Trust Signals in Supply Chain Alliances: Moving Toward a Robust Measure of Trust

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ABSTRACT

Trust is a vital ingredient in modern supply chain alliances. Yet, most measures of trust are rather simplistic. This article reviews the trust literature to identify the different facets of supply chain trust. A multi-faceted measure of trust is then developed and used to examine the extent to which trust signals are used in alliance management. Results of the multi-method approach show that most companies lack the know-how and ability to develop high levels of trust. Most companies have implemented strategies to signal their performance capability, leading to a level of transactional trust. However, few companies have recognized the need to signal to their supply chain partners their commitment to the relationship—leaving them without the ability to establish the trust levels needed to drive breakthrough collaboration. This paper introduces the importance of signaling trustworthiness in a supply chain context, develops relationship commitment as an important dimension of trust, and takes steps toward developing a more robust and meaningful measure of supply chain trust.

Keywords: Trust, signals, collaboration, supply chain management

INTRODUCTION

Value creation and competitive success depend on a firm's ability to use resources found among its supply chain (SC) partners (Dyer and Singh, 1998). Creating value across organizational boundaries through resource integration requires collaborative supply relations and routines. Trust is among the most essential ingredients in cultivating these collaborative relations and developing strong, mutually-beneficial relationships capable of achieving competitive advantage (Fawcett, Magnan, and Ogden, 2007; Kumar, 1996).

Trust yields several benefits to SC relationships including lower transaction costs (Dyer and Chu, 2003; Dyer, 1997), increased value-creation opportunities (Handfield and Bechtel, 2002), and enhanced collaborative learning (Dodgson, 1993). Further, trust-based relationships have been shown to lead to higher levels of profitability, innovation, and growth. Buyers have indicated that these key measures improve when they and their suppliers trust each other and collaborate together (Johnston *et al.*, 2004).

Although the benefits of trust are desirable, the ability to build trust-based relationships is missing in many firms. Highly touted theories such as the industrial organization theory and the resource-based view prescribe behaviors designed to increase the firm's bargaining power and reduce its willingness to share scarce resources (Barney, 1991; Porter, 1980). However, to build trust, powerful firms must refrain from exploiting their power—an uncommon behavior (Fawcett, Magnan and Williams, 2004). Moreover, building trust is resource intensive, requiring confidence that today's investments will bring future benefits (Zaheer and Harris, 2006). Because few managers understand the nature of trust and the practices that build it, they lack the foresight to make such investments. The tension between the enabling power of trust and the difficulty in establishing it raises questions of what constitutes SC trust, what behaviors comprise and promote the trust needed for breakthrough collaboration, and how we can better measure and promote the development of high-levels of trust.

BACKGROUND: THE RELATIONAL VIEW OF TRUST

Because trust is central to strong SC relationships, it is vital to accurately characterize and operationalize a trust construct. Over the past 20 years, numerous scholars have proposed alternative definitions of trust (Anderson and Narus, 1990; Ring and Van de Ven, 1992; Mayer *et al.*, 1995; Zaheer *et al*., 1998; Liu and Ngo, 2004). Although the variety of definitions and trustworthiness factors indicates that trust is complex, scholars appear to agree on two core dimensions of trust. First, trust is confidence that a firm's partner will not act opportunistically and exploit the firm's vulnerabilities (Kwon and Suh, 2005; Sabel, 1993; Sako, 1998; Barney and Hansen, 1994; Dyer and Chu, 2003; Laeequddin *et. al.*, 2009). Goodwill mitigates opportunism, allowing buyers and suppliers to work collaboratively despite the existence of vulnerability. Second, for trust to emerge fully, SC partners must have the intent and ability to perform to promise. Underperformance undermines the trust-enhancing power of goodwill.

The prominence of goodwill and competence as trustworthiness dimensions suggests that the relational view of the firm can provide insight into the complexities involved in defining trust and understanding how it is built. The relational view argues supernormal returns are obtained when firms acquire valuable resources or competencies that reside in different members of the supply chain (Dyer and Singh, 1998). Firms create competitive advantage from collaborative, idiosyncratic relationships with alliance partners who have complementary resources. Although the resource-based view emphasizes resources *within* a firm (Barney, 1991), the relational view leverages resources across SC partners to create advantage and supernormal returns. Trust enables collaboration, making it possible to bring heterogeneous, but complimentary capabilities together to create distinctive value and achieve competitive advantage.

Trust in Supply Chain Relationships

The extant research on SC trust suggests that the nature of trust and its enabling role in the creation of distinctive performance capabilities may vary considerably based on certain relationship characteristics including intensity and maturity. The following discussion thus describes trust in both transactional and collaborative SC relationships.

Trust in Transactional SC Relationships. In arms-length relationships, low cost and transactional efficiency are sought after and switching trading partners has little penalty (Williamson, 1985; Ghoshal, 1995). These relationships do not have the ability to create relational rents because "there is nothing idiosyncratic about the exchange relationship that enables the two parties to generate profits above and beyond what other seller-buyer combinations can generate" (Dyer and Singh, 1998). Trust in transactional relationships is primarily concerned with equity and efficiency (Fawcett and Magnan, 2001). Trust exists when SC partners have confidence that each party is acting fairly and with respect. Efforts are made to minimize hassle and transaction costs. This type of trust is described as contractual trust and competence trust, which is confidence in a partner's capability and motivation to perform according to its obligations (Sako, 1998; Lui and Ngo, 2004).

Trust in Collaborative SC Relationships*.* A distinctive performance capability is generated between SC partners when a valuable idiosyncratic relationship is formed (Dyer and Singh, 1998). Longer-term collaborative relationships require a higher level of trust than is needed for arms-length relationships. Such trust, often described as goodwill trust, is confidence that a firm's partner will look beyond the relationship and act with the focal firm's interest in mind (Sako, 1992; Humphrey, 1998). Goodwill trust focuses on the mutual commitment to the SC relationship and includes mutual expectations of reciprocity (Hardy *et al.*, 1998; McAllister, 1995; Ireland and Webb, 2007). Even as contractual trust and competence trust are closely tied with fulfilling contractual obligations, goodwill trust is based on a partner's motivation and ability beyond such structured obligations.

The relational view clearly articulates that high-level trust—a comingled combination of competence and goodwill trust—is needed to bring complementary competencies together in a way that leads to collaborative advantage. As firms seek to use SC resources to build distinctive competencies, they will naturally seek to establish high-level, collaborative trust. This notion leads to our first proposition:

Proposition 1: *Buyer firms include developing SC trust with suppliers as an important component of their competitive strategy.*

Theoretically, as companies invest in and execute their trust-building strategies, higher levels of SC trust should emerge. Thus, our second proposition is:

Proposition 2: *Current trust-building strategies are leading to high levels of trust between SC partners.*

Developing Supply Chain Trust

The complex, multi-faceted nature of trust creates a serious barrier to its establishment. Since managers do not fully understand the nature of trust, the levels of trust that exist in most SC

relationships are insufficient to enable a relational advantage. Interestingly, the measures of trust in the SC trust literature illustrate this challenge and point to a possible resolution (see Table 1). That is, most researchers evaluate trust using a single construct consisting of three to five items that comingle facets of goodwill and competence. As a result, these trust constructs tend to oversimplify trust while confusing the characteristics of trust. Given trust's centrality in the relational view's theoretical argument, a more comprehensive perspective of trust is needed. By evaluating the behavioral signals that lead to trust development, we propose a more-complete conceptual understanding of SC trust and begin to develop a construct to capture core, but distinctive facets of the two trust dimensions—goodwill and competence.

Each member in a SC relationship influences the other's perception of its trustworthiness via behavioral signals (Barney and Hansen, 1994; Spence, 1973). That is, signals are manifest by specific behaviors that instill or diminish trust. Different signals are related to the diverse trustworthiness factors discussed in the literature. Thus, a comprehensive measure of trust needs to be rooted in core trustworthiness signals. Through a combination of interviews and focus groups, Fawcett, Magnan and Williams (2004) identified five signals that influence trustworthiness perceptions: performance-to-promise signals, professional-relationship signals, openness signals, benevolent-collaboration signals, and empathy signals.

Performance to promise signals a partner's trustworthiness by reducing ambiguity and creating a history of positive interactions. If a supplier repeatedly delivers product on time with the expected quality, the buyer will gain confidence that the supplier is honest and capable (poor performance likewise erodes trustworthiness). Consistent, credible behavior also increases the supplier's reputation in the industry, which positively impact others' trust in the supplier (Barney and Hansen, 1994). Performance-to-promise signals are an important determinant for trust in both arms-length and collaborative relationships. It is also widely recognized in the literature as requisite for trust. Therefore, our third proposition is:

Proposition 3: *Performance-to-promise signals are widely used by buyer firms to develop trust with suppliers.*

Professional relationships signal trustworthiness because an agent is an important face for her company, and perceptions of her equity and integrity are a proxy for her organization's intent and ability to keep its promises. A supplier's agent will trust a buyer firm more when there is a consistent, credible, and positive interface with a buying agent. Agents who demonstrate respect and act with integrity will build their firm's trustworthiness (Fawcett, Magnan and Williams, 2004). Professional relationship signals are very visible and provide an opportunity for a partner firm to build credibility, which will significantly influence trust in both arms-length and collaborative relationships. Proposition four thus states:

Proposition 4: *Professional relationship signals are widely used by buyer firms to develop trust with suppliers.*

Openness sends a powerful signal of a partner's intent to perform as expected by diminishing the uncertainty that a partner has about the firm's actions (Kwon and Suh, 2004). For example, a buyer may be unable to predict if a supplier will fulfill a contractual agreement because the buyer has little visibility to the supplier's operations. This uncertainty can be overcome as the

Table 1
Supply Chain Trust Construct Measures

Author(s)	Number of Items	Items In Construct	Trustworthiness	
			Factor	Dimension
Cheng, Ye, and Tu (2008)	3	Partner is open in dealings	Openness	Competence
		Partner promises are reliable	Promise Keeping	Competence
		Partner does not make false claims	Honesty	Competence
Claro, Claro, and Hagelaar (2006)	4	Expect long-term work relationship	Reliability	Competence
		Partner is even-handed in negotiations	Fairness	Competence
		Confidence that partner will keep promises	Promise Keeping	Competence
		Partner is trustworthy	--	
Johnston *et al.* (2004)	7	Do not use proprietary information to partner's disadvantage	Non-exploitation	Goodwill
		Neither party is expected to make demands that might damage the other	Non-exploitation	Goodwill
		More powerful party restrains the use of power	Non-exploitation	Goodwill
		Personal confidence in one another	Promise Keeping (Agent)	Competence
		Business confidence in one another	Promise Keeping (Reputational)	Competence
		Rely on one another when it counts	Reliability	Competence
		Partner will maintain close relationship in the future	Reliability	Competence
Kwon and Suh (2005)	5	Confident that partner is telling the truth	Honesty	Competence
		Partner provides inaccurate information	Honesty	Competence
		Partner keeps promises	Promise Keeping	Competence
		Partner shares best judgment	Openness	Competence
		Can count on partner to be sincere	Honesty	Goodwill
Zaheer *et al.* (1998)	5	Supplier has always been evenhanded in negotiations	Fairness	Competence
		May use opportunities to profit at our expense	Non-exploitation	Goodwill
		Cannot rely on supplier to keep promises	Promise Keeping	Competence
		Hesitant to transact with supplier when specs are vague	Honesty	Competence
		Supplier is trustworthy	--	

supplier shares greater amounts of information, such as forecasts or pertinent operational details. Further, a buyer and supplier may establish information linkages or jointly implement a CPFR system to better share information. Involving other SC members in the target costing process exposes a firm's costs to its partners. Such openness demonstrates a partner's interdependency, which is important for the development of a long-term relationship. Scholars have recognized the importance of information sharing, but because shared information creates vulnerabilities, establishing informational linkages across firm boundaries can be difficult. Therefore, our fifth proposition argues:

Proposition 5: *Information-sharing signals are moderately used by buyer firms to develop trust with suppliers.*

Benevolent collaboration signals include relationship-specific investments and sharing risks and rewards. By making investments in a supplier, a buying organization can signal that it is worthy of trust. In a retail environment, a vendor could train a retailer's sales people in merchandising (Ganesan, 1994). In a manufacturing setting, a buyer might provide process engineering help to enhance supplier capabilities (Nelson *et al*., 1998). Also, sharing risks and rewards signals a partner's desire to have a long-term relationship with its partner. If a buyer shares the savings from supplier-initiated efficiency improvements in its operations, then the supplier will perceive the buyer as fair and the supplier's trust in the buyer will increase. Yet, collaborative behaviors tend to be both costly and risky. Thus, our sixth proposition states:

Proposition 6: *Collaborative-behavior signals are rarely used by buyer firms to develop trust with suppliers.*

Empathy signals are decisions and actions that consider a partner's wellbeing, even when power is asymmetrical (Fawcett, Magnan and Williams, 2004). Acting with empathy signals that a firm will not exploit the vulnerabilities of its partner (Kumar, 1996). Firms that act with empathy have policies to treat their partners fairly and consider their needs when making decisions. If the external environment changes such that a firm is in trouble, a partner may choose to alter its contract to safeguard the relationship. By contrast, opportunistic behavior signals a partner's lack of commitment to the relationship and damages trust. Empathetic actions send powerful signals of a partner's trustworthiness. However, many firms focus on their own needs and struggle to mitigate the adverse impacts of their decisions on SC partners. This reality leads to our final proposition:

Proposition 7: *Empathy signals are rarely used by buyer firms to develop trust with suppliers.*

RESEARCH METHODOLOGY

Because issues involving the role, influence and measurement of trust in SC relationships are complex, dynamic, and not well understood, an exploratory multi-method research framework was employed. Two preliminary steps were undertaken to firmly ground the research:

1. A series of 50 preliminary managerial interviews were conducted to identify the critical antecedents of successful SC alliances. Trust emerged as the most frequently identified and stressed building block of high-performing SC alliances.

2. A comprehensive literature search on the topic of trust was conducted. Issues including interpersonal, firm-based, and SC trust were evaluated. Interestingly, much more research has been done in the area of interpersonal trust than on SC trust.

These efforts provided the context to analyze and interpret the survey findings regarding the existence and influence of trust in SC relationships.

The survey process followed Dillman's Total Design Method; that is, three mailings of a cover letter, an instruction sheet, and the survey were sent to potential respondents at two-week intervals (Dillman, 1978). The mailing list consisted of 1,700 senior purchasing managers drawn from the Dun and Bradstreet database. The mailing list was designed to provide broad geographic and manufacturing industry coverage across America. To increase the response rate, managers were offered a copy of the study findings and the opportunity to be entered into a drawing for one of ten iPod Nanos. Overall, 189 usable surveys were returned for a response rate of 11 percent.

Non-response bias was evaluated using two methods. First, a comparison of early versus late responses revealed no problematic response patterns (Armstrong and Overton 1977). Second, to more clearly verify that the respondents and non-respondents were not uniquely different, the profiles of the two groups were compared. Respondents were tracked so that mailing and survey administration costs could be minimized. Non-respondents could also therefore be identified. Demographic profiles for 100 randomly selected non-respondents were developed using Dun and Bradstreet databases. These profiles were compared to those of the respondents. No significant differences were found.

FINDINGS AND DISCUSSION

Buying managers were asked to respond to a series of questions relating to 1) trust's influence on corporate strategy as well as 2) essential signaling behaviors. In each case, a seven-point scale (1 = strongly disagree, 7 = strongly agree) was employed.

Trust's Strategic Influence

According to respondents, most companies recognize SC trust as a valued element of their competitive strategies (mean = 5.86). The results shown in Table 2 reveal that buyers agree that trust leads to higher levels of collaboration (5.98) and improved competitive performance (5.91). The overall construct mean of 5.92 was the highest in the survey. Importantly, the Cronbach's alpha (a measure of internal consistency) of 0.726 suggests that this three-item Strategic-Role-of-Trust construct demonstrates strong reliability. Proposition 1 is thus affirmed.

However, managerial responses suggest that the desire for trust exceeds that actual level of trust achieved. When buyers were asked whether trust exists with suppliers, the mean level of agreement was 5.25. This result reveals a significant 0.67 gap ($p < 0.01$) between the strategic importance of trust and the actual trust achieved—a reality confirmed in the preliminary interviews. A consistent theme in these interviews was that trust is vital to better relationships and higher-level collaboration, but that managers were not fully cognizant of how to invest in trust-based relationships. Moreover, to the extent that building trust requires longer-term

investments, company climate is not perceived as supportive. Thus, Proposition 2 is not supported—many trust-building strategies are not leading to higher levels of trust.

Table 2
Perceptions Regarding the Strategic Role of Trust and Its Existence

Question	Mean	Std Dev
Strategic Role of Trust		
Trust-based supplier relationships lead to higher levels of collaboration	5.98	0.97
Trust-based supplier relationships lead to improved competitive performance	5.91	1.06
Establishing trust with valued suppliers is an important part of our strategy	5.86	1.08
Composite Index α = 0.726	***5.92***	***0.83***
Existence of Trust		
Our suppliers trust us to do what is right for the health of our LT relationship	5.40	1.24
We trust our suppliers to do what is right for the health of our LT relationship	5.14	1.24
Correlation = 0.623	**5.25**	**1.14**

Trustworthiness Signals

Performance to Promise. Perhaps the strongest and most easily measured trust signal is a company's actual performance to promise. Three questions were asked to assess the buyer's intention and ability to keep promises and commitments (see Table 3). The Perform-to-Promise construct score of 5.88 reveals that buyers believe that they score highly on this measure of competence trust. The Cronbach's alpha of 0.767 suggests a high level of construct reliability. Proposition 3 is thus confirmed. Indeed, the respondents note that throughout the negotiation process, they only make promises they intend and are prepared to meet. The mean level of agreement of 6.25 for this statement is the highest of all the items assessed. Buyers believe that they are honest and objective agents as they represent their companies in buyer-supplier negotiations.

Buyers do, however, acknowledge that their companies' performance is not quite as good as advertised. Regarding follow through on all commitments (5.72) and delivering to promise with respect to purchase of promised order quantities (5.67), the agreement scores are significantly lower ($p < 0.01$) than that for the promises made during negotiations. Although these scores are still high, given the prominence of this trust signal for both transactional and collaborative relationships, the finding that a gap exists between the talk and the walk is problematic. After all, the perform-to-promise signal focuses more on the confidence a company can place on a partner's promises than on actual performance. A buyers' delivery (or failure to deliver) to promise gives suppliers immediate feedback concerning the buyer's trustworthiness.

Professional Relationships. Three questions were asked to evaluate how and to what extent buying organizations are striving to encourage high levels professional-relationship trust (see Table 3). The overall composite score of 5.77 suggests that buying organizations appear to understand that creating equitable and respectful relationships are a contributor to the

collaborative trust needed for breakthrough SC performance. The Cronbach's alpha of 0.759 suggests an adequate level of construct reliability. Thus, Proposition 4 is affirmed.

Table 3
Assessing the Development of the Five Trust Signals and Associated Constructs

Questions Used to Assess Trust Signals	Mean	Std Dev
Performance to Promise		
In negotiations, we only make promises we are prepared and intend to keep	6.25	0.91
We follow through on all commitments we make to suppliers	5.72	1.06
We always deliver on promises made to suppliers	5.67	1.13
Composite Index α = 0.767	***5.88***	***0.86***
Professional Relationships		
Our culture encourages buyers to treat suppliers with fairness and respect	5.94	1.13
Fairness and integrity accurately characterize all our dealing with our suppliers	5.92	1.03
We are always perfectly honest and truthful with suppliers	5.45	1.23
Composite Index α = 0.759	***5.77***	***0.93***
Openness		
We do not use any proprietary information to our suppliers' disadvantage	5.93	1.13
We willingly share long-term production forecasts with our suppliers	5.77	1.30
We willingly share all information that might help our suppliers make better decisions	5.56	1.19
We proactively share our future technology and market entry plans with suppliers	4.29	1.61
We willingly share detailed cost information with our suppliers	3.37	1.57
Composite Index α = 0.671	***4.98***	***0.91***
Benevolent Collaboration		
We proactively work with our suppliers in planning and problem solving	5.59	1.07
We actively share resources with our suppliers to help improve their capabilities	4.31	1.65
We actively help our suppliers achieve certification & become dock-to-dock suppliers	4.19	1.72
We integrate supplier personnel into new product and other value-added teams	3.91	1.69
We offer technical training/education to suppliers to help them improve performance	3.90	1.73
We always share profits gained through collaborative efforts with our suppliers	3.82	1.52
Composite Index α = 0.762	***4.29***	***1.07***
Empathy		
Our success depends directly on the success and financial health of our suppliers	5.21	1.46
We do not make demands we feel will adversely impact our suppliers	4.92	1.34
Out of concern for our suppliers' welfare, we occasionally agree to pay higher prices	4.27	1.58
When making decisions, we explicitly evaluate the impact on supplier well being	4.25	1.41
Composite Index α = 0.647	***4.66***	***0.91***

Specifically, the respondents suggest that their organization's cultures do a good job (5.94) of encouraging them to treat suppliers with fairness and respect, which are foundational elements of good relations. Buyers also indicate that fairness and integrity accurately characterize their dealings with suppliers (5.92). However, when asked about the level of honesty and truthfulness in communications with suppliers, buyers report a significantly lower score (5.45, $p < 0.01$). As with the perform-to-promise signal, we see higher scores for the high-level, less-concrete questions than for the questions regarding specific behaviors. Thus, it seems that companies are interested in trust, but either are not sure exactly how to inculcate it or are not yet willing to invest fully in its development.

Openness. Respondent buyers were asked to indicate how openly their companies share information ranging from production forecasts to cost details (see Table 3). The composite index score of 4.98 affirms Proposition 5; however, it is significantly lower than for perform to promise and professional relationship trust. At 0.671, the Cronbach's alpha score was also somewhat lower. Although acceptable for exploratory research, this alpha score suggests that additional construct development is needed in the area of openness and information sharing (Nunnally, 1978).

Not surprisingly, buyer responses vary significantly depending on the type of information sharing being described. Buyers note that they are very willing (5.77) to share long-term production forecasts with suppliers. Sharing forecast information poses few risks for the buying firm while providing clear relationship benefits. Buyers also suggest an overall willingness (5.56) to share all information that would help suppliers make better decisions.

However, buyers do not include potentially sensitive information in their calculation of "all" relevant decision-making information. When asked specifically about their willingness to share future technology or market entry plans with suppliers, a very neutral 4.29 mean response is obtained. Buyers do not perceive such information as providing a quick or easy-to-see-and-measure benefit, and they also worry about potential opportunistic behavior. Buyers responded even less enthusiastically (3.37) when asked about their willingness to share detailed cost information. A buyer who shares its cost structure with a supplier loses the power that comes with information asymmetry. Suppliers might use these cost details to negotiate a higher price to force more equitable profit sharing between parties.

To summarize, companies are only moderately using openness signals in their trust building strategies. Buyers believe in the notion of selectivity—they feel that only certain types of information need to be shared to build trust. They still perceive information as power and are reluctant to give away any more than necessary to achieve short-term operational goals. Although sharing potentially proprietary information allows for relationship-specific investments and demonstrates commitment to the relationship, buyers have not adopted a strategy of sharing *all* information because some information exposes them to potential opportunistic behavior and a loss of information advantage.

Benevolent Collaboration. The preliminary interviews identified several behaviors that support or diminish trust. Survey respondents were asked to evaluate six of the most commonly observed practices (see Table 3). Not surprisingly, buyers are more hesitant to share resources than they were to share information. Thus, the overall composite score of 4.29 is the lowest among the five signals, affirming Proposition 6 and highlighting the fact that resource

sharing is not yet fully leveraged as a trust-building signal. The Cronbach's alpha is an acceptable 0.762.

Specifically, buyers agree that only one behavior is commonly exhibited in their supplier relationships: proactively working with suppliers in planning and problem solving (5.59). Joint planning and problem solving provide a direct and immediate buyer benefit without large risks. However, three other behaviors, which require higher commitment and increase risk, are much less employed: resource sharing = 4.31; dock-to-stock certification = 4.19; technical training/education = 3.90. The fear of supplier opportunism and uncertainty related to the long-term nature of the relationship exacerbate the sense of trepidation. Interestingly, the hesitancy to integrate resources extends to "borrowed" resources from suppliers. The respondents noted that their companies do not actively integrate supplier personnel into new product and other value-added teams (3.91). Finally, buyers do not equitably share profits from collaborative efforts with suppliers (3.82). Sharing rewards diminishes the short-term gains from joint efforts, so the motivation to do so is absent for a buyer who is primarily focused on meeting the current quarter's numbers. Yet, real relationship commitment requires a partner to signal its desire for interdependency by equitably sharing risks and rewards.

Empathy. The preliminary interviews showed that most companies acknowledge interdependence with supply chain members but only passively manage it. To better understand this phenomenon, respondents were asked four questions to assess how broadly this interdependence is recognized (see Table 3). The composite score for empathy is 4.66, affirming Proposition 7. Consistent with Proposition 7, the items within the construct demonstrate a bimodal response. That is, the general questions elicit high scores, but questions regarding specific behaviors reveal that empathy plays a much lesser role in decision-making. The Cronbach's alpha score is 0.647—acceptable for exploratory research, but in need of improvement.

Buyers agree that their success depends on the financial health of their suppliers (5.21). Buyers also note that they do not make demands that would adversely affect suppliers (4.92). Yet, the other responses tacitly denote that buyers are focused on their companies' own short-term well-being—even if suppliers will be negatively affected and the company's long-term competitiveness is injured. This point was clearly demonstrated as buyers noted that they are not disposed to pay higher prices out of concern for a supplier's financial health (4.27). Moreover, buyers note that they do not explicitly consider the impact of their decisions on supplier well-being (4.25). In essence, although buyers acknowledge their dependence on the "success and financial health" of their suppliers, they demonstrate an independent attitude in their overall approach to supplier management.

CONCLUSION: BUILDING COLLABORATIVE TRUST

Although trust is central to building the relations and routines needed to create unique value across organizational boundaries, our research findings suggest that few firms have achieved truly high levels of SC trust. Managers simply do not understand the multi-faceted and inter-connected nature of SC trust. Their companies are therefore unable to unlock the competitive potential of SC collaboration. Fortunately, the interview process and survey data analysis not

only helped define and measure trust more robustly but also led to following important managerial and theoretical implications.

Managerial Implications

To develop collaborative SC relationships with key suppliers, managers must adopt practices beyond those used with transactional partners. Performing to promise and building professional relationships will create trust sufficient for arms-length relationships, but they alone will not develop trust requisite for collaborative relationships that bring competitive advantage. Sharing all information, adopting collaborative behaviors and acting with empathy are all needed for developing strategic relationships with critical suppliers.

If they do not already exist, SC leaders must first develop high levels of performance-capability trust with their partners. Performing as promised and developing equitable and honest professional relationships are key to high performance-capability trust. When performance certainty is high, managers may invest in key partners, share rewards from successful endeavors, and keeping partners' interests in mind when making decisions. Through continued use of trustworthiness signals, managers can help create alliances that bring true collaborative competitive edge.

Theoretical Implications: A More Robust Trust Construct

Although we benchmarked the use and development of a variety of signals in the trust-building process, a primary focus of the research was to begin to develop a more robust construct for trust. Many empirical contributions have measured trust, but there is little consensus on how it should be measured, which leads to confusion to how these contributions can be compared and synthesized. Each of the five signals discussed above represents a factor of trustworthiness that needs to be measured—especially given trust's complexity and trust's centrality to SC collaboration. Measuring all five signals not only creates a more holistic concept of SC trust but also provides some guidance regarding where efforts need to be made to improve trust.

Future Research

Although we have made progress toward a more robust conceptualization and measurement of trust, more work is needed to adapt and strengthen our proposed measures. Further, because trust is a complex but critical concept, additional research is needed to understand 1) the organizational antecedents of SC trust and the moderating environmental factors that promote or impede high-level trust. Improving trust measures will help create a more accurate and complete conceptualization of trust and its role in the relational view of the firm.

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