final CITC	Alpha if Deleted	Cronbach's Alpha
T1. This customer has always been evenhanded in its negotiations with us.	0.727	0.656	0.906	0.913
T2. This customer uses opportunities that arise to profit at our expense.	-0.760	If Del.	NA	
T3. Based on past experience, we cannot rely with complete confidence on this customer to keep its promises made to us.	-0.700	If Del.	NA	
T4. We are hesitant to transact with this customer when the specifications are vague.	-0.718	If Del.	NA	
T5. This customer is trustworthy.	0.564	0.783	0.897	
T6. This customer is genuinely concerned that our business succeeds.	0.553	0.798	0.896	
T7. We are confident that this customer will look out for us even when it is costly to do so.	0.716	0.731	0.901	
T8. If a situation arises, this customer will stand by our side.	0.381	0.653	0.907	
T9. This customer will make sacrifices for us if needed.	0.639	0.796	0.897	
T10. This customer has superb processes.	0.844	0.816	0.896	
T11. This customer has superb capabilities.	0.568	0.622	0.908	
T12. This customer has great competencies across a variety of dimensions.	0.459	0.473	0.916	

Table 3-17: Trust - Exploratory Factor Analysis

Items	Factor 1 Loadings	Factor 2 Loadings
T1	0.650	0.485
T2	-0.842	
T3	-0.792	
T4	-0.769	
T5	0.854	
T6	0.874	
T7	0.745	
T8	0.760	-0.435
T9	0.835	
T10	0.807	
T11	0.693	
T12	0.497	0.512

Notes: Factor loadings below 0.4 are suppressed. Principal axis factoring, and direct oblimin rotation was performed

3.7.4 Commitment

In this study two types of commitment are examined and include affective commitment and normative commitment. Affective commitment is represented by five items while continuance commitment is operationalized by four items. The list of items for affective commitment is presented in Table 3-18. The initial CITCs are presented in Table 3-18 suggest that the CITC for AC5 is low and negative (-0.29), and was below threshold of 0.35. This indicates that AC5 can be a poorly performing item. If AC5 was dropped the lowest CITC was 0.75 and Cronbach's alpha was 0.91 (see Table 3-18).

Table 3-18: Affective Commitment- Item Purification Results

Items	Initial CITC	Final CITC	Alpha if Deleted	Cronbach's Alpha
AC1. We have a strong sense of loyalty towards this customer.	0.627	0.775	0.892	0.910
AC2. We like working with this customer.	0.573	0.752	0.900	
AC3. We are eager to continue working with this customer, even if we find other promising customers.	0.662	0.806	0.881	
AC4. We are proud to tell others about this customer.	0.742	0.869	0.857	
AC5. We have little, if any, emotional attachment to this customer.	-0.294	If Del.	NA	

Notes: Items were dropped iteratively and NA stands for Not Applicable

Table 3-19: Affective Commitment- Exploratory Factor Analysis

Items	Factor 1 Loadings
AC1	0.818
AC2	0.806
AC3	0.850
AC4	0.924
AC5	

Notes: Factor loadings below 0.4 are suppressed. Principal axis factoring, and direct oblimin rotation was performed.

An EFA was performed including all of the items for affective commitment. To ensure easy interpretation of the factor structure, the factor loadings of less than 0.40 were suppressed from presentation. EFA generated only one factor as expected but indicator AC5 did not load heavily on that factor (see Table 3-19). The loading of AC5 was less than 0.40. Apart from AC5, all of the other items for affective commitment loaded heavily on the extracted factor with the lowest loading being 0.81. Thus, the preliminary analysis suggests that AC5 can potentially be a problematic measure.

The list of indicators reflecting continuance commitment is presented in Table 3-20. The initial CITCs are presented in Table 3-20 and the reliability analysis suggests that the CITCs for all the items are above our threshold (0.35) while Cronbach's alpha is also greater than 0.70. The worst performing item on this scale had a CITC of 0.72.

Table 3-20: Continuance Commitment- Item Purification Results

Items	Initial CITC	Final CITC	Alpha if Deleted	Cronbach's Alpha
CC1. We are working with this customer because too much of our business will be disrupted if we decide to leave this customer now.	0.810	0.810	0.827	0.882
CC2. It will be very difficult for us to leave this customer right now, even if we wanted to.	0.682	0.682	0.876	
CC3. Right now we do business with this customer because we have no other viable or suitable option.	0.807	0.807	0.825	
CC4. We do business with this customer only because of the high costs to switch.	0.722	0.722	0.862	

Table 3-21: Continuance Commitment- Exploratory Factor Analysis

Items	Factor 1 Loadings
CC1	0.886
CC2	0.737
CC3	0.873
CC4	0.767

Notes: Factor loadings below 0.4 are suppressed. Principal axis factoring, and direct oblimin rotation was performed.

An EFA was performed with the all the items for continuance commitment. EFA generated only one factor and all the items loaded significantly onto the single factor (see Table 3-21).

3.7.5 Supply Chain Integration

The construct of integration was captured using an 18-item scale. The initial CITCs are reported in Table 3-22. The CITCs on most of the items other than I10, I11, and I12 were greater than our threshold of 0.35. Items I10, I11, and I12 had negative CITCs and thus were classified as suspicious items. If I10, I11, I12 are dropped the revised CITCs and Cronbach's alpha are reported in Table 3-22. The lowest CITC was 0.35 and Cronbach alpha is 0.95. An EFA of all the items for integration produced two distinct factors (see Table 3-23). Consistent to the results obtained from the initial CITCs, items I10, I11, and I12 had a negative loading on factor 1 on which a majority of the measures for integration had fairly high positive loadings. In addition to the items I10, I11, and I12 which were negatively loaded on factor 1, items I2 and I8 loaded heavily on a second factor. These items were closely examined by considering the content of these items. After the initial analysis, items I2, I8, I10, I11 and I12 were labeled suspicious and required a more comprehensive examination of the items with the larger data set.

Table 3-22: Integration- Item Purification Results

Items	Initial CITC	Final CITC	Alpha if Deleted	Cronbach's Alpha
I1. We overlook our firm's profit from individual transactions with this customer in the interest of our relationship.	0.730	0.747	0.955	0.957
I2. We set aside contractual terms in order to work with this customer when it faces serious challenges.	0.448	0.493	0.959	
I3. We develop an exclusive relationship with this customer at the expense of doing business with other potential customers.	0.819	0.827	0.953	
I4. We assume significant risk to maintain a long term relationship with this customer.	0.876	0.886	0.952	
I5. We share all relevant know-hows with this customer.	0.853	0.873	0.952	
I6. We sometimes bear the costs of this customer even if we are not contractually obliged to do so.	0.759	0.783	0.954	
I7. We make strategic changes to satisfy this customer's requirements.	0.701	0.746	0.955	
I8. We internalize this customer's values.	0.353	0.398	0.960	
I9. We have a unique or rare relationship with this customer.	0.781	0.814	0.959	
I10. We share only basic operational/transactional information with this customer.	-0.786	If Del.	NA	
I11. We constantly monitor this customer's activities to ensure that they don't take advantage of us.	-0.753	If Del.	NA	
I12. We drive our relationship with this customer primarily through contracts	-0.747	If Del.	NA	
I13. We have developed a mutually valuable relationship with this customer.	0.835	0.834	0.953	
I14. We invest significantly in our relationship with this customer (such as in product development, or technology, or manufacturing processes).	0.799	0.771	0.954	
I15. We shape our vision based on our relationship with this customer.	0.710	0.726	0.955	
I16. We plan our future together with this customer.	0.774	0.808	0.953	
I17. We settle disputes via non-contractual and amicable means.	0.842	0.860	0.952	
I18. We have compatible goals with this customer.	0.749	0.757	0.955	

Notes: Items were dropped iteratively and NA stands for Not Applicable

Table 3-23: Integration - Exploratory Factor Analysis

Items	Factor 1 Loadings	Factor 2 Loadings
I1	0.721	
I2		0.724
I3	0.916	
I4	0.878	
I5	0.762	
I6	0.910	
I7	0.867	
I8		0.802
I9	0.778	
I10	-0.724	
I11	-0.478	-0.504
I12	-0.836	
I13	0.801	
I14	0.657	
I15	0.588	
I16	0.957	
I17	0.806	
I18	0.777	

Notes: Factor loadings below 0.4 are suppressed. Principal axis factoring, and direct oblimin rotation was performed.

3.8 Large Scale Survey Administration and Instrument Validation

A large scale data collection was undertaken after the preliminary instrument development phase. Data collected are used for validating the instrument and testing the hypothesized structural relationships among constructs. This section presents the procedures used for collecting data, confirmatory factor analysis (CFA) and results for the measurement model, and subsequently the structural model analysis and results.

3.8.1 Large Scale Data Collection: Research Design

The data for this study were collected using a survey-based approach. A survey-based approach offers an attractive option for collecting a large volume of data that can be used to analyze the relationships among variables of interest (Miller & Roth, 1994). A

survey-based approach offers a means to collect information from a large number of participants, which provides an opportunity to validate and test the psychometric properties of the measurement scales. This approach has the potential for greater generalizability vis-a-vis other data collection processes e.g., case studies (Dillman et al., 2009), since it represents data collected from several firms across industries. Surveys are typically completed using face-to-face interviews or by telephone or mail-in surveys. However, with the advancement in Internet technology and the proliferation of Internet use across firms, on-line surveys have gained popularity (Dillman et al., 2009).

Although on-line surveys have gained popularity over the years, there is still one major drawback which is related to relatively lower response rates. Response rates to on-line surveys have been lower than using other survey data collection approaches. Klassen and Jacobs (2001) attribute the low response rates of on-line surveys to personal reluctance to use the Internet, controlled usage within the confines of the firm, and difficulty in obtaining valid email addresses for qualified respondents.

To overcome these challenges, several remedial measures were taken. Typically, survey participants are time constrained and generally tend to skip questions that are ambiguous and difficult to read. If they encounter several such questions they may quit responding to the survey, never completing it. To improve response rates, it is necessary to make sure that the questions are easy to read and comprehend by the survey participants (Blankenship & Breen, 1992) and this is achieved here through several iterations of scrutiny during the instrument development process.

Another method to improve the response rates is to provide participants with relevant incentives (Erdos & Morgan, 1970). Dillman et al. (2009) advices to provide individual incentives as opposed to providing one big incentive to a randomly chosen survey participant. Dillman also suggests that it is necessary to provide the incentives to individuals before they participate in the survey as it develops a sense of goodwill towards the researcher, and hence they are more likely to complete the survey. Adhering to this recommendation, each individual participating in this study was provided a small incentive (i.e., a $5 Starbucks Gift Card) prior to survey completion.

Dillman et al. (2009) also argues for social bonding with the participants of the survey in order to improve response rates. Dillman suggests that this bonding can be achieved by writing personalized emails to the participants (i.e., addressing them by their first/last name). Previous studies have shown that personalized emails improve the response rate in surveys (Joinson & Reips, 2007). Furthermore, targeting the right group of respondents is more likely to increase the response rate. Through email correspondence and several screening questions I ensured that the right participants for the survey were contacted. See Appendix-B for the screening criteria. The pre-qualification of the participants also ensures that the individuals who are supposed to be taking the survey actually received it.

3.8.2 Large Scale Data Collection: Procedures

The data was collected from two different sources. The first source of data was a large American University's (>50,000 enrolled students) alumni network (AUAN), which provided a list of potential candidates who matched the screening criteria. The other source

of data was the panel service offered via Qualtrics. Previous studies have also used the Qualtrics panel service for their research (Hagtvedt, 2011). The procedures used to obtain the data from the AUAN and Qualtrics are discussed in the subsequent paragraphs of this section.

In this paragraph, the procedure used to select the sample for the survey from the AUAN is discussed. AUAN provides the contact information of executives from different industries and different functional departments. A customized sample can be obtained from the website by specifying the requirements for this study. Based on the screening of participants, a total of 170 individuals were identified. An email was sent soliciting their participation (See Appendix-B for the correspondence email) of which 55 individuals responded indicating their interest in participation. Next, emails with a link to the survey and a $5 Starbucks gift card were sent out to 55 individuals who indicated their interest to participate in the study. Among the 55 emails sent out, 40 individuals responded by completing the survey which resulted in a 72.73% response considering only the emails that were sent out with the survey link. The overall response rate considering the total number of individuals contacted is 23.52%.

In this paragraph, the procedure used to obtain the data from the Qualtrics panel is provided. The Qualtrics panel approach is a paid service in which a customized sample can be obtained. The quality of the data was ensured by adhering to the screening criteria imposed earlier. Furthermore, attention filters were put in place to eliminate respondents who were not paying attention while completing the survey. The quality of data was further ensured by triangulating the personal information provided by the respondent and

cross-verifying that information with online sources (e.g., www.linkedin.com). The survey data was collected in two rounds. A total of 1847 emails were sent out soliciting responses from a targeted group. A total of 136 responses were obtained from the first round. In the follow up round, a total of 83 responses were obtained. This process resulted in a total of 219 observations, yielding a response rate of 11.85%. Collectively, a total of 2017 emails were sent out soliciting responses from participants across both methods of data collection and a total of 259 observations were obtained resulting in an overall response rate of 12.84%.

Further, 17 observations were omitted from the overall sample of 259 observations due to inappropriate job title/functional role resulting in 242 useful observations. Of the 242 observations obtained, a randomly selected set of 34 observations were used for the pilot test, since pilot tests can be effectively used with about 30 responses. The remaining 207 observations were used for the large scale data analysis.

3.8.3 Demographics

Tables 3-24 and 3-25 depict the profiles of respondents and companies used for this study. In relevance to the respondent profile, Table 3-24 provides information about the gender, age, experience, title, and the functional departments of the respondents. In terms of the company profile, information regarding whether a firm is private or public, and the number of employees is presented in Table 3-25. The respondents were primarily affiliated with SIC codes 20-39. More than 70% of the firms used in this study were private firms (70.2%) and several large corporations participated in our study. Approximately 41% of the firms that participated in this study had over 5000 employees.

Around 50% of respondents had more than three years of work experience and around 9% of the individuals had work experience of more than 5 years with the specific corporation on behalf of which they were responding. The respondents came from different functional groups within an organization with 29.5% of the individuals working in sales or sales operations group, 22.7% of the respondents belonging to the operations department, and 22.2% of the respondents were affiliated with the supply chain management functional division. Also, a sizable portion (33.8%) of the individuals belonged to the 35-44 age group. Furthermore, based on available data, roughly 23% of the respondents were at the managerial level while about 16% of the respondents were at the level of a director or above.

Table 3-24: Individual Demographics

	N	Percentage
Gender		
Female	41	25.5
Male	126	74.5
Missing	46	22.2
Total	**207**	**100**
Age		
18-24	2	1.0
25-34	27	13.0
35-44	70	33.8
45-54	41	19.8
55-64	20	9.7
>65	1	0.5
Missing	46	22.2
Total	**207**	**100**
Functional Department		
Supply chain management	46	22.2
Marketing or marketing sales	13	6.3
Sales or sales operations	61	29.5
Operations	47	22.7
Missing/Other	40	19.3
Total	**207**	**100**

Table 3-24: Continued

	N	Percentage
Experience in the Firm		
3-4 years	83	40.3
4-5 years	105	50.7
>5 years	19	9
Total	**207**	**100**
Job Title		
Buyer/Procurement Specialist	20	9.5
Manager	48	23.2
Business Analyst	17	8.3
Director	14	6.8
VP	14	6.8
C-Level	4	1.9
Other/Missing	90	43.5
Total	**207**	**100**

Table 3-25: Organizational Demographics

	N	Percentage
Organization Type		
Private	144	70.2
Public	61	29.8
Missing	2	1.0
Total	**207**	**100**
Firm Size		
0-100	3	1.4
100-500	34	16.4
500-1000	31	15.0
1000-5000	52	25.1
5000-10000	47	22.7
>10000	38	18.4
Missing	2	1.0
Total	**207**	**100**

3.8.4 Nonresponse Bias Test

Although there is no generally accepted minimum percentage for response rates (Fowler, 2013), nonresponse bias is always a concern. Non-respondents alter the sample

frame and can potentially create a sample that is not truly depictive of the actual population (Dillman et al., 2009). One method for testing non-response bias is to test for significant differences between the responses of early and late waves of returned surveys (Krause, Ragatz, & Hughley, 1999). This method is based on the assumption that the opinions of late responders are somewhat representative of the opinions of non-respondents (Armstrong & Overton, 1977). In this study, 129 usable observations were obtained from the first round, and subsequently 78 responses were obtained in the follow-up round. Comparing the firms' responses across groups yields a non-significant t-test statistic ($p>0.10$), between the two groups. A non-significant t-test statistic indicates that non-response bias may not be a significant problem in this study.

3.8.5 Common Method Bias Test

Another potential source of bias in survey research is common method bias (CMB). One of the procedures utilized to test for evidence suggesting the presence or absence of common method bias in a data set is the Harman's one-factor test (Podsakoff et al., 2003). The Harman's single factor test resulted in more than one factor being obtained which suggests that CMB is not a significant issue. However, another robust approach to examine for common method bias is by using a correlation-based marker variable technique (Malhotra, Kim, & Patil, 2006). Craighead, Ketchen, Dunn, and Hult (2011) suggest that this technique involves using one variable in the survey instrument that is theoretically unrelated to at least one factor in the study. The results of correlating the marker variable (i.e, to what extent do you enjoy Starbucks coffee) with other variables used in this study, are presented in Table 3-26. Only one variable (i.e., continuance

commitment) had a significant correlation with the marker variable. Statistically insignificant correlations between the variables of interest and the marker variable suggest that the threat of common method bias is minimal (see Table 3-26).

3.8.6 Confirmatory Factor Analysis (CFA)

This section presents the results of the CFA measurement model for each construct followed by the results of the CFA for the overall measurement model. I use CFA for each construct in order to examine the convergent validity of the constructs along with their significance level and to determine which items need to be deleted from subsequent analysis. The CFA of the overall measurement model is carried out to examine overall model fit, to test for the efficacy of a second-order factor structure for Transformational Leadership, and to examine for convergent and discriminant validity among the constructs used in this study. Although some similarities do exist between CFA and EFA, each is used for different purposes. In EFA, the number of factors is not specified while in CFA the number of factors is already specified (Shah & Goldstein, 2006). The regression coefficients in a CFA are termed as the factor loadings and higher values suggest that they more precisely represent the latent construct. Convergent validity exists if all items for a construct are measuring one common factor (Koufteros et al., 1998). This validity is demonstrated by the statistical significance of factor loadings at a given level of significance. If items had loadings on their construct (i.e., ≤ 0.60) these are deleted from subsequent analysis, and that is if their deletion did not hamper content validity. If multiple items are being deleted from a single factor, an iterative process was undertaken to delete multiple items from a given construct.

Table 3-26: Marker Variable Correlations

		Charisma/ Inspirational	Intellectual Stimulation	Individualized Consideration	Management by Exception	Contingent Reward	Trust	Affective Commitment	Continuance Commitment	Integration	Transformational Leadership
Marker Variable	Pearson Correlation	.030	.013	.064	.123	.043	.084	-.017	.137*	.094	.041
	Sig. (2-tailed)	.665	.849	.356	.077	.540	.229	.811	.049	.178	.560
	N	207	207	207	207	207	207	207	207	207	207

Notes:

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Several fit indices such as the CFI, TLI, and SRMR measure how well the model fits the data. Generally a CFI and TLI values greater than 0.90 are indicative of a good model (Jöreskog & Sörbom, 1986). Similarly, SRMR values less than 0.05 are suggestive of a well-fitting model and models with SRMR values less than 0.09 are also considered to have acceptable model fit (Kline, 2011). A summary of acceptable fit indices is presented in Table 3-27 below.

Table 3-27: Fit Statistics for Measurement Model

Fit Statistic	Accepted Cut-Off Values
SRMR	<0.09
CFI	>0.90
TLI	>0.90
χ^2 /d.f.	<2.0

3.9 CFA with Each Factor

This section presents the CFA results for each construct. Model fit indices are examined first followed by examining the standardized factor loadings and their significance. Mplus does not compute the model fit indices for constructs with three or less items. Based on the factor loadings and its significance value, items are considered for deletion (i.e., factor loadings <0.60) in this phase. Items are deleted iteratively and the fit indices for the revised model and the factor loadings are also presented and discussed. Caution is taken to ensure that deleting an item does not affect the content validity of the construct.

3.9.1 Transformational Leadership-CFA

Theory suggests that Transformational Leadership is a second-order factor characterized by three sub-dimensions (Avolio et al., 1999). Prior to establishing that Transformational Leadership is a second order construct it was necessary to establish the convergent validity for the three constructs of Transformational Leadership (Charismatic/Inspirational, Intellectual Stimulation, and Individualized Consideration). The CFA for Charismatic/Inspirational leadership is carried out using Mplus 6 with a maximum likelihood robust estimator (MLM) to estimate the factor loadings and their significance. A similar approach was carried out for intellectual stimulation, and individualized consideration.

Table 3-28: Measurement Model- Charismatic/Inspirational Leadership

Items	Model-1 Standardized Factor Loadings	p-value
II1	0.751	0.000
II2	0.693	0.000
II3	0.694	0.000
II4	0.737	0.000
II5	0.758	0.000
II6	0.783	0.000

Notes: Model-1: Fit indices (overall):χ2 (d.f)= 14.78(9), χ2/d.f= 1.64, CFI= 0.99, TLI=0.98, SRMR= 0.03

Table 3-29: Measurement Model- Intellectual Stimulation

Items	Model-1 Standardized Factor Loadings	p-value	Model-2 Standardized Factor Loadings	p-value
IS1	0.704	0.000	0.722	0.000
IS2	0.750	0.000	0.700	0.000
IS3	0.482	0.000	Deleted	NA
IS4	0.732	0.000	0.768	0.000

Notes: Model-1: Fit indices (overall):χ2 (d.f)= 5.51(2), χ2/d.f= 2.75, CFI= 0.97, TLI=0.91, SRMR= 0.03; Model-2: Just identified hence fit indices cannot be computed.

Table 3-30: Measurement Model- Individualized Consideration

Items	Model-1 Standardized Factor Loadings	p-value
IC1	0.588	0.000
IC2	0.759	0.000
IC3	0.804	0.000

Notes: Model-1: Just identified and hence fit indices are not computed.

The CFA model for Charismatic/Inspirational Leadership has the following fit indices: χ^2 (d.f.) = 14.78(9), χ^2 /d.f.= 1.64, CFI= 0.99, TLI=0.98, SRMR= 0.03 (see Table 3-28) and were indicative of a good fitting model (Hu & Bentler, 1999). The lowest standardized factor loading for the Charismatic/Inspirational construct is 0.69, was above

the threshold (i.e., 0.60), all the items of charismatic/inspirational leadership were retained. The CFA models for Intellectual stimulation and Individualized Consideration did not have their fit indices computed because they were just identified based on the number of items for each construct. From Table 3-29 it is evident that IS3 had the lowest standardized factor loading at 0.48 (i.e. 0.60). Since IS3 had a very low loading on the construct it was deleted from our subsequent analyses. Care was taken to ensure that the content validity of the construct is not affected by deleting the measure IS3. Likewise Table 3-30 depicts that IC1 had the lowest standardized factor loading of 0.58 for the construct individualized consideration. Even though IC1 had marginally lower factor loadings than the threshold (i.e., 0.60), it was retained to ensure the content domain of the factor individualized consideration. The factor loadings for all the three constructs were significant at the 0.01 level.

3.9.2 Transactional Leadership-CFA

Within the realm of transactional leadership, two distinct constructs, i.e., contingent rewards and management by exception, are frequently identified. Both constructs are measured by using three indicators each. CFA is used to establish the convergent validity of the items for contingent reward and management by exception by examining the factor loading so of their measures. The CFA results for contingent rewards and management by exception are provided in Tables 3-31 and 3-32 respectively.

Table 3-31: Measurement Model- Contingent Reward

Items	Model-1 Standardized Factor Loadings	p-value
CR1	0.491	0.000
CR2	0.827	0.000
CR3	0.819	0.000

Notes: Model-1: Just identified and hence fit indices are not computed.

Table 3-32: Measurement Model- Management by Exception

Items	Model-1 Standardized Factor Loadings	p-value
ME1	0.747	0.000
ME2	0.798	0.000
ME3	0.917	0.000

Notes: Model-1: Just identified and hence fit indices are not computed.

Due to the number of items (i.e., 3) for each of the transactional leadership constructs, their CFA models were just-identified and fit indices were not generated by Mplus 6.0. Table 31 depicts the factor loadings of contingent reward and suggests that CR1 is poorly loading on the intended construct (0.49). This finding is consistent with my results which were based on the preliminary data analysis. Thus, CR1 is deleted for the purposes of subsequent analyses. Caution is taken to ensure that the content validity of the construct is not lost while deleting a particular item. Table 32 suggests that all the items measuring management by exception relate with the intended construct. This is manifested through the high factor loadings of the measures on the construct. ME1 had the lowest

factor loading of 0.747. The factor loadings for contingent reward and management by exception were all significant at the 0.01 level.

3.9.3 Trust-CFA

The construct of trust is operationalized by twelve items in this study. CFA was carried out to examine the model fit, and determine the convergent validity of the items measuring trust. The CFA model for trust has the following fit indices: χ^2 (d.f.) = 79.12(27), χ^2 /d.f.= 2.93, CFI= 0.92, TLI=0.90, SRMR= 0.05 (see Table 3-33) which are suggestive of a good fitting model (Hu & Bentler, 1999). Although χ^2 /d.f. >2, this model is considered acceptable as the other fit indices appear to surpass recommended thresholds.

Table 3-33: Measurement Model- Trust

Items	Model-1 Standardized Factor Loadings	p-value	Model-2 Standardized Factor Loadings	p-value
T1	0.697	0.000	0.700	0.000
T2	-0.156	0.029	Deleted	NA
T3	-0.135	0.062	Deleted	NA
T4	-0.275	0.000	Deleted	NA
T5	0.667	0.000	0.671	0.000
T6	0.679	0.000	0.687	0.000
T7	0.742	0.000	0.730	0.000
T8	0.815	0.000	0.818	0.000
T9	0.714	0.000	0.700	0.000
T10	0.735	0.000	0.734	0.000
T11	0.713	0.000	0.720	0.000
T12	0.701	0.000	0.705	0.000

Notes: Model-1: Fit indices (overall):χ2 (d.f)= 269.38(54), χ2/d.f= 4.98, CFI= 0.75, TLI=0.71, SRMR= 0.11; Model-2: Fit indices (overall):χ2 (d.f)= 79.12(27), χ2/d.f= 2.93, CFI= 0.92, TLI=0.90, SRMR= 0.05

The factor loadings for the measures of trust are presented in Table 3-33 and suggest that most of the items had fairly high loadings on the intended construct. However, indicators T2, T3, and T4 had fairly low and negative loadings on the intended construct, with the lowest being -0.13. Again, the results are consistent with the findings of our preliminary analysis. These items were dropped iteratively and the revised factor loadings are also shown in Table 3-33. Caution was taken when deleting the three items of trust so that the content validity of the construct was not compromised. All the factor loadings were significant at the 0.01 level.

3.9.4 Commitment-CFA

Affective commitment and continuance commitment are the two types of commitment examined here. Affective commitment is operationalized using five items and continuance commitment is captured using four items. The CFAs for these two constructs are used to establish the convergent validity of their items by examining their factor loadings and p-values. Table 3-34 and Table 3-35 depict the results of the CFA for affective and continuance commitment respectively.

Table 3-34: Measurement Model-Affective Commitment

Items	Model-1 Standardized Factor Loadings	p-value	Model-2 Standardized Factor Loadings	p-value
AC1	0.799	0.000	0.801	0.000
AC2	0.736	0.000	0.736	0.000
AC3	0.704	0.000	0.703	0.000
AC4	0.747	0.000	0.746	0.000
AC5	0.046	0.548	Deleted	NA

Notes: Model-1: Fit indices (overall):$\chi 2$ (d.f)= 4.692(5), $\chi 2$/d.f= 0.938, CFI= 1.00, TLI=1.00, SRMR= 0.02; Model-2: Fit indices (overall):$\chi 2$ (d.f)= 0.508(2), $\chi 2$/d.f= 0.254, CFI= 1.000, TLI=1.00, SRMR= 0.01

The final CFA model for affective commitment had the following fit indices: χ^2 (d.f.) = 0.508(2), χ^2 /d.f.= 0.254, CFI= 1.00, TLI=1.00, SRMR= 0.01 (see Table 3-34). These fit indices are suggestive of a good fitting model. The fit indices for continuance commitment were not generated by Mplus 6.0 as the final CFA model for continuance commitment was just identified.

Table 3-35: Measurement Model-Continuance Commitment

Items	Model-1 Standardized Factor Loadings	p-value	Model-2 Standardized Factor Loadings	p-value
CC1	0.653	0.000	0.639	0.000
CC2	0.452	0.000	Deleted	NA
CC3	0.896	0.000	0.872	0.000
CC4	0.804	0.000	0.839	0.000

Notes: Model-1: Fit indices (overall):χ2 (d.f)= 23.66(2), χ2/d.f= 1.92, CFI= 0.93, TLI=0.78, SRMR= 0.06; Model-2: Fit indices (overall):χ2 (d.f)= 1668.59(867), χ2/d.f= 1.92, CFI= 0.91, TLI=0.90, SRMR= 0.08

The factor loadings for the measures of affective commitment are presented in Table 3-34 and suggest that most of the items had fairly high loadings on their intended construct. However, item AC5 had a fairly low and negative loading on the intended construct (0.046). This result was consistent with the findings which relied on my preliminary analysis. This item was dropped and the revised factor loadings for affective commitment are also shown in Table 3-35. When continuance commitment is considered, most items, except of item CC2 with a factor loading of 0.45, loaded heavily on their intended construct. Indicator CC2 was dropped from subsequent analyses. The revised

factor loadings for continuance commitment are presented in Table 3-35. Care was taken to ensure that content validity was not affected by dropping items. All the remaining factor loadings are significant at the 0.01 level.

3.9.5 Integration-CFA

The primary dependent variable in this study is SCI. The construct of SCI is measured using 18 items. The CFA is used to assess model fit and convergent validity by examining the factor loadings with their significance level. The results of the CFA are presented in Table 3-36 below.

Table 3-36: Measurement Model- Integration

Items	Model-1 Standardized Factor Loadings	p-value	Model-2 Standardized Factor Loadings	p-value
I1	0.528	0.000	0.441	0.000
I2	0.569	0.000	Deleted	NA
I3	0.565	0.000	Deleted	NA
I4	0.461	0.000	Deleted	NA
I5	0.653	0.000	0.644	0.000
I6	0.384	0.000	Deleted	NA
I7	0.683	0.000	0.706	0.000
I8	0.748	0.000	0.614	0.000
I9	0.621	0.000	0.622	0.000
I10	-0.317	0.000	Deleted	NA
I11	-0.611	0.000	Deleted	NA
I12	-0.430	0.000	Deleted	NA
I13	0.630	0.000	0.714	0.000
I14	0.686	0.000	0.739	0.000
I15	0.720	0.000	0.701	0.000
I16	0.664	0.000	0.722	0.000

Table 3-36: Continued

Items	Model-1 Standardized Factor Loadings	p-value	Model-2 Standardized Factor Loadings	p-value
I17	0.501	0.000	0.488	0.000
I18	0.686	0.000	0.753	0.000

Notes: Model-1: Fit indices (overall):χ2 (d.f)= 402.48(135), χ2/d.f= 2.98, CFI= 0.77, TLI=0.74, SRMR= 0.09; Model-2: Fit indices (overall):χ2 (d.f)= 91.85(44), χ2/d.f= 2.82, CFI= 0.93, TLI=0.91, SRMR= 0.05

The CFA model has the following fit indices: χ^2 (d.f.) = 91.85(44), χ^2 /d.f.= 2.01, CFI= 0.93, TLI=0.91, SRMR= 0.05 (see Table 3-36). Although, χ^2 /d.f. >2, this model is considered acceptable as the other fit indices are fairly supportive of good model fit.

The factor loadings for the measures of SCI appear in Table 3-36 and suggest that most of the items had fairly high loadings on their intended construct. However, several items (i.e., I10, I11, I12) had fairly low and negative loadings with I10 having the lowest loading of -0.31. Several of the items that had low factor loadings were the same as the items that were labeled suspicious in my preliminary analysis (see items I10, I11, I12). Items were dropped iteratively. However, at the end of the iterative approach, two items (i.e., I1 and I17) that had low factor loadings were retained as deleting them would have affected the content validity of the construct.

3.10 Overall Measurement Model

Once the variables were purified and the model fit and the convergent validity of individual constructs was established, an overall measurement model was examined using CFA. To address the overall measurement model using CFA, tab-delimited data was used

as the input and tested using Mplus 6.0. The overall measurement model was used to test for the efficacy of a second-order specification for Transformational Leadership factor, assess convergent and discriminant validity for all constructs, and to compute the composite reliability for each latent variable. To test the efficacy of the second-order factor, four competing models specified within the realm of the overall measurement model are examined using the guidelines proposed by Koufteros, Babbar, and Kaighobadi (2009). The extant literature supports a higher-order factor specification for Transformational Leadership. The steps for examining the second-order model specification is discussed below.

Four different models are compared and the model that is conceptually plausible and fits the data well will be selected for subsequent analyses. The first model (Model 1) specified that all 10 items load onto a single first-order factor, whereas the second model (Model 2) specifies three uncorrelated first-order factors. The primary difference between Model 2 and Model 3 is that all the first-order factors are correlated in Model 3. The last model (Model 4) specifies three first-order factors and one second-order factor. After establishing an appropriate measurement model, it is deployed in the structural model to test the hypotheses in this study.

Table 3-37: Goodness of Fit Indices for Alternative Models of Factor Structure

	Model 1: One first-order factor	Model 2: Three first-order factors uncorrelated	Model 3: three first-order factors correlated	Model 4: Three first-order factors , one second-order factor
χ^2(df)	1437.93(1005)	1554.29(993)	1320.04(990)	1355.20(1002)
χ^2/df	1.43	1.57	1.33	1.35
Comparative fit index (CFI)	0.91	0.88	0.93	0.92
Tucker-Lewis fit index (CFI)	0.90	0.87	0.92	0.92
Standardized root mean square residual (SRMR)	*0.08*	0.17	0.07	0.07

Table 3-38: Overall Measurement Model

Items	Standardized Factor Loadings	p-value	Construct
II1	0.716	0.000	Charisma/
II2	0.683	0.000	Inspirational
II3	0.713	0.000	
II4	0.712	0.000	
II5	0.755	0.000	
II6	0.774	0.000	
IS1	0.747	0.000	Intellectual
IS2	0.724	0.000	Stimulation
IS4	0.704	0.000	
IC1	0.621	0.000	Individualized
IC2	0.758	0.000	Consideration
IC3	0.768	0.000	
CR1	0.849	0.000	Contingent
CR2	0.819	0.000	Reward
ME1	0.783	0.000	Management
ME2	0.792	0.000	By
ME3	0.921	0.000	Exception
T1	0.711	0.000	Trust

Table 3-38: Continued

Items	Standardized Factor Loadings	p-value	Construct
T5	0.703	0.000	
T6	0.715	0.000	
T7	0.736	0.000	Trust
T8	0.801	0.000	
T9	0.647	0.000	
T10	0.708	0.000	
T11	0.715	0.000	
T12	0.685	0.000	
AC1	0.745	0.000	Affective
AC2	0.801	0.000	Commitment
AC3	0.680	0.000	
AC4	0.747	0.000	
CC1	0.648	0.000	Continuance
CC3	0.868	0.000	Commitment
CC4	0.830	0.000	
I1	0.458	0.000	
I5	0.669	0.000	
I7	0.650	0.000	
I8	0.757	0.000	SCI
I9	0.661	0.000	
I13	0.698	0.000	
I14	0.740	0.000	
I15	0.728	0.000	
I16	0.723	0.000	
I17	0.500	0.000	
I18	0.736	0.000	
Charisma/Inspirational	0.983	0.000	Transformational
Intellectual Stimulation	0.595	0.000	Leadership
Individualized Consideration	0.989	0.000	

Notes: Fit indices (overall):$\chi 2$ (d.f)= 1355.20(1002), $\chi 2$/d.f= 1.35, CFI= 0.92, TLI=0.92, SRMR= 0.07

To select the appropriate model, the competing models are compared examining, iteratively whether there is a statistically significant difference in χ^2 values, and where lower χ^2 values are favored (see Table 3-37). Model 1 produced a χ^2=1437.93 (1005 d.f.) while Model 2 had an χ^2=1554.29 (993 df). The χ^2diff is 116.36 and is statistically significant (p<.01) based on 12 d.f. This suggests that Model 1 is preferred to Model 2. Model 3 produced a significantly lower χ^2=1320.04 (990 d.f.) than Model 2 and the χ^2diff of 234.25 (3 d.f.) is statistically significant (p<.01) that indicates Model 3 is preferred to Model 2. Finally, Model 4 generated a χ2=1355.20 (1002 d.f.) and χ^2diff =35.2 (12 d.f.), which is statistically significant (p<0.01), suggesting model Models 3 has a better fit than Model 4. Thus Model 3 is the best fitting model followed by model 4. Model 3 will always have the best model fit, since a second-order model can never produce better fit indices than its corresponding first-order correlated model (Koufteros et al., 2009). However, a second-order model that is comparable in terms of its fit indices with the correlated first-order model can serve as an attractive option if it can be conceptually supported. The fit of Model 4 proved to be similar to the fit generated by Model 3 in terms of CFI and TLI and can be conceptually supported. Thus model 4 appears to be a suitable alternative and was used as the model for evaluating the substantive hypotheses.

The overall measurement model with a second order factor for Transformational Leadership has acceptable model fit based on the following fit indices: χ^2 (d.f.) = 1355.20(1002), χ^2 /d.f.= 1.35, CFI= 0.92, TLI=0.91, SRMR= 0.07 that are suggestive of a good fitting model (Hu & Bentler, 1999). Furthermore, all the items loaded significantly

onto their respective factors based on their t-values (see Table 3-38). Most of the factor loadings were above 0.60 and a great majority of those loadings were above 0.70.

3.11 Discriminant Validity Results

Table 3-39 provides information about the AVE, CR and squared factor correlations. Evidence for discriminant validity can be obtained by comparing the AVEs of any two constructs against the respective squared factor correlation (Koufteros & Marcoulides, 2006). Table 3-39 also includes the second-order factor. Correlations among the first-order Transformational Leadership factors and their second-order factor are expected to be rather high. Thus, the AVE and the squared factor correlations were not compared among the three first order factors and Transformational Leadership.

The highest squared correlation among all the constructs compared was observed between affective commitment and Transformational Leadership at 0.62 which is greater than the AVE for affective commitment. Similarly, for trust its AVEs were lower than its squared correlations with Transformational Leadership. Transformational leadership is a strong driver of trust and commitment and hence very high correlations among these constructs are expected. The AVEs for all the other constructs are higher than their respective squared correlation, and thus rendering support for discriminant validity (Ho & Zhang, 2008). Reliability for the measurement items of each construct is established by probing the CR and AVE values. In our case, the CR value for every construct is above 0.70, and the AVE values for most of the constructs are greater than 0.50 except for SCI for which the AVE is 0.45. The relatively low AVE value for SCI is potentially because

Table 3-39: Reliability and Correlation Matrix for the Constructs

Constructs	1	2	3	4	5	6	7	8	9	10
1. Charisma/Inspiration	0.87[a] 0.53[b]									
2. Intellectual Stimulation	0.51[c]** (0.26)[d]	0.77[a] 0.53[b]								
3. Individualized Consideration	0.79** (0.62)	0.44** (0.19)	0.76[a] 0.52[b]							
4. Transformational Leadership	0.95** (0.90)	0.70** (0.49)	0.88 (0.77)	0.90[a] 0.76[b]						
5. Contingent Reward	0.66** (0.43)	0.43** (0.18)	0.65** (0.42)	0.69** (0.47)	0.82[a] 0.70[b]					
6. Management by Exception	-0.11 (0.01)	0.09 (0.00)	-0.01 (0.00)	-0.04 (0.00)	0.12 (0.01)	0.87[a] 0.69[b]				
7. Trust	0.74** (0.54)	0.31** (0.09)	0.74** (0.54)	0.74** (0.54)	0.67** (0.44)	0.09 (0.00)	0.90[a] 0.51[b]			
8. Affective Commitment	0.79** (0.62)	0.44** (0.19)	0.72** (0.52)	0.79** (0.62)	0.58** (0.33)	-0.13 (0.02)	0.66** (0.44)	0.83[a] 0.54[b]		
9. Continuance Commitment	-0.08 (0.00)	0.02 (0.00)	-0.01 (0.00)	-0.04 (0.00)	0.17* (0.02)	0.73** (0.53)	0.11 (0.01)	-0.05 (0.00)	0.84[a] 0.64[b]	
10. Integration	0.54** (0.29)	0.44** (0.19)	0.53** (0.34)	0.59** (0.34)	0.54** (0.29)	0.17* (0.03)	0.58** (0.33)	0.54** (0.29)	0.123 (0.02)	0.89[a] 0.45[b]

Notes: On the diagonal: [a]Composite reliability and [b]average variance extracted. Off the diagonal: [c]Correlation and [d]squared correlation in parentheses.
One-tailed sign. Level: *p-value<0.05, ** p-value<0.01

of the two poorly loading items that were retained to ensure content validity of the construct.

3.12 Research Methods for Testing the Structural Model

The Structural Equation Modeling (SEM) approach works particularly well for testing relationships among several constructs simultaneously with large data (Kline, 2011). Shah and Goldstein (2006, p.149) state that "structural equation modeling is a technique to specify, estimate, and evaluate models of linear relationships among a set of observed variables in terms of a generally smaller number of unobserved variables." SEM has become a widely used method among empirical scholars in Operations and Supply Chain Management (OSCM) to study linear relationships between unobserved variables (Shah & Goldstein, 2006).

3.12.1 Structural Model Analysis and Results

This section provides an overview of the procedures used for testing the structural model. The subsequent sections will provide a comprehensive treatment of the procedures used. The structural model provides insights about the hypothesized relationships among constructs in this study. According to the prescriptions provided by Anderson and Gerbing (1988), a two-step approach is utilized in testing the models. The first step involves testing the measurement model using CFA and the subsequent step involves the testing of the structural model. The structural model is assessed using Mplus 6.0 using the maximum likelihood robust estimator.

Prior to examining the overall structural model, researchers need to examine whether there are any biases due to potential outliers and non-normality of data. The

maximum likelihood estimator used frequently in examining the structural model is sensitive to non-normality. If any non-normality is detected, necessary transformations need to be carried out to ensure normality of data or an adequate estimator that can handle non-normality should be used for the analysis. It is also necessary to examine the representativeness of the sample vis-à-vis the population so that we can generalize the findings to the entire population.

After undertaking these tests, and comprehensively taking into account the findings from previous analyses, the structural model presented in Figure 3-1 is tested. Typically, the beta coefficients indicate the strength of the relationships between variables and the structural model is evaluated by examining the size of the standardized structural path coefficients. These coefficients are scrutinized for their statistical and substantive significance. In general, standardized path coefficient values of 0.20 or higher, indicate a substantive relationship among constructs (Chin, 1998). The statistical significance of the beta coefficients is demonstrated using the p-values derived from t-tests.

3.13 Data Quality Check

3.13.1 Missing Data

Some participants were eliminated from further analyses in this study. In the structural model analysis observations with missing data were deleted "listwise" based on the job profile and the functional role of the individuals. Although a carefully selected sample was targeted, 17 observations did not match the functional department and job title requirements for this study. For instance, one of the observations that was deleted had a job title listed as a foreman. After carefully screening out 17 participants, 242

observations remained of which 34 was used for the pilot study and 207 for the large data analyses.

3.13.2 Normality Check

The maximum likelihood estimation technique is sensitive to non-normality in the data. To examine the normality of data used for the structural model analysis a normality check of the individual constructs is conducted. Although, univariate normality does not ensure multivariate normality, the presence of a multivariate distribution is reflected by the univariate distributions (Johnson & Wichern, 2002). To examine normality the Kolmogorov-Smirnov (KS) statistics for the constructs in this study were estimated. The results are presented in Table 3-40. As illustrated in Table 3-40 all the variables did not pass the normality test as the KS test statistic was significant at the 0.05 level. Hence I opted to use the MLM estimator that is capable of handling non-normal data in the structural model analysis.

Table 3-40: Test for Normality- Kolmogorov-Smirnov Test

	Statistic	d.f.	**Sig.**
1. Charisma/Inspiration	0.119	207	**0.000**
2. Intellectual Stimulation	0.139	207	**0.000**
3. Individualized Consideration	0.130	207	**0.000**
4. Transformational Leadership	0.146	207	**0.000**
5. Contingent Reward	0.137	207	**0.000**
6. Management by Exception	0.141	207	**0.000**
7. Trust	0.124	207	**0.000**
8. Affective Commitment	0.102	207	**0.000**
9. Continuance Commitment	0.083	207	**0.000**
10. Integration	0.168	207	0.000

3.13.3 Representativeness of Sample

The representativeness of the sample is assessed by comparing the number of firms observed in each manufacturing sector with the number of firms expected in each based on the distribution of the respondents across different manufacturing sectors. The distribution of firms in different SIC codes is obtained using www.melissadata.com/lookups/sic.asp. Using the distribution of firms in each SIC code, the expected counts are computed by estimating the proportion of firms in each SIC code based upon the total number of observed firms. The chi-square test was used to compare the observed and the expected counts across different SIC codes. The Chi-square statistic was 107.17 with 17 degrees of freedom and p=0.000 (see Table 3-41). This indicates that our sample is not representative of the original population. One plausible reason for this finding can be attributed to the fact that several firms in this study did not report their company name and industry to which they belonged. This prevented them from being included in the representativeness check which could have altered our test statistic value and its significance. Although, the results from this analysis appear to restrict the generalizability of this study's findings, having data from companies belonging to 18 different SIC codes in the manufacturing industry suggests strong generalizability for our findings to US manufacturers.

Table 3-41: Representativeness Test

SIC Classification	Observed	Expected	Residual
20	5	12	-7
21	1	1	1
22	1	2	-1
23	2	5	-3
24	1	9	-8
25	5	2	3
26	4	3	1
28	4	6	-2
29	5	2	3
30	2	5	-3
32	3	2	1
33	6	3	3
34	3	16	-13
35	17	26	-9
36	17	7	10
37	20	5	15
38	11	6	5
39	25	20	5
Notes:			
Chi-Square (d.f.)		107.17 (17)	
p-value		0.000	

3.14 Structural Model Analysis and Results

SEM is used to test the nomological network comprising of transformational leadership, transactional leadership, trust, two types of commitment, and SCI. The nomological network relates transformational leadership to trust, and contingent reward and management by exception to trust. Furthermore, there are hypothesized relationships from trust to affective and normative commitment, which subsequently affects SCI. The extant literature also suggests that several factors such as industry competition e.g., number of suppliers (Staber, 1998); product type in reference to whether it is a strategic or a commodity product (Oliver & Ebers, 1998), and the firm size (Koufteros et al., 2007) can influence SCI as they can influence the degree on inter-dependence between firms.

Table 3-42: Structural Model Coefficients

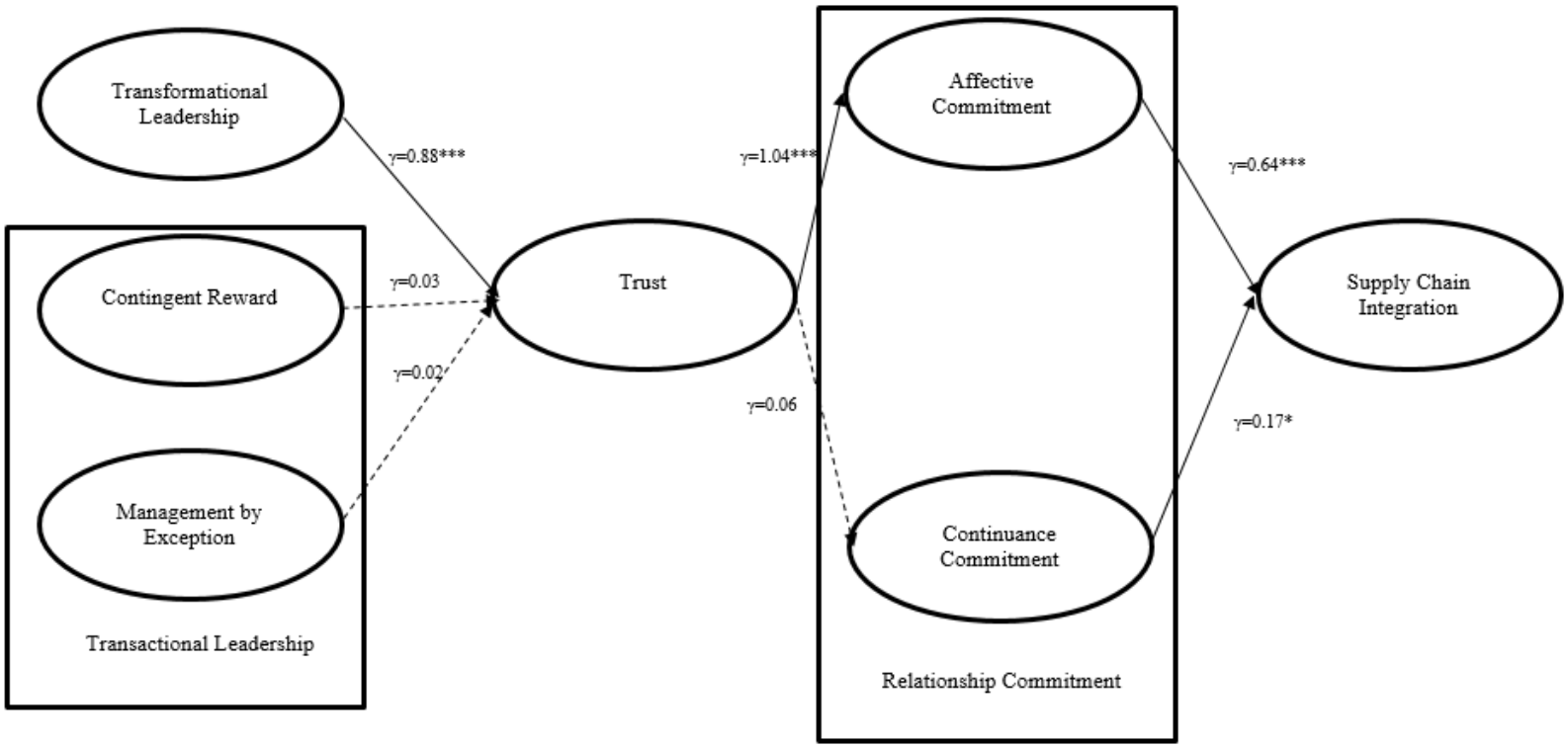
Structural Path (from-to)	Hypotheses	Coefficient (t-Value)
Transformational Leadership → Trust	H1	0.88 [a] *** (9.60)
Contingent Reward → Trust	H2a	0.03 (0.76)
Management by Exception→ Trust	H2b	0.02 (0.50)
Trust → Affective Commitment	H3a	1.04*** (30.83)
Trust → Continuance Commitment	H3b	0.06 (0.75)
Affective Commitment → Integration	H4a	0.64*** (12.20)
Continuance Commitment→ Integration	H4b	0.17* (2.31)

Notes: Fit indices (overall): χ^2 (d.f)= 1489.44(1043), χ^2/d.f= 1.42, CFI= 0.91, TLI=0.90, SRMR= 0.08, [a] =Completely Standardized Coefficient, One-tailed sign. level: *p-value<0.05,** p-value<0.01, *** p-value<0.001

Furthermore, relationship duration (Ring & Van de Ven, 1994) between customers can influence the relationship between commitment and SCI.

The results for the structural model are presented in Table 3-42. The overall fit indices of the structural model are acceptable under the guidelines proposed by Hu and Bentler (1999): $\chi 2$(d.f.)= 1448.87(1037), $\chi 2$ /d.f.= 1.39, CFI= 0.91, TLI=0.91, SRMR= 0.07. Hypothesis 1 suggests that Transformational Leadership impacts Trust positively. The standardized path coefficient is indicative of a significant relationship (γ=0.883, t-value=11.452). The second set of hypotheses relates the two factors of transactional leadership to Trust. The hypothesized effect of Contingent Reward on Trust (γ=0.030, t-value=0.709) and the effect of management by exception on Trust (γ=0.025, t-value=0.422) are not statistically significant. The third set of hypotheses relates Trust to two types of commitment. There is evidence to suggest that Trust is positively related to Affective Commitment rendering support to Hypothesis 3a (γ=1.039, t-value=46.187). However, there is no sufficient evidence to suggest that there is a significant relationship between Trust and Continuance Commitment (γ=0.051, t-value=0.680). The final set of hypotheses relates Affective and Continuance Commitment to SCI. The standardized path coefficient for the relationship between Affective Commitment and SCI is indicative of a significant relationship between the two (γ=0.630, t-value=6.099). Furthermore, contrary to the hypothesized direction Continuance Commitment has a positive and significant relationship with SCI (γ=0.166, t-value=2.931). However, the relationship between

Figure 3-2: Hypothesized Structural Model Results[1]



[1]Note: One-tailed sign. level: *p-value<0.05,** p-value<0.01, *** p-value<0.001
Controls: Product type, relationship duration, competition, and firm size.

Affective Commitment and SCI is more pronounced than the relationship between Continuance Commitment and SCI.

3.15 Discussion and Conclusion

The findings from this study provide insights regarding the mechanisms through which leadership styles will ultimately influence SCI. Figure 3-2 suggests that transformational leadership had a positive impact on trust indicating that customers who demonstrated more charisma/inspiration, intellectual stimulation, and individualized consideration were more likely to develop trust in their suppliers, supporting Hypothesis 1. The relationship of transactional leadership and trust was insignificant, indicating that customers exhibiting contingent reward and customers that manage their relationship with suppliers by exception had no impact on suppliers' trust of their customers, and thus Hypotheses 2a and 2b were not supported. Lack of evidence for Hypothesis 2a suggests that getting tasks accomplished from suppliers by rewarding them for their completing their work and punishing them for failing might not induce trust. Suppliers who perceive their customers not to be very helpful, and rather punitive when they fail to accomplish a task, tend to harbor low levels of trust towards their customers. Likewise, customers who work with their suppliers with a contractual frame of mind, and actively manage and correct deviations from contracts, are also less likely to help develop trust in their suppliers. Furthermore, Figure 3-2 reveals that suppliers' trust positively influences their affective commitment towards their customers. This supports Hypothesis 3a which suggests that as suppliers trust their customers they are more willing to be committed to their customers and develop a long term orientation towards them. On the other hand

Figure 3-2 implies that suppliers' trust towards their customers had an insignificant impact on their continuance commitment, and thus Hypothesis 3a was not supported. These results suggest that only customers exhibiting transformational leadership effectively achieve high levels of affective commitment among suppliers by engendering trust. Empirical evidence from this study further demonstrates that transactional leadership has no significant impact on trust which plays a pivotal role in developing affective relationship commitment. This finding is in line with Hult et al. (2000) who also empirically demonstrate that transactional leadership has no significant impact on relationship commitment.

This study also investigates the relationship between affective and continuance commitment on SCI. Figure 3-2 illustrates that the path coefficient from affective commitment to SCI is positive and highly significant, and thus Hypothesis 4a is supported. This suggests that suppliers that have an emotional attachment and emotional bonding through trust with their customers are more likely to invest substantively into their relationship with customers. They are more likely to internalize the values of their customers and work more closely together. Figure 3-2 also reveals that continuance commitment is also positively related to integration. This finding was contrary to Hypothesis 4b. One plausible explanation for this finding is that suppliers with continuance commitment might engage in some degree of SCI to salvage some benefit from their existing relationship with customers. However, suppliers with continuance commitment will be willing to change their customers if they find a viable alternative. The results of my study also demonstrate that continuance commitment has a relatively smaller

impact on SCI than affective commitment. This smaller impact suggests that a customer should try and foster affective commitment more than continuance commitment with their suppliers to enhance SCI. Zhao et al. (2008) state "When suppliers have an intrinsic desire to continue their relationship…SCI can be readily achieved" (p.67).

Understanding the mechanism of SCI development through leadership, trust and commitment is particularly helpful for practitioners in selecting the appropriate leadership style. Since transformational leadership style is the most effective leadership style in developing SCI, customers should engage in motivating, challenging and helping suppliers in order to achieve high levels of SCI by engendering trust and affective commitment.

This work contributes substantially to the SCI literature by systematically examining the relationship among leadership styles, trust, commitment and SCI. The role of leadership has hardly been subject to empirical investigation in the realm of supply chain management (Defee, 2007). Through this research, I demonstrate the significance of transformational leadership in the context of SCI.

This study provides managerial insights on the effective leadership style that needs to be developed to foster SCI. This study demonstrates a strong relationship between affective commitment and SCI and illustrates the most effective way to lead suppliers to develop affective commitment. A clear link is established between leadership styles-trust-commitment and SCI. My work also demonstrates that engaging in contingent rewarding behavior does not influence trust development, and should be used with caution by customers towards their suppliers. Furthermore, customers should actively engage with

suppliers by helping them achieve specific goals, training them to look at problems from different perspectives, and fostering creativity. However, customers should refrain from binding suppliers to set rules and standards as they do not engender trust.

Even though this study makes significant contributions to academia and practice, there are several limitations to this study that offer the potential for future research. First, the leadership style exhibited can be subject to several contextual constraints such as power, task knowledge, and environmental uncertainty. Future studies should consider the contextual variables while examining leadership. Second, the interaction effect between transformational and transactional leadership styles can be considered. Studies have suggested that leaders who exhibit both transformational and transactional leadership can be very successful. However this claim is yet to be examined in the realm of supply chain management. Third, this study is focused on the supplier perspective, and although this perspective provides useful insights into the development of SCI, future studies should try to incorporate the perspective of both the customer and the supplier. Developing this line of thought, leadership style within a supplier can also impact its relationship with a customer and examining the role of leadership styles within suppliers in the context of this study can be a fruitful endeavor.

CHAPTER IV

CALLING THE SHOTS

4.1 Introduction

Leading-edge companies have recognized that the real competition is not necessarily pitting company against company anymore but rather supply chain against supply chain (Cooper et al., 1997; Molm et al., 2000; Peng et al., 2013; Rice & Hoppe, 2001). Drucker (1996), a renowned management theorist, emphasized that the biggest change in the way business is being conducted may be the increasing growth of relationships based on partnerships, and not in ownership. Accordingly, firms have utilized supply chain integration (SCI), which involves close strategic relationships with supply chain partners, to improve their performance (Paulraj & Chen, 2005; Wagner et al., 2011; Watson, 2001). Scholarly research attests that firms can use SCI as a strategic weapon to gain competitive advantage (Dyer & Singh, 1998). Porter (1985, p. 48) stated, "Competitive advantage frequently derives from linkages among activities just as it does from the individual activities themselves." SCI involves linkages of several activities across firms (Das et al., 2006; Stevens, 1989). Many studies have demonstrated, for instance, that SCI is a critical factor in the success of new product development (Koufteros, Rawski, & Rupak, 2010; Rai & Bajwa, 1997; Saeed et al., 2005) and for competitive advantage at large (Droge et al., 2004; Kahn & Mentzer, 1998; Rosenzweig et al., 2003; Wong et al., 2011). Frohlich and Westbrook (2001) illustrate that firms with wider *arcs of integration* have higher performance improvement. That is, firms with

greater supplier and customer integration exhibit higher operational performance improvement when compared to firms that have lower integration levels with their supply chain partners.

Although several studies have cited the benefits of SCI (Chen et al., 2004; Leuschner et al., 2013; Peng et al., 2013; Stuart, 2000; Wong et al., 2011), there is scarcity of research that examines executive decision making related to SCI at the individual level (Croson, Anand, & Agarwal, 2007; McKnight, Cummings, & Chervany, 1998; Stuart, 1998; Villena et al., 2009). Much of the empirical literature on SCI has taken a macro (i.e., organizational level) perspective (Das et al., 2006; Flynn et al., 2010; Gulati, 1995; Van der Vaart & van Donk, 2008). As an example, Peng et al. (2013) examine SCI at the level of strategic business units (SBUs), and finds that SCI improves plant innovation and improvement capabilities. Although research on SCI has benefited from a macro perspective, the concomitant micro level perspective has not made significant inroads in SCI research. For instance, the personal interests of executive decision makers are ignored when examining SCI, but increasingly researchers question whether this is prudent given the level of power executives hold (Hitt & Tyler, 1991; Villena et al., 2009).

Furthermore, most extant empirical studies have examined SCI assuming that only a single type of relationship describes SCI between firms (Flynn et al., 2010; Frohlich & Westbrook, 2001). However, several recent studies on SCI have shown that relationships among firms can exist at different levels, such as coordination, collaboration, and internalization (Leuschner et al., 2013; Vanpoucke et al., 2014). The most elemental form of relationship is "coordination." Coordination refers to basic exchange of information

and linkage of information systems for facilitating the flow of goods (Leuschner et al., 2013). The next level of relationship between firms is termed as "collaboration," which goes beyond coordination efforts and includes joint idiosyncratic investments. Several studies have examined the added benefits of going beyond mere coordination (Jap, 1999), but have acknowledged the additional investments that are required for collaboration vis-à-vis coordination (Dyer & Singh, 1998). The extant literature also has suggested that some firms take their relationship to a level beyond collaboration by building relational linkages (Lado et al., 2008; Villena et al., 2011). These firms internalize the values of their partners and are willing to withstand short-term losses to achieve long-term strategic relationships with their partnering firms (Lado et al., 2008). I coin this type of relationship "internalization." Internalization reduces transaction costs and improves firm performance (Dyer & Singh, 1998). See Appendix-C for a more detailed definition for coordination, collaboration, and internalization. Vanpoucke et al. (2014) also ackonwledge that interfirm relaitonship evolves through three phases through which they gradually develop close strategic relationships. The failure to acknowledge that relationships can exist at different levels in limits our understanding in two primary ways. We cannot, first, examine the circumstances under which the highest level of SCI is opted, and, second, ascertain the benefits of having a specific level of SCI.

SCI is typically ascribed with positive evaluations, but it is still considered to be a risky decision (Gulati, 1995; Villena et al., 2009; Villena et al., 2011). Engaging in SCI requires significant investments of time, and both financial and nonfinancial resources (Vanpoucke et al., 2014). Furthermore, the failure rate of strategic alliances is anywhere

between 30% and 50% (Anderson & Jap, 2012). The risk of failure is largely undertaken by the executive who makes the decision to engage in a strategic alliance with a particular firm. The transfer of risk from the firm to the executive occurs by design through governance mechanisms (Wiseman & Gomez-Mejia, 1998). The perceived risk to the executive's wealth occurs via a threat to compensation or any other form of threat that results in greater risk bearing by the executive. Agency theorists have argued that when an executive bears greater risk, he or she engages in risk-averse behaviors (Wiseman & Gomez-Mejia, 1998). In a similar vein, if supply chain executives (SCEs) who make decisions related to SCI bear greater risk, they might decide not to pursue SCI (Villena et al., 2009). Agency scholars argue for the use of monitoring or incentive mechanisms to align the interests of the executives and the firms.

Economic factors, such as variability in pay, are known to affect executive decision making under risk (Wiseman & Gomez-Mejia, 1998). Empirical research on executive compensation dates back at least 85 years to when Taussig and Baker (1925) found empirical evidence that suggested a relationship between executive compensation and firm performance. Ever since, literally hundreds of studies have examined executive compensation. Compensation scholars have tried to explain the impact of different compensation schemes on executive behavior over the past several decades (Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007), and specifically the influence of fixed pay and variable pay (Wiseman & Gomez-Mejia, 1998) on executive behavior.

Although variability in pay is an important factor to be considered when examining SCE decision making (Bloom & Milkovich, 1998), executive compensation scholars have also increasingly demanded the incorporation of factors examined in disciplines such as sociology and psychology, for instance socioemotional wealth, to better explain executive decision making within organizations (Gomez-Mejia & Wiseman, 1997). Studies have previously shown that cognitions, values, and perceptions held by executives do influence their decision making (Graham, Li, & Qiu, 2012; Hambrick & Mason, 1984; Hitt & Tyler, 1991). "Strategic choices made in organizations are reflections of the cognitions, perceptions, and values of powerful actors" (Carpenter et al., 2004, p. 750).

In this study, I examine the circumstances under which individuals will opt for varying levels of SCI resting on the theoretical tenets of the Behavioral Agency Model (BAM) (Wiseman & Gomez-Mejia, 1998) and the Behavioral Approach and Inhibition Model (BAIM) (Anderson & Galinsky, 2006). The BAM theory predicts that individuals are in general loss averse and will engage in risky behaviors in loss situations to mitigate losses or to totally avoid them (Wiseman & Gomez-Mejia, 1998). BAM particularly examines the role of variability in base pay in decision making and suggests that higher levels of variability in base pay are associated with increased risk seeking behaviors (Villena et al. 2009). The base pay for an executive is the portion of income that is essential for maintaining or raising his or her standard of living. The base pay generally includes annual cash compensation along with annual cash bonus awards that tend to have considerable consistency from year to year (Larraza-Kintana, Wiseman, Gomez-Mejia, & Welbourne, 2007). Studies in the past have examined the role of incentives in the form of

variable base pay on strategic decision making (Gomez-Mejia & Wiseman, 1997), but not specifically in the context of SCI. BAM predicts increased risk taking behaviors with an increase in the variability in base pay. For instance, Larraza-Kintana et al. (2007), had used BAM and found that variability in base pay is positively associated with risky strategic decisions. I thus examine the role of variability in base pay (*variability in pay* henceforth) on SCE decision making in the context of SCI.

On the other hand, BAIM theory posits that individuals with more power (socioemotional wealth in this context) are more risk seeking vis-à-vis individuals with low power (Keltner, Gruenfeld, & Anderson, 2003). The concept of socioemotional wealth captures the innate feeling of self-worth, the ability to exercise authority, and the sense of belonging within organizations, and it is a construct that is closely linked with power (Gomez-Mejia, Cruz, Berrone, & De Castro, 2011; Keltner, Gruenfeld, & Anderson, 2003). Individuals with high socioemotional wealth view situations more optimistically and focus more on gains rather than losses. BAIM predicts that individuals with high socioemotional wealth are more risk seeking than individuals who lack socioemotional wealth.

Examining the interaction effect of socioemotional wealth and variability in pay can provide a more holistic view of how SCEs make decisions within organizations (Gomez-Mejia & Wiseman, 1997). To the best of my knowledge, there are no extant studies that have considered the interaction effect of variability in pay and socioemotional wealth on executive decision making. This study systematically investigates the role of

variability in pay and socioemotional wealth in executive decision making related to interfirm relationships through an experimental methodology.

In this study, SCI examined at three different levels. Extant empirical studies have had positive attributions towards high levels of SCI (Frohlich & Westbrook, 2001; Leuschner et al., 2013). However, there is increasing evidence to suggest that as a firm moves toward internalization from mere coordination, performance can be impacted adversely due to increased opportunism (Locke, Noorderhaven, Cannon, Doney, & Mullen, 1999), reduced objectivity (Granovetter, 1985), and poor decision making (Grover, Lim, & Ayyagari, 2006). Therefore, I anticipate that when SCEs consider the potential benefits of internalization, they will also consider the downside risks associated with internalization.

The predictions regarding the impact of variability in pay and socioemotional wealth on SCEs decision making rest on the theoretical perspective of BAM (Wiseman & Gomez-Mejia, 1998) and BAIM (Anderson & Galinsky, 2006). The experiments were carried out by manipulating the socioemotional wealth and the variability in pay of an executive using a hypothetical situation administered first to students, and then to supply chain practitioners using vignettes. Immediately after sensitizing the participants to a specific scenario which involved manipulation of variability in pay and socioemotional wealth, they were asked to respond on their decision to pursue a specific type of a relationship with their supply chain partner. I piloted the experiment with 400 students before I eventually administered the finalized experiment to another 150 business students and 166 practitioners using an online software, Qualtrics.

The results derived the practitioner sample suggest that only variability in pay is a significant predictor of SCE's decision making. However, a post-hoc analysis suggested that 'age' affects decision making by influencing how individuals perceive variability in pay and socioemotional wealth. The results from young practitioners suggest that individuals who experience variability in pay are prone to more risk taking, and individuals who have high socioemotional wealth are also more risk seeking compared to those who experience no variability in pay and low socioemotional wealth respectively. This was reflected by greater propensity to internalize. Furthermore, young individuals with high socioemotional wealth who experience high variability in pay are relatively more risk averse, and so less likely to opt for internalization, when compared to individuals with low socioemotional wealth who experience high variability in pay, and individuals with high socioemotional wealth who experience low variability in pay. These results were consistent with the student sample results. However, results based on older practitioners suggest that they valued only socioemotional wealth when considering a specific level of SCI to pursue with their customer, and, furthermore, they were risk averse when possessing high socioemotional wealth and were less likely to choose internalization.

Specifically, this study addresses the research question how do variability in pay and socioemotional wealth influence a SCEs decision to engage in a specific level of integration. In the process of addressing the research question, I contribute to the extant SCI literature by identifying two important factors that can influence executive decision making, and addressing a growing call to incorporate a micro (i.e., individual level) perspective in SCI research. Furthermore, I examine SCI at three different levels.

Although supply chain researchers have cited the importance of examining the role of individuals in SCI, (Villena et al., 2009) and suggest that there are different levels of SCI (Lee, 2000), to the best of my knowledge this is the first study that address both the issues.

The rest of the article is organized as follows. In section 2, I discuss the primary dependent variable used in this study, and in section 3, I review some of the related literature on interfirm relationships, behavioral agency theory, and socioemotional wealth in the context of decision making. Subsequently in section 4, I develop the hypotheses to be tested in this study. The subsequent sections discuss the experimental design for this study, the methodology used, analyses, and present the results. The final part summarizes the results and recommend directions for future research.

4.2 Primary Dependent Variable –Supply Chain Integration

Supply chain scholars often measure interfirm relationships using the construct of supply chain integration (SCI). The term SCI is characterized by inconsistent definitions and dimensions (Tate et al., 2010). Some scholars treat SCI as a single construct (Cox, 2001), while others focus on multiple dimensions of SCI (Leuschner et al., 2013; Nahapiet & Ghoshal, 1998; Peng et al., 2013; Rai & Bajwa, 1997), in particular internal-, customer-, and supplier-integration. While these dimensions offer significant insights into research on SCI, the extant literature falls short in defining the term SCI.

Van der Vaart & van Donk (2010) suggest that the term SCI is captured by various practices, patterns, and attitudes. They suggest that supply chain practices are characterized by tangible activities, or technologies that play a critical role in the collaboration of a focal firm with its suppliers and/or customers. Examples include the

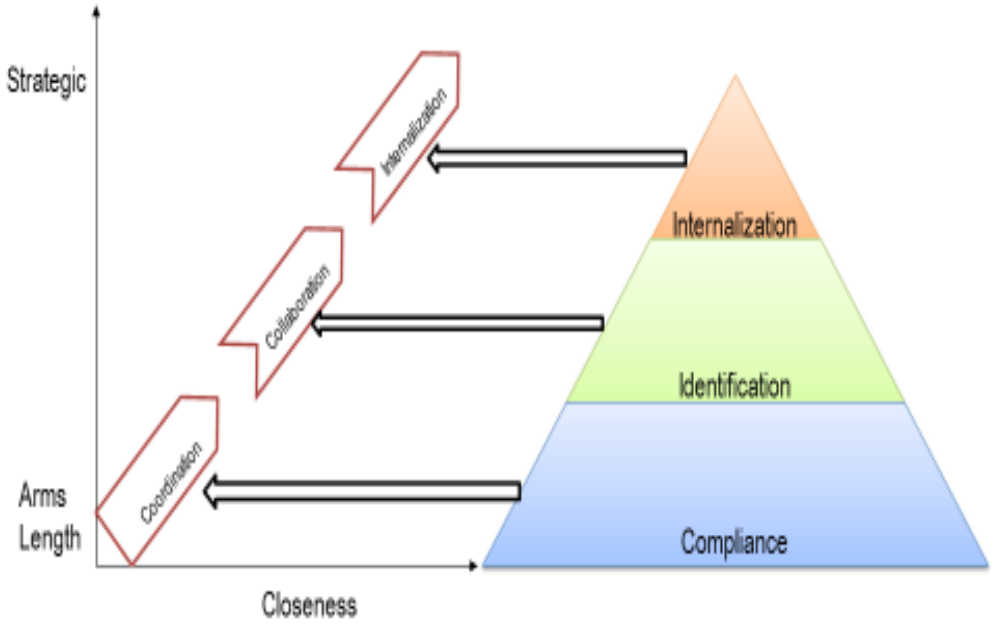
utilization of Electronic Data Interchange (EDI) and Vendor Managed Inventories (VMI). Moreover, they suggest that related to supply chain practices are supply chain patterns, or interaction patterns, between the focal firm and its suppliers and/or customers. Examples of interaction patterns include regular visits to the supplier's facility and frequent face-to-face communication. Attitudes, they suggest, measure the feelings of buyers and/or suppliers towards each other or towards SCI in general. For instance, one such feeling is a customer's view of their suppliers as an extension of their company. These categories help us group pre-existing measures of SCI in an effective fashion. The classification advanced by Van der Vaart & van Donk (2010) affords a useful classification to examine how existing empirical studies have captured SCI, yet it does not adequately resolve the ambiguity of the term SCI.

SCI confounds the terms coordination and collaboration (Cao & Zhang, 2011; Lee, 2000; Leuschner et al., 2013). Several studies suggest that there is a difference between coordination, collaboration, and integration (Cao & Zhang, 2011; Lee, 2000), but the differences between them are still very ambiguous. According to a report by Boston Consulting Group & Wharton (2006), supply chain coordination and collaboration are not sufficient to address the primary goal of supply chain management to have the right product at the right place at the right time at the right price. The report recommends that successful firms have now embraced SCI. It is important to note they suggest there is a difference between supply chain coordination, collaboration, and integration without, however, really delineating the differences between the three. In addition, Lee (2000) suggests that there is a difference between being coordinated and being integrated.

According to Lee (2000), coordination reflects information sharing, exchanging decision rights, work realignment, and resource sharing, while integration encompasses coordination and organizational linkages which facilitate sharing of risks, costs, and gains. The differentiation made by Lee (2000) is significant; however, the term collaboration is lost in the expression of coordination and integration. Also, a number of scholars have illustrated that collaboration is different from coordination (Bowersox et al., 2003; Zaheer et al., 1998b). Jap (1999) carried out a significant study towards this account. Jap (1999) suggests that collaboration is the combination of coordination efforts and joint investment in idiosyncratic resources. Although scholars acknowledge that there is a difference between the terms supply chain coordination, collaboration, and integration, these terms are frequently confused with each other (Cao & Zhang, 2011). A plausible reason for this confusion is the lack of an unambiguous definition for the constructs of supply chain coordination, supply chain collaboration, and SCI.

I posit that SCI is an overarching term that encompasses different levels of interfirm relationships such as coordination, collaboration, and internalization shown in Figure 4-1. I draw upon the inter-personal relationship literature (e.g., Raven, 1992; Yukl, 2010) to develop a rudimentary argument to support my claim. Kelman's (1958) seminal paper suggests that changes in behavior produced by social influence may occur at different levels. He further suggests that the difference in the levels of change that occur correspond to differences in the processes by which an entity accepts influence. The different processes by which changes in behavior occur are compliance, identification, and

Figure 4-1: Levels of Interfirm Relationships (adapted from Lee, 2000)



internalization (Kelman, 1958). Compliance is said to occur when an individual accepts influence because he/she hopes to achieve a favorable reaction from another person or group. Identification occurs when an individual adopts the induced behavior because he/she wants to be associated with the relationship. Finally, internalization occurs when an individual adopts the induced behavior because it is congruent with his/her value system and the behavior adopted via this way is integrated with an individual's value system. The adoption of a certain behavior through internalization is permanent, and it changes the way an individual will react in the future to certain situations.

Although the influence occurs through three different processes, it is important to understand that the behavior obtained through compliance can be achieved through identification, and the behavior achieved through identification can be achieved through internalization, but the reverse is not possible. This is because the behavior through compliance is contingent upon extrinsic rewards and surveillance, while the behavior through identification is due to an individual's personal interest to be associated with the influencing agents. Therefore, through identification, an individual might do more than what was necessary through surveillance due to his/her personal interests to maintain the relationship. Likewise, behaviors through internalization will be undertaken because the values of the individual and the values of the influencing agent are congruent (Burnes & New, 1997). Therefore, internalization can induce behaviors achieved through identification and more. Internalization of organizational values has been linked to elevated levels of commitment towards the organization (Burnes & New, 1997).

Drawing upon the inter-personal influence literature to study organizations is not new. For example, scholars have utilized power, which was primarily considered to be an inter-personal influence mechanism, to study relationships between organizations (Benton & Maloni, 2005; Goo et al., 2008). Therefore, extrapolating this discussion to the context of a social network comprising of organizations sets the foundation for the explanation of the term SCI.

I posit that the term coordination is associated with the most basic form of inter-organizational relationships. Coordination is defined as the process of managing dependencies between firms (Malone & Crowston, 1994), and is primarily achieved

through contracts (Leuschner et al., 2013). If a firm is essentially coordinating and not collaborating, or internalizing, it implies that the firm is merely complying with the influencing firm based on contracts and will restrict its behaviors to what can be governed by contracts. Collaboration is the next level of interfirm relationships. Collaboration is a process by which two firms jointly work towards achieving common objectives (Stank, Keller, & Daugherty, 2001b). Collaboration includes coordination efforts and investments in idiosyncratic resources (Jap, 1999). Collaboration occurs when a firm is identifying itself with another firm, since it occurs under conditions of salience of a firm's relationship with an influencing firm. A firm that is collaborating will also be coordinating based on the previously stated argument that behaviors through identification will encompass behaviors through compliance.

Internalization is the highest level of interfirm relationship. It is achieved due to the internalization of values by the constituent firms. The behavior of firms that have internalized are in harmony with each other. Firms that have internalized their partner's values perform desired actions regardless of surveillance or salience. Such firms can also exhibit leniency towards the other firm. These firms are purported to have the highest level of SCI. Internalization is the highest level of interfirm relationships followed by collaboration and then by coordination. A firm, however, cannot have internalization without collaboration and coordination. Similarly, a firm cannot have collaboration without coordination (*see* Figure 4-1).

Importantly, internalization is riskier than collaboration, and collaboration is riskier than coordination. To augment this argument, a parallel is drawn between the three

levels of inter-firm relationship (i.e., internalization, coordination, and collaboration), and the evolution of relationship types amongst humans (Ring & Van de Ven, 1994). Guerrero and Andersen (2003) illustrate the evolution of relationships through dating, engagement, and marriage. Although marriages are socially desirable in most cultures, marriages require the highest level of commitment in contrast to dating and engagement. Rapoport (1998 p.37) states that in marriages "an individual's social role changes, his image of himself is affected, the way in which others expect him to behave changes and his legitimate expectations for the behavior of others change."

An individual's investments are lower when dating (e.g., buying flowers) in contrast to when engaged (e.g., buying a ring), and similarly, the investments during married life (e.g., the effort put into coping with the responsibilities of marriage) are significantly higher than in the engagement phase. Likewise, the cost and ease of getting out of a date (e.g., cost of dinner and saying goodbye) might be lower in comparison with marriage (e.g., alimony to be paid after divorce, and complexity of a divorce).

Now using the analogy between the levels of inter-firm relationships and the evolution of relationship types between individuals (Ring & Van de Ven, 1994), two aspects of internalization can be inferred. First, although internalization is desirable, internalization comes at a higher cost than collaboration or coordination. Second, it is more difficult for a firm to disentangle from an internalized relationship, as opposed to when it is coordinating. Thus, it is possible for SCEs to perceive internalization to be riskier than collaboration, and collaboration to be riskier than coordination.

4.3 Related Literature

Within the context of the supply chain literature, SCI has been examined primarily at the firm level (e.g., Flynn et al. 2010), and at times at the SBU level (e.g., Peng et al., 2013). Whereas these extant studies have contributed to our understanding of the factors that impact SCI (Autry & Golicic, 2010; Dollinger, Golden, & Saxton, 1997; Wong et al., 2011; Zhao et al., 2008), a significant part of the puzzle has been left largely unexplored. There is scant empirical evidence in the extant literature that has examined the role of individual executives in the context of interfirm relationships. More recently supply chain scholars have recognized the need to consider executive decision making in the context of supply chain relationships (e.g., Ho & Zhang, 2008; Lim & Ho, 2007). As an example, Loch and Wu (2008) found that social preferences systematically influence managerial decision making in the context of supply chain transactions. Although, these studies have offered meaningful insights regarding managerial decision making, experimental studies to date have not made significant progress in corporate strategy related research (Croson et al., 2007). Furthermore, experimental studies related to supply chain management have particularly focused on loss aversion primarily due to economic incentives using game theoretic models, and have mostly ignored other intrinsic factors related to decision makers (Croson et al., 2007). In this study, I examine economic incentives in the form of variability in pay and an executive's cognitive perceptions and values in the form of socioemotional wealth.

I draw upon the BAM (Wiseman & Gomez-Mejia, 1998) and BAIM (Keltner et al. 2003) to shed light regarding how managers opt for a specific level of SCI in the

presence of variability in base pay and socioemotional wealth. Wiseman and Gomez-Mejia (1998) are credited with developing BAM. The BAM combines the elements of prospect and agency theory to explain executive risk taking. The BAM predicts that decision makers will be more risk averse to gains and risk seeking toward losses (Villena et al., 2009). BAM is widely used to study managerial risk taking under different compensation structures (Pathak, Hoskisson, & Johnson, 2013).

Although economic factors to some extent determine the behavior of executives, they do not adequately predict managerial behavior. For instance, Jensen and Murphy (1990) found that executives do not effectively respond to changes in pay, i.e., their pay-for-performance sensitivity was low, and suggested that non-economic factors need to be considered to fully explain an executive's behavior. Executive compensation scholars have generally agreed upon the axiom that "executive compensation does not reside within a vacuum" (Gomez-Mejia & Wiseman, 1998, p. 350). Several executive characteristics can impact the relationship between executive compensation and executive behavior (Carpenter et al., 2004; Hambrick & Mason, 1984; Tosi, Katz, & Gomez-Mejia, 1997). However, alarmingly, executive compensation research has yet to adequately capture the inherent factors describing executives that can perhaps meaningfully explain an executive's behavior within organizations. The executive's strategic decisions are influenced by his cognitions, perceptions and values (Carpenter et al., 2004). Along similar lines, this study captures variability in pay and socioemotional wealth of executives while examining their decision making with respect to interfirm relationships.

Historically, scholars believed that individuals with low socioemotional wealth tended to be more risk seeking (Anderson & Galinsky, 2006) than those who possess high levels of socioemotional wealth (Adler et al., 1994). However, a more recent and contrary view suggests that individuals with higher power, alike to high socioemotional wealth, are more optimistic, focus on positive outcomes more than negative outcomes, and feel less vulnerable to a negative outcome, and, therefore should be more risk seeking than individuals with low power (Keltner et al., 2003). Possessing high or low power should cause individuals to respond differently to a potential risky situation (Galinsky, Magee, Gruenfeld, Whitson, & Liljenquist, 2008). For example, individuals with high socioemotional wealth will focus more on the potential gains and less on potential losses in a given situation (Anderson & Galinsky, 2006). Therefore, high socioemotional wealth should increase optimism, which in turn leads to greater risk taking. Management scholars have argued that the decision maker's tendency to maintain or elevate socioemotional wealth guides his or her decision making with respect to "organizational choices concerning management processes, firm strategies, corporate governance, stakeholder relations and business venturing"(Gomez-Mejia et al., 2011, p. 351)

In the subsequent section I rely on the tenets of the BAM and the BAIM to develop my hypotheses for this study.

4.4 Hypotheses Development

4.4.1 Interfirm Relationships and Variability in Pay

Internalization requires the greatest commitment in terms of time, resources, and effort as compared to coordination or collaboration (Leuschner et al., 2013). The high

investment cost for internalization makes the cost of failure the greatest. More often, the risk of internalizing with a customer is transferred from the firm to a supply chain executive who makes the decision through governance mechanisms (Villena et al., 2009). Although internalization is risky, empirical evidence regarding interfirm relationships has suggested that having close relationships in highly uncertain environments can improve a firm's performance (Peng et al., 2013). For instance, Wong and Boon-itt (2012) suggested that close relationships among supply chain partners improve firm performance when uncertainty in the environment is high. Collectively, the extant literature has suggested that firms benefit from close interfirm relationships when uncertainty is high (Peng et al., 2013). However, if the interests of the firm and the supply chain executives are not aligned, the supply chain executives might act in ways that detract from the firm's performance (Tosi et al., 1997). Bloom and Milkovich (1998) concur, and suggest that executives do not necessarily make decisions that are in the best interest of their firm when they are faced with a high business risk (i.e., the uncertainty of future outcomes or events with respect to business decisions).

Choosing high levels of SCI can be a risky decision for SCEs (Villena et al. 2009), but can enhance firm performance (Peng et al., 2013). However, if adequate incentive mechanisms are not present, SCEs might not act in the best interest of their firms. The BAM proposes the use of variable pay as an incentive mechanism to align the interest of an SCE with the firm (Wiseman & Gomez-Mejia, 1998; Villena et al., 2009). BAM predicts that in a loss situation, SCEs will be more likely to engage in risk seeking behavior. For instance, Larraza-Kintana et al., (2007) demonstrate that when there is

variability in pay, executives are more risk seeking. When executives experience variability in pay, they can perceive it to be a gain or a loss. However, elements of BAM suggest that individuals tend to weigh losses more heavily than gains, and thus executives are more likely to focus on the possible loss when they experience variability in pay. This induces higher risk seeking behavior, and, therefore prompts SCEs to engage in high levels of SCI. Thus I propose the following hypothesis:

Hypothesis 1. Supply chain executives experiencing high variability in pay are more likely to pursue internalization.

4.4.2 Interfirm Relationships and Socioemotional Wealth

Internalization is much riskier than coordination and collaboration but can have more lucrative better payoffs (Ring & Van de Ven, 1994, Villena et al. 2009). Traditional arguments regarding individuals ascribed with high socioemotional wealth have suggested that these individuals will be less likely to internalize because they value what they have and will try to preserve it by making risk-averse decisions (Anderson & Galinsky, 2006). Contrary to the traditional conception of socioemotional wealth, more recent studies (Gomez-Mejia et al., 2007; Keltner et al., 2003) have found that high socioemotional wealth increases risk seeking behavior. When individuals have high levels of socioemotional wealth they focus more on the positive outcomes and less on the negatives in a given situation and feel less susceptible to negative outcomes (Anderson & Berdahl, 2002). Several other independent studies have attest that individuals with high socioemotional wealth are more likely to orient towards positive outcomes (Anderson & Galinsky, 2006). Individuals with high socioemotional wealth tend to perceive an

increased sense of personal control, which motivates them to view a given situation more optimistically than individuals with low socioemotional wealth (Galinsky et al., 2008). The increased optimism is reflected in the risky behaviors individuals with high socioemotional wealth undertake. Gomez-Mejia et al. (2007), for example, demonstrated that high socioemotional wealth can lead to more risk seeking behavior in the context of family-controlled firms.

SCI can furnish valuable benefits if successful, but can lead to high costs in case of failure. Using the theoretical tenets of BAIM, SCEs with high socioemotional wealth are more likely to focus on the positive aspects of SCI while SCEs with low socioemotional wealth will more likely focus on the negative aspects of SCI. Thus, individuals with high socioemotional wealth are likely to seek high levels of SCI (Gómez-Mejía et al., 2007). Therefore, I propose the following hypothesis:

Hypothesis 2. Supply chain executives with high socioemotional wealth are more likely to pursue internalization.

4.4.3 Interfirm Relationships, Variability in Base Pay, and Socioemotional Wealth

Much of the extant executive compensation literature has considered variability in pay without taking into consideration the socioemotional wealth of an executive (Gomez-Mejia & Wiseman, 1997). There is a pressing need to consider the compensation mechanisms for executives along with their cognitions, perceptions, and values (Carpenter et al., 2004; Gomez-Mejia & Wiseman, 1997). Independently, BAM predicts that executives who experience variability in pay should be more inclined to seek high levels of SCI (i.e., internalize), and BAIM predicts that executives with high socioemotional

wealth are also likely to internalize. However, to examine the impact of variability in pay and socioemotional wealth on a SCE's decision to engage in specific levels of SCI, I combine the BAM and the BAIM perspectives.

BAIM suggests that individuals with high socioemotional wealth will emphasize the potential positives more heavily than the potential negatives in a given situation (Keltner et al., 2003). High socioemotional wealth increases the anticipated value of gains and reduces the anticipated value of losses (Inesi, 2010). Thus they are more likely to internalize (H2). However, if a SCE who possesses high levels of socioemotional wealth experiences high variability in pay, which can be perceived as gains or losses, he/she will tend to perceive it as a gain as opposed to as a loss (Larraza-Kintana et al., 2007). Since, they perceive variability in pay more optimistically than others who lack socioemotional wealth, they view variability in pay as a gain. According to BAM, SCEs in gain position are risk averse. So, although high socioemotional wealth executives tend to perceive SCI positively, the high variability in pay makes them slightly risk averse by inducing them to be in a gain situation. Thus they might opt for slightly lower levels of SCI than when they experienced only variability in pay or possessed only high socioemotional wealth. Thus, I hypothesize the following:

Hypothesis 3. Supply chain executives with high variability in pay and high socioemotional wealth are less likely to internalize.

4.5 Research Design

To the best of my knowledge, there are no extant studies that have examined executive decision making in the context of interfirm relationships using experiments

despite there being calls to incorporate experimental methodology in corporate strategy research (Croson et al., 2007) and supply chain management research. Experiments enable researchers to infer the causal relation between related variables, thus providing a high degree of internal validity compared to other studies such as cross-sectional studies or even longitudinal studies.

Several factors can influence the type of relationship among firms, such as their degree of interdependence, their financial stability, the type of product, and the industry (Heide & John, 1990). However, experiments help us isolate the effects of the variables of interest while controlling for the rest. One potential drawback of this method is the lack of generalizability (i.e., external validity). In order to overcome this problem, I conduct my experiment with practitioners from different industries.

I undertook several rounds of pilot studies before administering the experiment to students in a behavioral lab and then to practitioners, using an online software, Qualtrics. I am primarily interested in examining the behavior of practitioners. However, I also report the analysis and results based on student data in Appendix-C. Corroborating evidence from the field and the lab renders credibility to my findings.

4.6 Experimental Design

I employed a 2 x 2 full factorial between subjects design to test the hypotheses, which resulted in four design scenarios. I use a between-subjects design to ensure that there was no carryover effect among scenarios. Participants were randomly assigned to each condition. This resulted in a fairly even distribution of participants across the different conditions. The factors in the vignettes were orthogonal to each other (Carter &

Ellram, 2003), thus alleviating concerns about endogeneity. All the scenarios had a common script and a manipulation script. The common script prompted each participant to assume he/she is a supply chain executive in a large firm in the electronics industry that supplied parts which are critical to a large, financially stable customer. The sales to this customer contributed a significant proportion of their annual dollar sales volume. Participants were also informed that they had the authority to make decisions regarding their customer relationships assuming that there is some level of volatility in the market environment due to the nature of the industry (*see* Appendix-C).

The experiment manipulated two variables: variability in pay and socioemotional wealth. Each of these was varied at two different levels: low and high. The manipulation script for high variability in pay stimulated participants to assume that their firm's performance was highly inconsistent, resulting in their annual compensation being highly variable for the past few years. Similarly, the low variability scenario encouraged participants to assume that the firm's performance had been relatively stable, and they had been receiving a stable annual income for the past few years. In order to manipulate an individual's socioemotional wealth, I derived measures from Gomez-Mejia et al. (2011) and Keltner et al. (2003). I provided participants in the high socioemotional wealth condition with a statement that described them as individuals who had worked with the company for ten years, whose colleagues looked up to them when a crisis emerges, and whose top management viewed them favorably in comparison to their colleagues. On the contrary, participants with low socioemotional wealth read a statement that portrayed them as individuals who had been with the firm for only two years, who constantly sought the

help of their peers to perform their job, and who were not considered by top management to be those who always made the right decision.

Following these manipulations, the participants were asked a series of questions regarding the type of a relationship that they desired to pursue with the customer given the scenario. In order to determine whether participants paid adequate attention to the questions, I placed an attention filter at the end the survey. The attention filter required the respondents to read five lines of text and follow specific instructions in the text to answer that particular question.

4.7 Pilot Testing

Prior to pilot testing my study, I discussed the relevancy of the study with 11 high level executives across industries. They included VPs and Directors of Supply Chain. I then completed two pilot rounds of my experiment with undergraduate business students before I administered the experiment to a new group of students and then practitioners. Collectively, I piloted the study with 400 undergraduate business students to ensure that the manipulations created the desired state of mind for the respondents, and also to ensure that the sequence of manipulation did not have an effect on how each individual perceived a scenario in the experiment.

4.8 Sample

I conducted the study using practitioners as my primary respondents. To obtain the consent of practitioners I corresponded with sponsors within several firms and briefed them about the study. The sponsors undertook the responsibility to carefully select the participants for this study. Sponsors screened participants by examining the functional role

within their organization and the knowledge domain of each individual. The sponsors then provided me with the contact information of the prospective participants for the study. Subsequently, I sent an email to the identified participants and solicited their participation. As an incentive for participation I provided each individual participants a $5 Starbucks gift card as a small token of appreciation. After screening out 41 observations through an attention filter, I obtained 125 usable observations for this experiment. The attention filter required participants to read a five line instruction, and select an option as suggested in the instruction and then type in "effort" as shown in Appendix-C.

Table 4-1: Experiment Demographics

	N	Percentage
Gender		
Female	43	34.4
Male	82	65.6
Total	125	100
Age		
18-24	20	16..0
25-34	59	47.2
35-44	35	28.0
45-54	7	5.6
55-64	4	3.2
Total	125	100
Race		
Black or African American	1	0.8
Hispanic or Latino	20	20.0
Asian	6	4.8
White	90	72.0
Other	8	6.4
Total	125	100
Education		
Some College	8	6.4
Associate's Degree	4	3.2
Bachelor's Degree	84	67.2
Master's Degree	26	20.8
Doctorate Degree	3	2.4
Total	125	100

Table 4-1: Continued

	N	Percentage
Experience		
1 Year	11	8.8
2 Years	23	18.4
3 Years	16	12.8
4 Years	13	10.4
5 Years	4	3.2
>5 Years	58	46.4
Total	125	100
Job Title		
Buyer/Procurement/Operations Specialist	24	19.2
Manager	57	45.6
Business Analyst	9	7.2
Director	4	3.2
Other	31	24.8
Total	125	100

Table 4-1 provides demographic information regarding the participants. A large proportion of the practitioner sample was fairly young, (around 61.2% of my sample was between the age group of 18-34). The sample included more male than female individuals with males representing 65.6% and females representing 34.4% of the sample. Moreover, a large proportion of the sample, i.e., 46.4% had over 5 years of work experience.

4.9 Manipulation Check

A manipulation check informs the researcher whether the desired state of mind was created for each respondent. To examine whether the desired state of mind was created two manipulation check questions were asked at the end of the study (see Appendix-C). One manipulation check asked respondents to identify the type of individual (i.e., as one who possesses low or high socioemotional wealth respectively) described in the study, and the other manipulation check asked the participants to identify the variability in pay (i.e.,

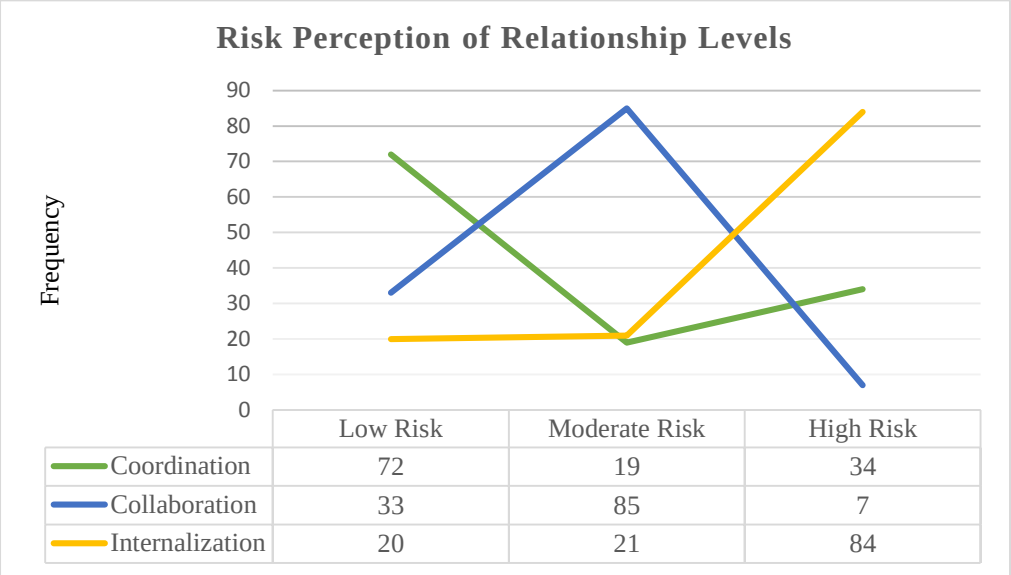
low or high) described in the scenario. A chi-square test comparing the observed and expected values for socioemotional wealth and variability in pay respectively was insignificant with $p>0.10$ indicating that the manipulations created the desired state of mind with the individuals.

4.10 Risk Profile

I posited based on the extant literature, that internalization is the riskiest while coordination is the least risky type of interfirm relationship. Collaboration, I argue lies in-between coordination and internalization in terms risk associated with it for a SCE.

The perception of risk is context specific (Dowling, 1986), and I determined whether the risk profile of the different levels of interfirm relationships, given a scenario, matched my theoretical conceptualization about the risk involved different levels of SCI. I developed a risk profile for the outcome variable based on the sample of 125 observations from practitioners. From Figure 4-2 it is evident that my conceptualization of the risk profile for different levels of SCI matched the perceptions of individuals participating in my study.

Figure 4-2: Risk Profile



It is evident that a large majority of the population (67.2%) interpreted internalization as the most risky choice among the three levels of SCI. Similarly, a large proportion of the sample population selected coordination (57.6%) as the least risky option among collaboration and internalization while 67.2% chose collaboration in between coordination and internalization in terms of risk.

4.11 Control Variables

For this study, I identified several variables that potentially can confound my results, and controlled for them. For example factors such as product type (i.e., strategic or commodity) (Vanpoucke et al., 2014), relationship duration (Ring & Van de Ven, 1994), and firm size (Koufteros et al., 2007) can influence the relationships developed by firms. These variables were implicitly controlled for in this study by describing them in

the common script presented to each participant, within their respective scenario. Certain individual level factors such as gender, financial and social risk attitudes of participants (Bearden & Netemeyer, 1999) were explicitly measured and controlled for in this study.

4.12 Analysis and Results

4.12.1 Ordered Logistic Regression

Logit models have been widely used to examine managerial decision making under different circumstances. The ordinal nature of the dependent variable (i.e., coordination, collaboration, and internalization) in my study guided me to use ordered logistic regression (Ologit) for the analysis. Although I tried to balance the distribution of scenarios, and since the distribution was randomly carried using the software, Qualtrics, I ended up with slightly unbalanced cell counts. Logit models come under the class of generalized linear models (GLM) and are acceptable for analyzing unbalanced data (Jaeger, 2008). The Ologit model used here examines the impact of variability-in-pay, socioemotional wealth, and their interaction after controlling for gender, financial performance of the firm in the scenario, and social and financial risk taking attitudes of the participants. I control for the inherent risk taking attitudes of individuals by controlling for their social and financial risk taking attitudes. The model is specified as follows:

$$\text{Logit}(p(Y))=\alpha+\beta1(\text{socioemotional wealth})+\beta2(\text{variability in pay}) + \beta3(\text{socioemotional wealth}*\text{variability in pay})+ \text{gender} + \text{firm performance}+ \text{social risk taking attitude}+ \text{financial risk taking attitude}+ e \quad \text{----- (1)}$$

The dependent variable (*Y*) captures the specific level of SCI that a participant decides to pursue with the customer in a respective scenario. It assumed values of '1', '2', or '3' depending upon whether the participant is willing to coordinate, collaborate or internalize. The variable socioemotional wealth is a binary measure that represents the level of socioemotional wealth. The socioemotional wealth variable received a value of '0' for low socioemotional wealth, and '1' for high socioemotional wealth scenarios. Variability in pay is also a binary measure that captures whether the participant in a scenario experienced low (0) or high variability (1) in pay. The *firm performance* of the organization was embedded in the scenario and was captured using a binary measure while the respondent social and financial risk taking attitudes were captured on a seven point Likert scale.

I used the ordered logistic regression method via SPSS 21 to analyze the practitioners' data. Since Ologit bases its calculations on the ordinal nature of the data, the results are the same for any monotonic transformation of the original dependent variable. In order to evaluate the model, I first examined for model fitting information using a Log likelihood ratio test. A significant Log Likelihood ratio test indicates that the full model is significantly better than the base intercept only model. Furthermore, it is necessary to check for the proportional odds assumption in the model. The proportional odds assumption implies that the odds of moving from one level to another in the dependent variable does not vary. This assumption is tested using the test for parallel lines. In the test of parallel lines, I do not wish to reject the null hypotheses which suggests that the odds of moving from one level to another in the dependent variable is not different.

4.12.2 Ordinal Logistic Regression Results

Based on the analysis I find that the model is well fitting (χ^2=15.748, p<0.05, *see* Table 4-2). I find evidence to suggest that the model is significantly better than the base intercept only model. I obtain a Nagelkerke R-Square value of 0.140. This suggest that the variables in the model explain 14% of the variance of the dependent variable, SCI. Table 4-3 provides the results for the test of proportional odds assumption in the model. I find that the Log Likelihood Ratio test is insignificant (χ^2=5.029, p>.10). This suggests that the odds do not change across groups and thus it is appropriate to use the Ologit model. The results for the Ologit model are provided on Table 4-4.

Table 4-2: Model Fitting Information

Study	Model	-2Log Likelihood	Chi-Square	Sig.	Nagelkerke R-Square
Overall Sample	Null Hypotheses	225.055			
			15.748	0.025	0.140
	General	209.307			
Post-Hoc: Low Age	Null Hypotheses	148.982			
			19.355	0.007	0.255
	General	129.627			
Post-Hoc: High Age	Null Hypotheses	79.813			
			13.340	0.064	0.304
	General	66.474			

Table 4-3: Test of Parallel Lines

Study	Model	-2Log Likelihood	Chi-Square	Sig.
Overall Sample	Null Hypotheses	209.307		
			5.029	0.656
	General	204.278		
Post-Hoc: Low Age	Null Hypotheses	129.627		
			4.520	0.718
	General	125.107		
Post-Hoc: High Age	Null Hypotheses	66.474		
			9.724	0.205
	General	56.750		

Table 4-4: Ordinal Regression Results

		Study: Overall Sample	Post-Hoc: Low Age	Post-Hoc: High Age
	Thresholds	1.382	2.032	0.532
		4.541	5.324	4.495
Main Effects				
Socioemotional Wealth	Low vs. High	-0.548	**-1.704***	**2.255***
Variability in Pay	Low vs. High	**-1.228***	**-2.098***	-0.117
Interaction Effect				
Socioemotional Wealth **x** Variability in Pay	Low vs. High	0.619	**1.874**†	-1.821
Controls				
Gender	Female vs. Male	0.430	0.962†	-0.983
Financial Performance		0.443**	0.538**	0.458
Financial Risk Attitude		0 .192†	0.071	0.593**
Social Risk Attitude		0.119	0.137	0.145

Notes: † $p<0.1$. $^{*}p<0.05$. $^{**}p<0.01$

The first hypothesis predicts that individuals who experience variability in pay are more risk seeking than individuals who do not experience variability-in-pay, and therefore

they are more likely to seek internalization. A negative beta implies that there is a higher chance for moving to a higher value of the dependent variable for a unit increase in the independent variable. From Table 4-4, I observe that an increase in variability-in-pay will result in a higher probability of internalization (β= -1.228, $p<.05$). However I do not find support for hypothesis 2 (β= -0.548, $p>.10$) and Hypothesis 3 (β= 0.649, $p>0.10$). This seems to suggest that socioemotional wealth does not have any effect on executive decision making in the context of interfirm relationships.

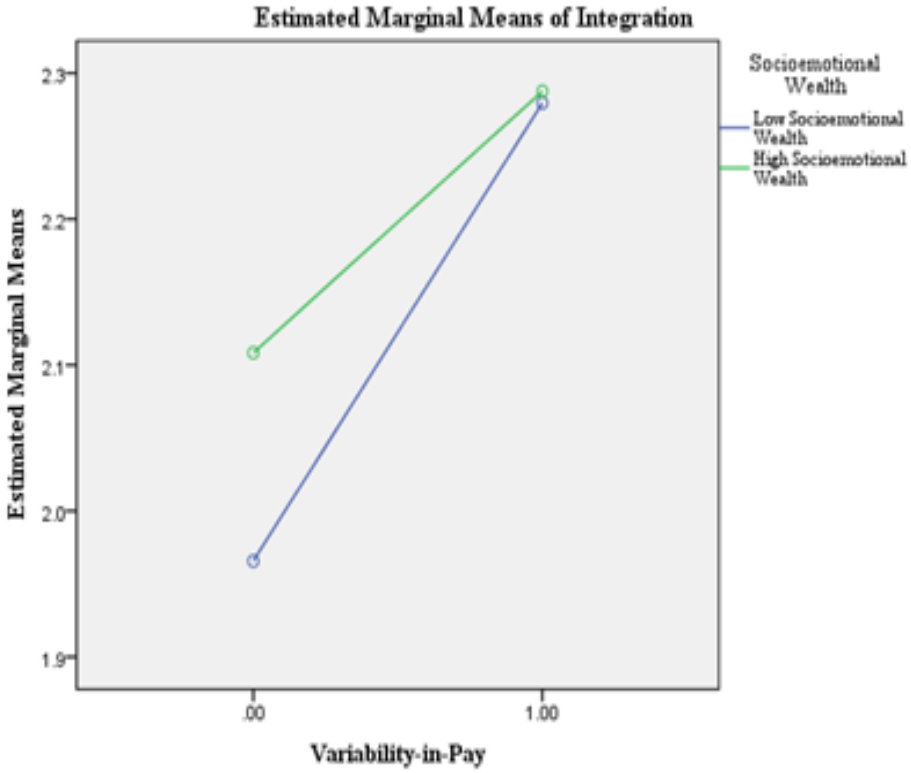
4.12.3 Robustness Check- ANCOVA

An ANCOVA analysis was conducted by using the sample of **125** observations. Table 4-5 provides the ANCOVA analysis results for the effect of socioemotional wealth, variability in pay and their interaction effects on SCI after taking the covariates into consideration. In the analysis I find that consistent with the Ologit analysis, only the main effect of variability in pay had a significant impact on executive decision making.

In order to better interpret the ANCOVA results, I plotted variability in pay and socioemotional wealth against the outcome variable of SCI. From Figure 4-3, I find that at low variability in pay individuals with high socioemotional wealth have marginally higher values of integration than individuals who have low levels of socioemotional wealth. However, there is clearly no difference in the values of SCI for individuals who experience high variability in pay and high socioemotional wealth with individuals who experience high variability in pay and have low socioemotional wealth. Furthermore, the slopes for variability in pay and SCI are not markedly different among individuals with low and high socioemotional wealth. Figure 4-3 also suggests that there is a significant

increase in the values of SCI for individuals who experience high variability in pay from individuals who experience low variability in pay among individuals who experience either high or low socioemotional wealth.

Figure 4-3: Overall Sample ANCOVA Plot



These results suggest that as the variability in pay increases, there is an increase in the value of the outcome variable, SCI. This is indicative of the shift towards risk taking behavior among SCEs as the variability in pay increases. Collectively interpreting the ANCOVA results from Table 4-5 and Figure 4-3, there seems to be an insignificant effect

of socioemotional wealth on SCI and the interaction effect does not appear to be significant. However, the variability in pay appears to have a significant effect on the SCI.

Table 4-5: ANCOVA Results

DV=SCI	Study: Overall Sample		Post-Hoc: Low Age		Post-Hoc: High Age	
	F-statistic	Sig.	F-statistic	Sig.	F-statistic	Sig.
Corrected Model	2.168	0.042	2.795	0.013	1.771	0.122
Intercept	9.664	0.002	4.173	0.045	5.140	0.029
Socioemotional Wealth	.464	0.497	1.836	0.180	**3.149**	**0.084**
Variability in Pay	**3.740**	**0.056**	**3.919**	**0.052**	0.768	0.386
Socioemotional Wealth x Variability in Pay	0.373	0.542	**3.115**	**0.082**	1.353	0.252
Gender	1.198	0.276	3.842	0.054	1.500	0.228
Financial Performance	7.264	0.008	7.240	0.009	1.314	0.259
Financial Risk Attitude	3.348	0.070	0.339	0.562	8.236	0.007
Social Risk Attitude	0.604	0.439	0.495	0.484	0.341	0.563
R-Square	0.115		0.216		0.246	

4.13 Post-Hoc Analysis

The results of this study were not as predicted or suggested in the study with students (*see* Table C-4 in Appendix-C). Further, studies have demonstrated that age should attenuate the effect of incentives by reducing the negativity bias associated with incentive framing (Mather & Carstensen, 2005; Vroom & Pahl, 1971). In order to further examine the cause of the discrepancy in results I conducted post-hoc analysis by splitting the sample with practitioners into two groups, low age group (i.e., age $\leq$ 34) and high age group (age>34), and subsequently performed Ologit and ANCOVA analysis. The low age group had 79 observations while the high age group had 46 observations.

4.13.1 Ordinal Logistic Regression

Based on the analysis for the low age group, I find that the model fit is acceptable (χ^2=19.355, p<0.05, see Table 4-2), and I also find evidence to suggest that the model is significantly better than the base intercept only model. I obtained a Nagelkerke R-Square value of 0.255. This suggest that the variables in the model explain 25.5% of the variance of the dependent variable, SCI. Table 4-3 provides the results for the test of proportional odds assumption in the model. I find that the Log Likelihood Ratio test is insignificant (χ^2=4.520, p>.10). This indicates that the odds do not change across groups and thus it is appropriate to use the Ologit model. The results of the Ologit model with the low age group and high age group are presented in Table 4-4. Hypotheses 1 (β= -1.704, p<.05), 2 (β= -2.098, p<.05), and 3 (β= 1.874, p<.05) were supported in the context of the low age group sample. Similarly, I conducted the analysis for the high age group and found that the model fit is also acceptable (χ^2=13.340, p<0.10, see Table 4-2). Here, I obtained a Nagelkerke R-Square value of 0.304. This suggest that the variables in the model explain 30.4% of the variance of the dependent variable, SCI. Table 4-3 provides the results for the test of proportional odds assumption in the model. I find that the Log Likelihood Ratio test is insignificant (χ^2=9.724, p>.10). This indicates that the odds do not change across groups and thus it is appropriate to use the Ologit model. The results of the Ologit with the high age group are presented in Table 4-4. For this sample, I find that only socioemotional wealth was a significant predictor of executive decision making with respect to inter-firm relationships (β= 2.255, p<.05). The sign of the coefficient for socioemotional wealth in the high age group sample was the opposite of what was obtained

in the low age group sample and the a priori prediction. This indicates that older individuals react differently to socioemotional wealth. In this case, older individuals were willing to take less risk even if they had high socioemotional wealth.

4.13.2 Robustness Check- ANCOVA

ANCOVA analysis was performed for the low age and the high age groups as a part of the post-hoc analysis. Table 4-5 provides the ANCOVA analysis results for the effect of socioemotional wealth, variability in pay, and their interaction effect on SCI for both the groups. For the low age group, I find that the main effect of variability in pay ($F = 3.919$, $p<.05$) and the interaction of variability in pay and socioemotional wealth ($F = 3.115$, $p<.10$) are significant. However, I do not find evidence to support the main effect of socioemotional wealth. On the other hand when I examine the results of the high age group, I find that the main effect of socioemotional wealth is significant ($F= 3.149$, $p<.10$) while the main effect of variability in pay and the interaction term are not significant. The ANCOVA analysis results are consistent with the Ologit analysis with the exception of socioemotional wealth, which was insignificant in the low age group while using ANCOVA but significant when examined using Ologit.

Figure 4-4: Low Age Group ANCOVA Plot

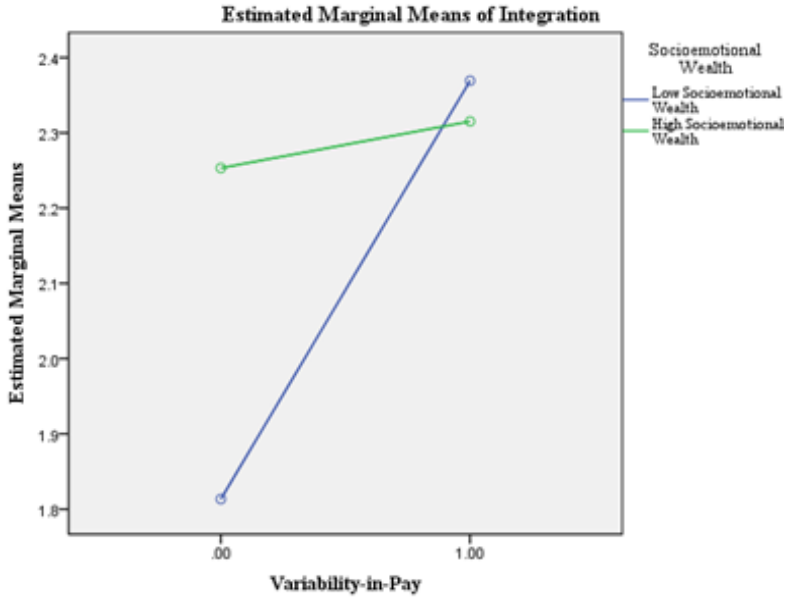
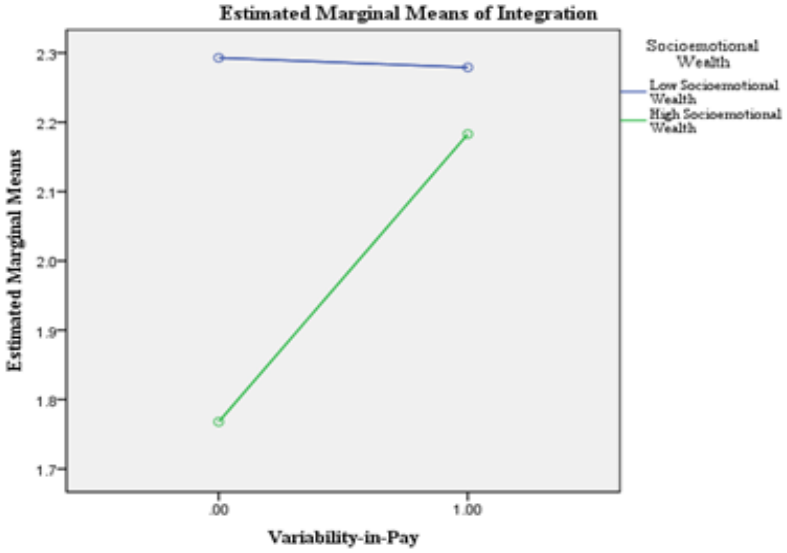


Figure 4-5: High Age Group ANCOVA Plot



In order to better interpret the ANCOVA results, I plotted variability in pay and socioemotional wealth against the outcome variable SCI. From Figure 4-4, for the low age

group sample, for individuals with low variability in pay there seems to be a marked increase in the value of integration for the high socioemotional wealth individuals compared to the low socioemotional wealth individuals. In addition, for both the high and low socioemotional group of individuals, variability in pay seems to have a positive effect. However, the slope relating variability in pay and SCI seems to be steeper for low socioemotional wealth than for high socioemotional wealth group individuals. Figure 4-4 also reveals that individuals with high socioemotional wealth and high variability in pay seem to opt higher levels of SCI than individuals possessing high socioemotional wealth and do not experience variability in pay. Furthermore, I find from Figure 4-4 that individuals possessing high socioemotional wealth and experiencing high variability in pay are likely to opt lower levels of SCI than individuals with low socioemotional wealth and experiencing high variability in pay. Collectively interpreting the ANCOVA results from the Table 4-5 and the Figure 4-4, I find that high variability in pay significantly increases the possibility of executives opting for SCI. However with regards to socioemotional wealth it appears that high socioemotional wealth increases the probability of executives opting for high SCI from Figure 4-4, but the ANCOVA results from Table 4-5 suggests that this increase is not significant. Figure 4- 4 and Table 4-5 also suggest that interaction effect between socioemotional wealth and variability in pay is significant.

Examining the plot for the high age group sample in Figure 4-5, among individuals who experience low variability in pay, I clearly see a marked decrease in the value of SCI for individuals with high socioemotional wealth compared those with low socioemotional wealth. Furthermore, individuals with low socioemotional wealth

experiencing high variability in pay do not seem to differ in their choice SCI level pursued from those individuals with low socioemotional wealth experiencing low variability in pay. The level of SCI pursued by individuals who experience high variability in pay and have high socioemotional wealth is higher than what is pursued by individuals who do not experience variability in pay but possess high socioemotional wealth. This is reflected by the positive slope relating variability in pay and SCI for high socioemotional wealth individuals. Furthermore, the level of SCI opted for by individuals with low socioemotional wealth and experiencing high variability in pay is higher than what is pursued by individuals with high socioemotional wealth experiencing high variability in pay. Collectively interpreting the ANCOVA results from Table 4-5 and Figure 4-5 suggest that high variability in pay does not significantly influence the possibility of executives opting for high levels of SCI, and socioemotional wealth seems to decrease the probability of executives opting for SCI. Figure 4-5 and Table 4-5 further suggest that interaction effect between socioemotional wealth and variability in pay is not significant.

4.14 General Discussion

I use two theoretical models, BAM and BAIM, to examine how managers make decisions with respect to inter-firm relationships. BAM predicts that, *ceteris paribus,* individuals who experience high variability-in-pay will be more risk seeking than individuals who experience low variability-in-pay. Thus, individuals with high variability-in-pay are more likely to seek internalization as a form of their relationship with their customers. Similarly, BAIM suggests that individuals with higher socioemotional wealth will exhibit more risk seeking behavior, as opposed to individuals with lower

socioemotional wealth, and thus they are more likely to internalize. However, I argue that considering these factors independently does not provide a holistic perspective on strategic decision making. Thus, I combined the perspectives of BAM and BAIM and examined the interaction effect of variability in pay and socioemotional wealth on executive decision making in the context of interfirm relationships.

To test the hypotheses, I conducted an experiment with supply chain practitioners to investigate executive decision making. However, I had also administered the experiment to business students prior to administering it to practitioners. The experiment offers us the potential to isolate the effects of interest, in this case the impact of variability in pay and socioemotional wealth on executive decision making. The experiment was set up as a fully crossed 2x2 traditional design. The results from the practitioner based sample supported only the hypothesis related to variability in pay. This result was only partially predicted by the theory, and partially supported by the results from student based data (*see* Table C-4 in Appendix-C). An in-depth examination of the results based on splitting the practitioner sample by *age* yielded interesting results. The results from the low age group sample were consistent with the results obtained based on student sample (*compare* Table-4 with Table C-4 in Appendix-C) and supported all the hypotheses in the study. The results from the high age group sample indicated that socioemotional wealth was the only significant predictor of executive decision making in the context of interfirm relationships. These results suggest that age attenuates the negativity bias associated with variability in pay. The results are also consistent with the recent findings that age diminishes negativity bias (Goldsmith & Dhar, 2013) .Furthermore, I find that socioemotional wealth, among

the high age group, had the opposite effect to what was anticipated. Older individuals with socioemotional wealth were risk averse while younger individuals with the same socioemotional wealth were risk seeking by opting for lower levels of SCI and high levels of SCI respectively.

4.15 Conclusion

In today's competitive environment firms are increasingly relying on other firms in their supply chain to develop distinctive competitive advantage (Dyer & Singh, 1998). Firms try to engage in relationships with their supply chain partners, where these progressively become strategic. Yet, there has been limited research regarding how SCEs make strategic decisions in the context of interfirm relationships. Agency theorists have long argued that the interests of individual decision makers within organizations should be aligned with those of the firm (Eisenhardt, 1989). Several incentive mechanisms have been developed to align the interests of the firm and the individual (Wiseman & Gomez-Mejia, 1998). Variability in pay contingent on firm performance is one such prominent incentive alignment mechanism (Wiseman & Gomez-Mejia, 1998). Jensen and Murphy (1999) suggest that it is not how much you pay, but how. They find that incentive mechanisms through variability in pay did not have the desired effects on individual decision makers. Compensation contracts often fail to consider the personal attributes of individuals while trying to align the interest of the decision maker with that of the firm (Tosi et al., 1997). I extend Jensen and Murphy's (1990) argument in this article to suggest that is not sufficient to consider how much you pay, and how you pay, but it is necessary to consider to whom you are paying. This study addresses the recent call in the

compensation literature that suggests "executive compensation does not reside in a vacuum" (Gomez-Mejia & Wiseman, 1998, p.350). Further, the strategic decisions of executives within organizations are influenced by executives' cognitions, perceptions and values. Towards this end, this study is one of the first to consider the socioemotional wealth of an individual while simultaneously examining the compensation mechanism in strategic decision making within the context of SCI.

This research contributes to the SCI literature and practice. A recent study by Villena et al. (2011), using a survey of managers, suggests that as the variability in pay increases managers are more likely to seek supply chain integration. The Ologit results based on the overall practitioner sample suggests that increasing variability in pay increases an executive's inclination to achieve high levels of SCI. With the overall sample I did not find that socioemotional wealth or the interaction between socioemotional wealth and variability in pay to be significant predictor of executive decision making in terms of SCI. The results were not as predicted by BAM and BAIM, or consistent with the results obtained from the student sample which matched the predictions. Moreover, theory also suggests that age can diminish the effect of incentives by reducing negativity bias associate with incentive framing. This prompted us to conduct a post-hoc analysis. The post-hoc analysis of the practitioner sample suggested that variability in pay increases an executive's inclination to integrate but only among young individuals. I found that variability in pay was not an effective means to align the interest of older individuals with the firm. In addition to the difference in the impact of variability in pay between the young and old individuals on SCI, I find that young individuals possessing higher socioemotional

wealth are more likely to seek internalization, which is riskier than coordination and collaboration. However, with older individuals, socioemotional wealth seems to enhance the risk averse behavior of individuals and thereby prompting them to opt low levels of SCI. The findings with respect to the young practitioners were comparable to the results obtained from the student sample (compare results from Table 4-4 and Table C-4 in Appendix-C). This similarity renders greater credibility to the findings through triangulation. While organizations seek to employ SCI as a means to achieve competitive advantage, organizations need to realize that the incentives for SCEs need to be structured by considering taking the cognitive biases, perceptions and values of an SCE into consideration.

Furthermore, studies have shown that the effect of incentives on risk seeking behavior can diminish with age (Goldsmith & Dhar, 2013). For instance, among young adults extreme negative images produced greater brain activation compared to equally positive images whereas among older adults this effect was not observed (Ito, Larsen, Smith, & Cacioppo, 1998). This suggests that younger were more sensitive to negatives while older adults were not. Along similar lines, studies have shown that attention to negative events reduces with age, (Isaacowitz, Wadlinger, Goren, & Wilson, 2006), but not so for positive events (Kennedy, Mather, & Carstensen, 2004). In my study, I find that age can impact how executives perceive variability in pay, and the emphasis that they give to negative outcomes associated variability in pay, which influences their overall decision to engage in SCI.

Another contribution of this study is examining inter-firm relationships by considering them at different levels of a larger construct, SCI. Much of the extant literature on inter-firm relationships has primarily sought to describe SCI using a single level construct. However, a better understanding of the different nuances in inter-firm relationships provides greater insights into understanding the phenomenon. Particularly in this study, coordination, collaboration, and internalization are all perceived at different levels of risk and benefits associated with them. Understanding the role of variability in pay and socioemotional wealth under this conceptualization of SCI provides useful insights to devise appropriate incentive mechanisms for executives to engage in SCI.

This study has some limitations, but they present opportunities for future research. Generalizability is still a major concern in experimental studies, and mine is no exception. Survey studies that capture the socioemotional wealth and variability-in-pay of supply chain executives and their decision making will render more credibility into my findings. Furthermore, in light of the recent findings, compensation scholars can examine the impact of different incentive mechanisms to align the interest of executives with their firms. Also, supply chain scholars can incorporate the cognitive factors such as socioemotional wealth of executives while examining game theoretical models. Another potential direction for future research is to examine the role of socioemotional wealth and variability-in-pay in other contexts such as inventory management.

CHAPTER V

OVERALL SUMMARY AND CONCLUSION

5.1 Introduction

Supply chain integration (SCI) is perceived to be a panacea that can be deployed to resolve several supply chain challenges. A plethora of studies have examined SCI over the last two decades, and yet I demonstrate through this dissertation that there is a lot to be accomplished in terms of understanding the phenomenon. I contribute to the SCI literature via three related and yet distinct studies. All the three studies were guided by one broad question: how to effectively manage and achieve supply chain integration. In the process of answering this broad research question, I identified three potential gaps in the extant SCI literature that were addressed with this dissertation. I used an array of different methods ranging from qualitative, survey and experimental research to adequately respond to the research questions. However, I conclude on the note that I have taken a small step towards understanding SCI while a considerable amount of future research is still desired in the area of SCI. I provide a brief summary for my studies and reiterate some conclusions and directions for future research presented earlier in the respective chapters, and subsequently provide a more holistic perspective based on all three studies.

5.2 Study-1

5.2.1 Summary

My first research question pertains to the examination of the distinct behaviors exhibited by firms engaging in SCI. In order to address this research question, I employ a grounded theory (GT) methodology to analyze data obtained from several interviews across multiple firms. Based on this work, I provide a stipulative definition of SCI and identify the idiosyncratic characteristics associated with SCI. This work suggests that firms engaging in SCI widely exhibit a set of six behavioral patterns, which vary in degree. The six behavioral patterns are identified as monitoring, relational investments, knowledge sharing, joint activities, vision sharing, and adaptability in relationships. Based on the degree of specific behavioral combinations, I conjecture that SCI exists at three different levels which include coordination, collaboration, and internalization. Among the three levels of SCI, coordination is the most rudimentary form while internalization is coined as the most evolved form of SCI. Collaboration is invariably perceived as standing in between the other two forms. I also found that companies progress from coordination to internalization through collaboration. This research endeavor specifically sheds light on the different attributes or behaviors exhibited by firms at each level of SCI. I conjecture that if firms would like to achieve high levels of SCI, they would have to achieve high levels of internalization, which implies that firms have to exhibit characteristics that go above and beyond of what they do at their coordination or collaboration levels.

5.2.2 Conclusion and Directions for Future Research

The theoretical framework I posit can be used to drive measurement instruments for subsequent studies on SCI. Proposing a framework for SCI enables additive empirical research by theoretically delineating its levels and their respective idiosyncratic nuances while drawing the differences between the concepts of SCI, coordination, and collaboration. This research also contributes to practice. Several organizations from different industries were purposefully selected to be representative units in my study in order to make the findings as generalizable as possible. My research presents a broad set of characteristics that are exhibited by firms at different levels of SCI. This provides managerial insights by specifying the diverse practices that firms engage in while pursuing coordination, collaboration, and internalization. Furthermore, this research also suggests engaging in activities that develop trust and commitment in followers can have a significant impact in the evolution of SCI from coordination to internalization. Managers need to focus on trust and commitment building initiatives among supply chain partners.

This study only captures ongoing relationships at the time of my research. It does not seek to examine the factors that contribute to the demise of an ongoing relationship, neither does it track the process of termination. For instance, internalized relationships can decline through collaboration, and coordination before being terminated, or can directly decline from internalization to coordination, or seize to exist all together. Understanding the effective 'relationship reversal process' can provide meaningful insights to practitioners to reduce their loss in the event of SCI failure.

Through this research I came to the conclusion that relationships do not necessarily evolve from one level to the next in a set time interval that is common across firms or industries. Similarly, a firm might transition from coordination to collaboration much faster, as compared to the time it takes for firms to progress from collaboration to internalization. Also, I noticed that certain firms achieve internalization (moving from collaboration) faster than others. How and what causes such differences in transition is not adequately captured in this study and should be addressed in future research. This is a critical issue for academic research as several studies employ "relationship duration" as a proxy for the strength of relationship (Bolton, 1998) and this might not be apposite given that I found that duration of the relationship does not always explain SCI levels. Some companies evolve from coordination all the way to internalization in a year while others may take 12-15 years.

Based on my interviews I acknowledge the critical role that trust plays in the evolution of SCI. Future research should attempt to address the exact nature of trust (i.e., contractual, competence, and goodwill) that is salient at different levels of SCI. Also scholars should examine the role of different types of organizational cultures (e.g., the competing values framework proposed by Cameron and Quinn (2011) in the evolution of SCI. For instance, Cameron and Quinn (2011) propose four types of organizational cultures (i.e., clan, adhocracy, market, and hierarchy) that "differentiate an orientation toward flexibility, discretion, and dynamism from an orientation toward stability, order, and control" (Kessler, 2013, p. 123). Ascertaining the most effective type of

organizational culture for successfully engaging in SCI can prove to be useful to practitioners.

Future research on SCI should seek to conduct longitudinal and in-depth case-studies by tracking specific relationships over time in order to ascertain the evolution of SCI more systematically.

5.3 Study-2

5.3.1 Summary

In the second study I develop a theoretical framework that examines the relationship between leadership behavior styles and SCI and test it via survey-based approach that included the collection of data from several industries. I draw upon the Transformational Leadership Theory (TLT) and the Social Exchange Theory (SET) to propose that the level of SCI a supplier is willing to pursue with its customer rests on the type of commitment (affective or continuance) the supplier has for its customer, which is dependent on the level of trust the supplier holds for its customer. In turn, I posit that the level of trust is subject to the type of customer leadership behavior (transformational or transactional). In other words, I postulate a mediational model. I employ structural equations modeling (SEM) to analyze data obtained from 207 firms via survey methodology. My results suggest that the customer's transformational leadership behavior appears to positively influence trust which impacts affective commitment. Affective commitment is found to engender high levels of SCI. Furthermore, no statistical evidence was found to suggest that transactional leadership behaviors positively influence trust. I also find that continuance commitment is positively related to SCI, which is opposite to

the hypothesized relationship. A plausible explanation for this finding is that suppliers with continuance commitment might engage in some degree of SCI to salvage some benefit from their existing relationship with customers.

5.3.2 Conclusion and Directions for Future Research

Stock, Boyer, and Harmon (2010) note that "researchers examined channel captains in traditional and vertically integrated distribution systems, but supply chain management (SCM) researchers have yet to apply that knowledge to managing the supply chain" (p.39). They call for research on supply chain leadership. Harland, Caldwell, Powell, and Zheng (2007) find that customer leadership can have a significant positive impact on supply chain information integration. They also call for further research to examine the leadership styles that specifically enhance SCI. My study empirically demonstrates the role that leadership behavior style plays in achieving high levels of SCI, and finds that transformational leadership is an effective way undertaken by customers to develop high levels SCI. My findings are partially corroborated by Hult et al. (2000) who find that transformational leadership can positively influence relationship commitment of exchange partners.

Customers exhibiting transformational leadership are sensitive to suppliers' needs and contributions, and engage with suppliers in ways that develop self-worth and self-belief, which are crucial as they engender trust and affective commitment. Most customers continuously strive to gain the commitment of their suppliers. My research clearly demonstrates the leadership path by which customers can achieve high levels of commitment from their suppliers and thereby elicit high levels of SCI.

Using contingent rewards is a widely advocated practice within organizations and in supply chains but my study demonstrates that contingent reward behavior did not have a significant impact in the development of trust in suppliers. However, this result should be interpreted with caution. The relationship between customers' contingent reward behaviors and trust can be fully mediated by suppliers' perception of customers' intrinsic motives (Dirks & Ferrin, 2002). Additional studies are required to understand the exact nature of relationship between customers' contingent reward behaviors on inducing suppliers' trust.

MacKenzie, Podsakoff, and Rich (2001) suggest that effective leaders tend to exhibit both transformational and transactional leadership behaviors. For example, it is possible for a customer to provide individualized consideration to its suppliers, and at the same time reward them for specific tasks accomplished. In my study, both leadership behaviors were examined in isolation of each other. It is however possible that customers can exhibit both transactional and transformational leadership behaviors simultaneously and therefore the interaction effect between them needs to be accounted in future research.

While this research makes significant contributions, caution should be taken in interpreting the results. The influence of customer leadership behavior on suppliers can be contingent on several external factors such as the environmental uncertainty, supplier concentration, and power disposition (Yukl, 2010). Future studies should examine the role of customer leadership behaviors in the realm of other constraining or enabling factors of leadership (Bass & Bass, 2009). Antonakis, Avolio, and Sivasubramaniam (2003) suggest that transformational leadership can be context specific. Certain transformational

leadership behaviors might be more effective than others contingent upon the context in which they are being operated (Schriesheim, Wu, & Scandura, 2009). Future research can focus on identifying the effectiveness of specific transformational leadership behaviors (e.g., individualized consideration) under different contexts e.g., at high and low environmental uncertainty.

Although this study did not consider the role of leadership within supplier firms, it can have a significant impact in the development of SCI (Defee et al., 2010). Carpenter et al. (2004) suggest that organizational behaviors are a mirror of its leadership, and to gain a better understanding of customer leadership behaviors' effectiveness in achieving SCI, supplier firms' leadership behaviors should also be closely examined.

5.4 Study-3

5.4.1 Summary

In the third study I argue that SCI exists at three different levels (i.e., coordination, collaboration, and internalization) and suggest that internalization appears to evoke or reflect the highest level of risk for decision makers, while it is also credited with the greatest returns. On the other hand, I posit that coordination entails the lowest level of risk while yielding however the lowest levels of returns. I employ two behavioral theories, i.e., Behavioral Agency Model (BAM) and Behavioral Approach and Inhibition Model (BAIM), in order to frame the research question regarding SCEs decision making behavior. I synthesize the two theories, and specify two variables (i.e., Variability in Pay and Socioemotional Wealth) as potential explanatory variables of SCE decision making. Using the theoretical tenets of BAM and BAIM, I postulate that variability in pay and

socioemotional wealth impact behavior in specific directions respectively and collectively when decision making involves risk. I test my theoretical model using a 2x2 between-subjects experimental design where socioemotional wealth and variability-in-pay are each varied at two levels (i.e., low & high). I examine the theoretical model in light of multiple studies (i.e., with business students and practitioners) while accounting for several control variables. The study was piloted for calibration purposes with roughly 400 undergraduate students in two different spells. The main findings reported in this study are based on 125 usable responses obtained from practitioners via Qualtrics. Based on the responses from supply chain management practitioners, I find evidence to suggest that only the main effect of variability in pay is positive and statistically significant. This suggests that individuals experiencing high levels of variability in pay are more likely to seek internalization. A post-hoc analysis, which involved splitting the sample by age (i.e., low & high) groups, yielded interesting findings as the results varied significantly between the two age groups. Among younger individuals, I find evidence to suggest that those with low socioemotional wealth and high variability in pay are more likely to seek high levels of SCI. Similarly, those with high socioemotional wealth and low variability in pay are also likely to opt for high levels of SCI. However, among the younger individuals, I find evidence to suggest that those possessing high socioemotional wealth and experiencing high variability in pay are less likely to pursue high levels of SCI. In older individuals, I find evidence to suggest that socioemotional wealth is the only salient variable but it exhibits a statistically significant negative impact on SCI. The results of the younger individuals matched with the results obtained earlier from the student sample.

5.4.2 Conclusion and Directions for Future Research

Clearly this study demonstrates that adequate incentives should be designed to achieve high levels of SCI. Adequate incentive mechanisms should also take into account the cognitions, perceptions and values of executives as they can also influence executive decisions (Carpenter et al., 2004). Furthermore, there is evidence to suggest that older adults do not respond effectively to variability in pay. My findings attest that older executives are willing to sacrifice performance to preserve their socioemotional wealth, as they do not engage in high levels of SCI.

My study's findings are consistent with some recent work on negativity bias. In this study I find that older adults are less responsive to variability in pay. This is consistent with the findings by Goldsmith and Dhar (2013) on negativity bias. Studies have articulated that young adults are more sensitive to extreme events (e.g., high variability in pay) whereas among older adults this effect was not observed (Ito et al., 1998). Along similar lines, studies have shown that attention to negative events diminishes with age (Isaacowitz et al., 2006), but not so for positive events (Kennedy et al., 2004). Several organizations use variability in pay as a mechanism to align the incentives of executives, without considering the personal interests of executives into consideration. Future research should determine ways to incorporate the cognitions and values of executives while devising alignment mechanisms. Further research is necessary to comprehend how the negative impact of socioemotional wealth on risky decision making (e.g., opting for high levels of SCI) can be mitigated.

This study also operationalized SCI at three different levels coordination, collaboration, and internalization, which proved to be effective in analyzing executive decision making. Koufteros et al. (2007) warn that "not all relationships with suppliers have to be close or collaborative" (p. 867). Future research can attempt to examine SCI at different levels to better understand their implications on performance by considering the circumstances under which one is preferred over the other. For instance, in the context of commodity products it might be more effective to merely engage in SCI at the coordination level, but not at the collaboration and internalization levels. Furthermore, some scholars argue that SCI improves performance under high environmental uncertainty (Peng et al., 2013), while others argue that it can deter performance (Villena et al., 2011). Under high environmental uncertainty it is possible that very high and very low levels of SCI can adversely impact performance, however pursuing SCI at the collaborating level might positively enhance firm performance. Future research should examine such possibilities.

5.5 Holistic Perspective

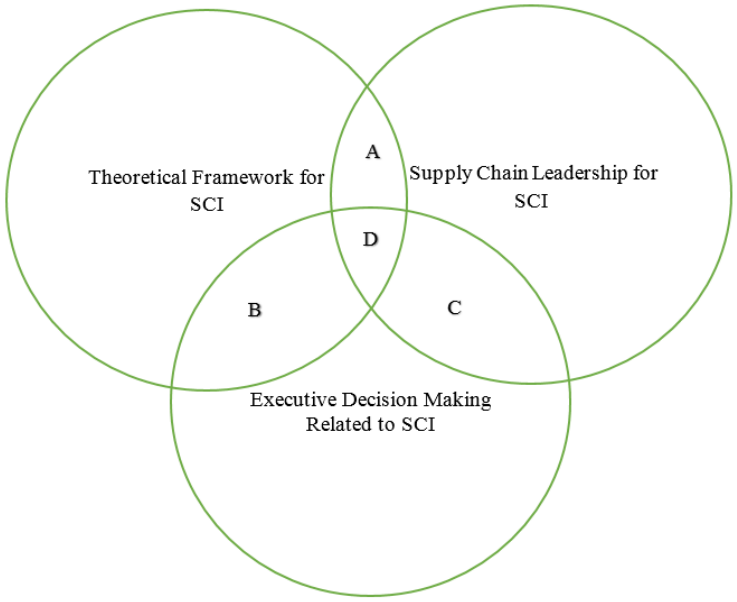
This section provides some insights into the implications of the three different, and yet interrelated studies on each other. Figure 5-1 indicates the areas of overlap among the three studies which are subsequently discussed.

5.5.1 Theoretical Framework for SCI and Supply Chain Leadership (A)

Study 2 demonstrates that transformational leadership behavior style has a significant far reaching impact on achieving high levels of SCI. However, based on my qualitative research (study 1), the influence of leadership on the behavior of supply chain

members was not immediately evident. SCI research can benefit from having a better understanding of how leadership behavior impacts the evolution from coordination to internalization. It is possible that during coordination, transactional leadership is more effective (i.e., as rules and norms of relationships are being shaped), and once firms go beyond coordination to collaboration and internalization transformational leadership is more effective (i.e., as firms at this level engage in shaping and developing their exchange partners). Understanding whether leadership behaviors suit specific levels of SCI can enhance the possibility of successfully achieving high levels of SCI. Lockstrom, Schadel, Moser, and Harrison (2011) also suggest that customer leadership behavior plays a vital role in attaining high levels of SCI.

Figure 5-1: Intersection across Studies



Both Studies 1 and 2 were conducted simultaneously. The survey instrument for SCI in Study 2 was primarily developed based on a comprehensive review of the extant literature while addressing some challenges that plagued SCI operationalization in the extant literature. However, reflecting upon the findings from the theoretical framework some calibration might be necessary in order to enhance the effectiveness of the measurement scales. For instance, the theoretical framework, suggests that monitoring behavior of supply chain partners differ along the different levels of SCI, however my refined instrument in Study 2 lacks a valid measure to capture monitoring behaviors. Future studies should undertake the endeavor to build on the existing scale for SCI from Study 2 and recalibrate it based on my theoretical framework in Study 1.

Furthermore, Study 1 identified several contextual variables (e.g., management acumen and culture) that were not considered in Study 2 as factors that can influence the evolution of SCI. Future research should consider such contextual variables while examining leadership behavior (Schriesheim et al., 2009).

5.5.2 Theoretical Framework for SCI and Executive Decision Making (B)

Study 3 establishes that executives' biases influence decisions regarding preferred levels of SCI. Specifically I find that variability in pay and socioemotional wealth had a differing impact on executives. However, Study 1 is restrictive in its understanding of the role of individuals within organizations. Executives within organizations can influence strategic decisions, and organizations can be seen as reflections of their top executives (Carpenter et al., 2004; Hambrick & Mason, 1984). Examining the role of individuals

within organizations in the context of SCI evolution may therefore be a fruitful research direction.

Ring and Van de Ven (1994) offered a cyclical perspective on the evolution of interfirm relationships on the basis of individual learning. They suggested that relationships evolve through an iterative process of negotiation, commitment, and execution of responsibilities agreed upon in the commitment phase. After each cycle, individuals assess the performance of the relationship and compare it with their expectations. After assessment, a new cycle is initiated for the same or new task or the relationship is terminated. The theoretical framework examines the organizational behaviors exhibited. However, it will be worthwhile to assess the role of individuals within organizations as proposed by Ring and Van de Ven (1994) in the development of SCI through coordination, collaboration, and internalization. Jap and Anderson (2007) also suggest that the three steps proposed by Ring and Van de Ven (1994) can be executed within different phases on interfirm relationship evolution.

5.5.3 Supply Chain Leadership and Executive Decision Making (C)

In the third study, I demonstrate that an executive's personal characteristics, such as variability in pay and socioemotional wealth, can influence *firm-level* decisions such as SCI. However, Study 3 does not take into consideration the leadership behaviors of their supply chain partners. A study by Korsgaard, Schweiger, and Sapienza (1995) suggests that the leadership behavior of customers can influence the decisions of exchange partners. Vroom and Yetton (1973) indicate that executive decision making can be perceived as a social process in which several interpersonal influence mechanisms such as leadership

style and power of other members involved in a relationship can impact executive decisions. My study on executive decision making was restrictive in scope and did not consider interpersonal influence factors (e.g., leadership style).

In the experimental study, which pertained to executive decision making, I find that among older adults socioemotional wealth had a negative impact on the willingness to engage in SCI. I recommend that future research should examine means to alleviate the negative impact of socioemotional wealth on SCI. As a direction to remedy this challenge, future research should examine the role of interpersonal influence mechanisms (e.g., leadership), within and between organizations, as a means to alleviate the adverse impact of socioemotional wealth on decision making with respect to SCI.

5.5.4 Theoretical Framework for SCI, Supply Chain Leadership, and Executive Decision Making (D)

SCI is a complex phenomenon. Several firms have attempted to attain high levels of SCI but have failed in the process. This dissertation is aimed at understanding how to effectively manage and achieve high levels of SCI. In the three studies that have examined SCI, it is evident that several factors such as customer leadership behavior style and executive personal interests within organizations can simultaneously impact SCI. To gain an in-depth understanding of SCI, future research should strive to consider all factors simultaneously in order to provide a comprehensive treatment. A systems dynamics approach to examining SCI may provide meaningful insights.

Through this dissertation I took a step towards a better understanding on how to effectively manage and achieve high levels of SCI. For this purpose, I employed different

methodologies, including qualitative, survey, and an experimental approaches. Although these studies provide meaningful insights, subsequent research should try to triangulate the findings by employing other suitable methods. For instance, I examined the impact of variability in pay and socioemotional wealth on executive decision making employing an experimental approach. However, survey studies can also be employed to capture the actual perception of socioemotional wealth and variability of pay of executives and to examine their decision making with respect to SCI.

This dissertation specifically focused on comprehending how to effectively manage and achieve SCI. However, future research should seek to understand the implications of achieving high levels of SCI in contexts such as supply chain risk management and sustainability, which are yet to be adequately explored.

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APPENDIX A

Table A-1: Semi-Structured Interview Protocol

	Questions Description
Questions regarding the obstacles and benefits of interfirm relationships	1. What are some of the most challenging aspects of managing interfirm relationships? 2. Do you perceive that relationships with certain firms change over time?
Questions pertaining to different levels of interfirm relationship	1. What are the different levels of an interfirm relationship? 2. What are the differentiating aspects among the different levels of an interfirm relationship? 3. How you relate the common aspects across different levels of an interfirm relationship? 4. Do firms transition from one level to another? How do firms transition among the different levels of an interfirm relationship? 5. What factors help in the transition from one level to another? 6. Why do firms transition among different levels/clusters in an interfirm relationship? 7. Can you please describe the progression of your relationship, since its inception, with a customer that is intertwined with your organization?

APPENDIX B

Definitions for Transformational and Transactional Leadership Behaviors

Leadership Behaviors	Definitions (Bass, 1985)
Charismatic/Inspirational Motivation	Communicates an appealing vision, instills pride, gains respect, and communicates expectations
Intellectual Stimulation	Behavior that increases follower awareness of problems and influences followers to view problems from a new perspective
Individualized Consideration	Providing support, encouragement, and coaching followers
Contingent Reward	Providing rewards for specific tasks accomplished
Management by Exception	Watches and searches for deviations in rules and standards, and takes corrective action

Definition for Relationship Commitment

Types of Relationship Commitment	Definition (Allen and Meyer, 1990)
Affective Commitment	Affective Commitment is associated with a sense of emotional attachment and involvement in the relationship
Continuance Commitment	Continuance Commitment is associated with the costs of leaving a particular relationship

Screeners Employed for the Supply Chain Leadership Study

1. In what sector do you work?

- Manufacturing (deals with making tangible or physical products. For example, making a dashboard is manufacturing) (1)
- Service (deals with providing an intangible or abstract experience. For example, consulting is a service) (3)

2. Do you work primarily in a Business-to-Business (B2B) or Business-to-Customer environment (B2C)?

- ❍ B2B
- ❍ B2C

3. How many people are employed in your organization?

- ❍ 0-100 (1)
- ❍ 100-500 (2)
- ❍ 500-1,000 (3)
- ❍ 1,000-5,000 (4)
- ❍ 5,000-10,000 (5)
- ❍ 10,000-20,000 (7)
- ❍ Greater than 20,000 (8)

4. What is your functional department?

- ❍ Supply Chain or Supply Chain Management (1)
- ❍ Marketing or Marketing and Sales (2)
- ❍ Sales or Sales Operations (3)
- ❍ Operations (4)
- ❍ Other (Please Specify) (5) _____

5. Do you have close interaction with customers or manage customer relationships?

- ❍ Yes (1)
- ❍ No (2)

6. How long have you been working in your company?

- ❍ 0-3 Years (1)
- ❍ 3-5 (3)
- ❍ Greater than 5 Years (4)

Correspondence Email

Dear XXXX

My name is XXXX and I am a PhD candidate at the Mays Business School, Texas A&M University. I am currently working on my doctoral dissertation in the domain of Supply Chain Management. I am reaching out to my fellow Aggies to help me complete my work which focuses on the relationship between leadership types and levels of integration with supply chain partners. I have prepared a survey to seek your input, and I am requesting for your participation. This study should take you no longer than 20-25 minutes to complete. I acknowledge that this is a relatively long survey and I apologize in advance for it. However, this is necessary in order to gain an in-depth understanding of inter-firm relationships within the supply chain context.

I understand that your time is very valuable, and I cannot adequately compensate for it. However, I will be providing you with a Starbucks gift card as a small token of appreciation for your valuable time and effort. Also, you are entitled to receive a free benchmark report upon the completion of my study. I am sure you will find the results of the benchmark report interesting and insightful. Please let me know if you can help me in this regard.

If you consent to participate in this study, please contact me at XXXX indicating your willingness to participate in this study. Once I receive your acceptance, I will send you a link to the survey along with the Starbucks gift card.

If you believe that others whom you know will be interested in participating in this study please feel free to circulate this email to them as well. You will receive an additional Starbucks gift card for each additional individual who references you as their referral in their survey.

Again, I thank you for your time and effort.

Best Regards!

XXXX

APPENDIX C

Definitions for Coordination, Collaboration, and Internalization Used in the Experiment.

Coordination:

It refers to interfirm relationships where firms involved exchange only basic operational and transactional information to achieve synchronization in the flow of goods, and have a rigid relationship primarily governed through contractual agreements. These relationships require minimal investment in time, money, and effort while the returns may be limited.

Collaboration:

It refers to interfirm relationships that go beyond mere coordination and it is primarily characterized by collective activities such as joint investments and a cooperative relationship which may be necessary to achieve respective objectives. These relationships require more investments into the relationship as compared to coordination but can have higher returns than coordination.

Internalization:

It refers to interfirm relationships that go beyond collaboration and involves the adoption of a strategic connection between the firms which are involved. This relationship is intimate and is characterized by trust, commitment, and long-term orientation, and a relational association is maintained among the involved parties. These relationships require the maximum investment in terms of time, money, and effort, but can have higher returns than collaboration

Vignette

Common Script

Bill Smith is a 40 year old supply chain management executive at a large electronics component supplier. Bill is responsible for managing the firm's relationships with its customers. The financial performance of his firm has been highly inconsistent over the past few years. For the past two years, Bill has been coordinating activities with a customer regarding a product which is critical to the customer, and may account for a significant proportion of annual dollar sales volume and profit at the company where Bill works. The customer is a large firm and has been a major player in the industry with a healthy financial performance for several years. Bill reckons that this customer is capable of meeting

contractual obligations and beyond. However, Bill acknowledges that the electronics industry is rather volatile (i.e., uncertain).

Manipulation Script

High Socioemotional Wealth

Bill, who has worked with the company for ten years, is seen an individual who takes pride in his work, and is highly regarded by the top management as one who makes the right decisions. Many of Bill's colleagues and subordinates even look up to Bill at times of trouble with their customers or when facing challenges at work.

Low Socioemotional Wealth

Bill, who has worked with the company for two years, is yet to make a name for himself within the organization. Bill constantly seeks the help of his colleagues for his work related problems.

High Variability in Pay

Bill's annual income depends on raises to base salary, annual cash bonuses, and long-term cash compensation which all depend on the financial performance of his firm. The inconsistent performance of Bill's firm has resulted in a high fluctuation to his annual income.

Low Variability in Pay

Bill's annual income depends on raises to base salary, annual cash bonuses, and long-term cash compensation which all depend on the financial performance of his firm. The healthy financial performance of Bill's firm has ensured Bill with a stable annual income.

Attention Filter

Research in decision making shows that people, when making decisions and answering questions, prefer not pay attention and minimize their effort as much as possible. Some studies show that over 50% of people don't carefully read questions. If you are reading this question and have read all the other questions, please select the box marked 'Other' and type 'effort' in the box below. Do not select decision making. Thank you for participating and taking the time to read through the questions carefully!

What was this study about?

Manipulation Checks

Questions	Responses
How will you characterize XXX in this Study?	a. An individual who is well respected, somebody people look up to b. An individual without much status in the organization
XXX's Annual income is presently is?	a. Highly stable or certain b. Highly unstable or uncertain

Table C-1: Student: Demographics

	N	Percentage
Gender		
Female	45	36.3
Male	79	63.7
Total	124	100
Age		
18-24	120	96.8
25-34	4	3.2
Total	124	100
Race		
Black or African American	1	0.8
Hispanic or Latino	21	16.9
Asian	8	6.5
White	85	68.5
Native Hawaiian or Other Pacific Islander	1	0.8
Other	8	6.4
Total	124	100

Table C-2: Student Study-Model Fitting Information

Study	Model	-2Log Likelihood	Chi-Square	Sig.	Nagelkerke R-Square
Study-1	Null Hypotheses	224.977			
			12.452	0.087	0.113
	General	212.526			

Table C-3: Student Study-Test of Parallel Lines

Study	Model	-2Log Likelihood	Chi-Square	Sig.
Study-1	Null Hypotheses	212.526		
			7.568	0.372
	General	204.957		

Table C-4: Student Study-Ordinal regression Results

		Estimate
	Thresholds	-1.105
		1.873
Main Effects		
Socioemotional Wealth	Low vs. High	**-1.369***
Variability in Pay	Low vs. High	**-1.264***
Interaction Effect		
Socioemotional Wealth **x** Variability in Pay	Low vs. High	**1.896***
Controls		
Gender	Female vs. Male	-0.344
Financial Performance		-0.149
Financial Risk Attitude		0.183†
Social Risk Attitude		-0.219†

Notes: † $p<0.1$. * $p<0.05$. ** $p<0.01$