TRUST AND SUPPLY CHAIN MANAGEMENT: DIRECTIONS FOR FUTURE RESEARCH

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1. INTRODUCTION

Trust is a rich construct that was traditionally examined under the domain of social science. However, more recently the importance of trust has become the source of an enormous outpouring of research within the management discipline as well. This interest is evidenced by special issues on the topic in the Academy of Management Journal (1997), Academy of Management Review (1998), Organization Studies (2001), and Organization Science (2002), hundreds of articles and presentations at international conferences, and numerous books on the subject. While organizational theorists (Zand, 1972; Zucker, 1986) have focused on understanding the impact of organizational factors on trust between employees, the management strategy scholars examined the role of trust in the formation of partnerships and strategic alliances.

Although the scope of strategic alliances is much broader, the terms partnerships and strategic alliances have been used interchangeably in the supply chain literature. According to Underhill (1996), supply chain partnership is a union of two or more firms both upstream and downstream to facilitate joint effort in developing activities such as research and development, manufacturing, distribution and other related activities with the intention of creating value for all the supply chain partners. Twenty years ago purchasing departments were not concerned with relationship with suppliers. The exchanges were based on the assumption that buyers and suppliers interacted in a zero-sum distributive game. The paradigm began to shift as supply management departments began to realize that “collaborating with suppliers could create competitive market advantages in cost and cycle time reduction, on time delivery, and access to product and process technology" (Trent &Monczka, 1999, p.929).Over the years, the focus has moved from short term opportunistic behavior to long term relationship building, behavior that is embedded in trust. Following are the important developments in SCM area that has compelled the companies to restructure their businesses around trust.

1. *Just-in-time* (JIT) is a method to deliver parts and components, including the purchased items that form the bulk of the cost, exactly at the time when they are needed with the express objective to reduce work-in-progress and overall inventory. Holding inventory is both risky and unprofitable business. With shortening product life cycles and rapidly changing customer demand, the risk of being left with wrong inventory is high. Some other accompanying benefits of JIT are increased purchased material turnover, increased ability to meet delivery promises, reduction in delivery lead-times, and reduction in scrap cost, improved product quality, and so forth. More recently, Bose Corporation has invented JIT-II, which extends the relationship by requiring key suppliers to manage their inventory on the shop floor of the buying company. These representatives called 'implants' have the authority to order parts from their own company as and when they are needed (Minahan, 1996). The popularity of this technique caught on very fast, and by 2001 companies like Beckman Coulter, Foxboro Company, Gulfstream Aerospace, Harley-Davidson, Honeywell, IBM, Johnson Wax, Lotus, Maytag, Motorola, Siemens, Sun Microsystems, Varian and Westinghouse were using JIT II (Atkinson, 2001). Since the vulnerability is higher, such a method can only work in its entirety if there is a trusting relationship between buyers and suppliers (Lummus&Vokurka, 1999).

2. *Single-sourcing practices* have been adopted by many companies to reduce the number of suppliers. Besides decreasing their inventories this step has also helped in implementing lean and agile supply chains. In the past, buyers typically worked with more than one supplier for each part to reduce the risk of exposure from opportunistic behavior of the suppliers. They also used the suppliers to compete with each other to buy material at reduced prices. However, such an approach of ordering the same part from different suppliers meant higher administrative cost (transaction costs) and also compromised quality. In addition, continuous emphasis on reducing time to market and need for early customer response forced firms to think of close cooperation with a limited number of suppliers. Consequently, companies started emphasizing single sourcing practices, which meant greater interdependence and increased vulnerability for both the buyers and the suppliers. As a result, trust became an important antecedent for the single-sourcing practice to work effectively.

3. *Early involvement of suppliers* during the product design stage started to emerge as firms started to feel more comfortable with single sourcing practices. Scholars have found that around 60 percent of the total cost is committed at the design stage of a product (Dorf&Kusiak, 1994), implying that the benefits of reduced cost and improved quality are amplified through early supplier involvement. Some companies have gone even further to involve their suppliers in research and development stage. But, early involvement of the supplier implies sharing greater proprietary information by the buyer, thus making them more vulnerable. It also implies greater risk for suppliers because they are required at a very early stage to tailor their product and process according to the needs

of the buying firm. Therefore, trust is an important precursor for developing a healthy relationship in the early stages of product development.

4. *Outsourcing* is another important concept that has become popular over the last decade, allowing companies to focus on their core competencies. Encouraged by high-speed information links and improved transportation, firms are adopting outsourcing strategies to reduce cost and improve quality, thus enhancing their competitiveness. However, increase in outsourced activities also increases the potential risk, particularly if a limited number of suppliers are used. This risk amplifies when we think of global sourcing, involving suppliers operating in different parts of the world. The cultural dynamics that enter the global supply chains add to the operational difficulties, thus making them more risky. Therefore, trust is required between the supply chain partners for global outsourcing to succeed.

2. DEFINING TRUST

Trust is a ubiquitous, amalgamated, and multifaceted phenomenon that has active streams of research in many fields. Psychologists examine trust as an interpersonal phenomenon and examine its role in inter- personal communication and conflicts. They conceive trust as individual's thoughts, traits, feelings, and behavior (e.g., Zand, 1972; Kegan& Rubenstein, 1973; Johnson-George & Swap, 1982; Barber, 1983), as it affects or is affected by other individuals. While, the sociologists examine trust and its social implications as they apply to societies. They are interested in examining trust amongst individuals and groups within a larger social structure in the context of social roles, race, class, gender, and ethnicity (Barber, 1983; Luhmann, 1979; Shapiro, 1987). Ethicists see trust as a social good and moral duty which is closely linked with truth telling and promise keeping (Bok, 1989; Hosmer, 1995). Organizational theorists see trust as an essential lubricant and enabler in both inter and intra-organizational relations (Gibb, 1964; Lewicki& Bunker, 1996). Economists examine trust within the framework of rational decision making with incomplete information (Arrow, 1974; Williamson, 1985).

Within the above disciplines, we find trust has been defined as a behavior (e.g., Zand, 1972), an attitude (Kegan& Rubenstein, 1973), a confidence (Cohen, 1966), an expectancy (Rotter,1980; Scanzoni, 1979), a belief or set of beliefs (Barber, 1983; Bromiley& Cummings, 1995; Rotter, 1967), a dispositional variable (Rotter,1967, 1980), a situational variable (Johnson-George & Swap, 1982), a structural variable (Fox, 1974; Lewis &Weigert, 1985), a social agency relationship variable (Shapiro, 1987), and an interpersonal variable (Rempel, Holmes &Zanna, 1985). Depending on how trust has been viewed, researchers have provided unique definitions, thus resulting in numerous definitions of trust (**see Appendix-1**).

A comprehensive literature review lead Lewicki and Bunker (1995) to conclude that the vast literature on trust can be broadly categorized into three groups: as an individual characteristic, as a characteristic of interpersonal transactions, and as an institutional phenomenon. We believe that the first two categories can be merged together because in the supply chain management field, the focus of this paper, we are interested in the application of an individual's characteristics as manifested in their interpersonal transactions.

2.1Trust at organizational level (institutional trust)

Inter-organizational trust has been defined as “the extent to which organizational members have a collectively held trust orientation toward the partner firm” (Zaheer, McEvily&Perrone, 1998, p. 143). Trust is considered to exist when one party has confidence in an exchange partner's reliability and integrity (Morgan & Hunt, 1994), and a willingness to rely on an exchange partner on whom one has confidence (Moorman, Niehoff& Organ, 1993). Anderson and Narus (1990, p.45) define trust between organizations as a “firm’s belief that another company will perform actions that will result in positive outcomes for the firm as well as not take unexpected actions that result in negative outcomes”. There is growing consensus among organization theorists that trust is best defined as the intention to accept vulnerability to the actions of the other party, based upon the positive expectation that they will perform a particular action that is important to the trustor (Mayer et al., 1995; Nooteboom, 2002; Rousseau et al., 1998).

2.2 Trust at individual level (interpersonal trust)

There is a large body of researchers who believe that organizational trust is a manifestation of interpersonal trust at the level of employees. Fahr and Irlenbusch (2008) argue that “Trust is an attitude which can only be shown by people rather than by organizations” (p.469). Organizations interact via representatives who can be seen as *boundary-spanning agents* (McEvily, Perrone&Zaheer, 2003). Individuals are employed by organizations and are at the very core of every organization, influencing them from the bottom up as well as the top down. The core values reflecting the culture of the organization flow top down, which are manifested in the actions of the boundary spanning agents(McEvily et al., 2003). Whereas, companies come together to conduct business as buyers and suppliers based on organizational trust; it is the individuals that conduct day-to-day management activities for the partnering firms, making individual-trust pivotal in a smooth working relationship between supply-chain partners (Svensson, 2001), as demonstrated in Figure 1 below.

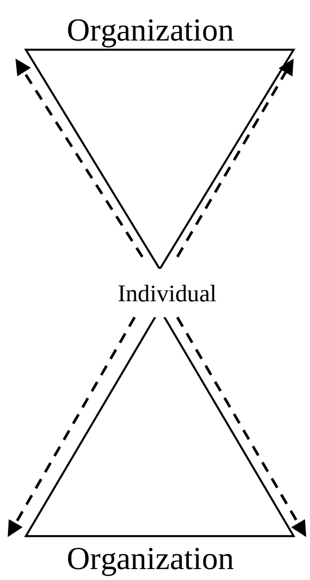

Figure1. Organizational trust manifested in interpersonal trust.

Trust as an individual characteristic and as a feature of interpersonal transactions has been a popular focus of study “for over 50 years” (Lewicki, Tomlinson & Gillespie, 2006, p.1017). In a seminal essay, Macauley (1963) had observed that close personal ties emerged between individuals in organizations that contracted with each other. These personal relationships in turn "exert pressures for conformity to expectations" (Macaulay, 1963, p. 63). Supporting this notion, Kelly and Schine (1992) argue that a long term trusting relationship with a supplier could be easily jeopardized by a company representative who proves to be dishonest and unreliable. Conversely, highly trusted salespeople can preserve customer commitment even during difficult times created by management policies that appear contrary to the customer’s best interests (Schiller, 1992). In an empirical study, Palay (1985) found that the relationships between rail-freight carrier companies and auto shipping companies were overlaid by the close personal connections among members of those organizations. He found that congenial personal relationship among individuals orchestrating day-to-day activities for the partnering firms resulted in the use of informal contracts between these companies; an industry where the regular practice is to demand extensive formal contracts. In another empirical study examining the nature of trust in buyer-seller relationships, Doney and Cannon (1997) found that the buyer’s trust in a supplier firm was based, in part, on encounters with the supplier’s salesperson. For instance, Zaheer et al., (1998, p.153) found that “the more one trusts the supplier representative with whom one deals, the more one’s organization trusts the supplier organization.” They go on to say that trust between two boundary-spanning individuals in two different organizations also causes other individuals in the two organizations to trust each other (Zaheer et al., 1998). In essence, a strong interorganizational relationship very often has at its core a trusting interpersonal relationship (Jeffries & Reed, 2000), also depicted in figure 2 below.

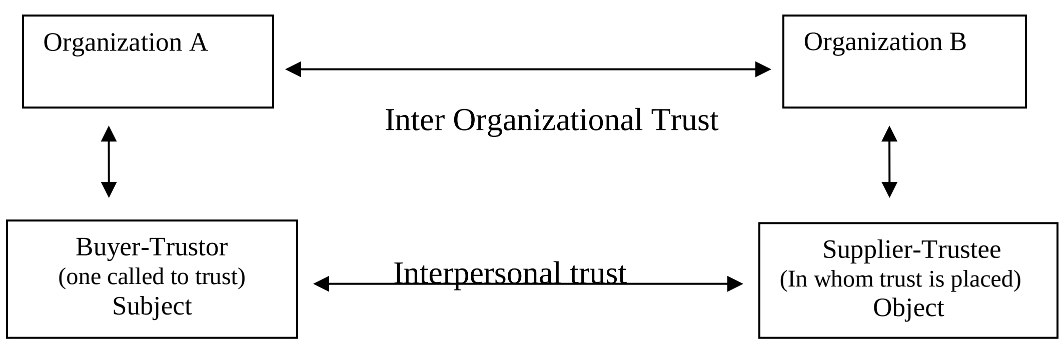

Figure 2. Levels of trust

There are two approaches to examining trust at an individual level, namely the behavioral approach and the psychological approach (see Figure 3).

Individual Level Trust	
Behavioral approach Specific trust based in situations	Psychological approach Disposition to trust based in personality

Figure 3. Two streams of individual level trust.

2.2.1 Behavioral approach – specific trust

The *behavioral approach,* views trust as a behavior demonstrated by an individual in a specific situation towards a specific other individual. Integrated with the situation are the antecedents of trustworthiness of this specific other individual on whom trust is being placed. Also defined as *state trust* or *situational trust* or *specific trust*, it originates from one person's assessment of the trustworthiness of a specific other individual within a specified situation (McAllister, 1995; Mishra, 1996; McKnight, Cummings &Chervany, 1998). The focus here is on examining the situation and the antecedents of trustworthiness of the specific other individual.

The three personality characteristics considered as antecedents of trustworthiness are ability, benevolence and integrity (Mayer et al., 1995; Ganesan 1994; Kumar, Scheer & Steenkamp 1995; Doney& Cannon 1997; Deutsch 1958).*Integrity* refers to the extent to which a trustor perceives the trustee adheres to a set of principles that the trustor finds acceptable (Mayer et al., 1995). The key to understanding the concept of integrity lies in two of its components: adherence and acceptability. That is, the trustor will be more willing to accept the influence of the trustee if the values of the trustee are acceptable to him or her. Researchers believe that trust is higher in partners who are perceived to have integrity, because these partners are expected to act with honesty, consistency, and remain fair at all times. *Ability* is defined by Mayer et al. (1995) as the perceived level of relevant skills, competencies, and characteristics that enable a person to have influence in a specific domain. In an organizational setting, coworkers often relay information or pieces of completed work to one another, which increases the interdependence amongst them. Therefore, the, knowledge, competence and skills of workers affect the quality of work of their fellow coworkers. According to Sonnenberg (1994), trust increases when employees are perceived as competent and skilful by their coworkers. If employees believe that they can depend upon their coworkers to produce quality work that would affect their job in a positive way, they will be willing to trust the judgment of those competent coworkers. *Benevolence* is the extent to which the trustee is perceived to want to do good to the trustor (Mayer et al., 1995). Mayer et al. (1995) elaborate that benevolence highlights a relationship marked by good intentions and positive orientation on the part of the trustee. And, for the act of benevolence to be meaningful, the good intentions of the trustee must be relevant to the needs and desires of the trustor. Studies have found that trust is higher for trustee who showed benevolence towards the trustor as opposed to those who did not (e.g., Korsgaard, Schweiger, &Sapienza, 1995). Thus, when one set of partner perceive the other partner as considerate and concerned about their interests and welfare, they will more readily trust this partner. It is also assessed that the benevolent partner is unlikely to act maliciously against the other partner. Thus being supportive of other partners interests, communicating honestly and openly, and showing willingness to delegate decisions and share power or control, are all indicators of one's benevolent behavior. According to researchers, an individual's beliefs in his/her co-worker's ability, benevolence, and integrity promotes his/her willingness to trust that individual, thus leading to cooperation, information sharing, etc. that promotes higher performance (Mayer eta l., 1995; Larson & La Fasto, 1989).

Consequently, the behavioral approach views trust as situation-based and is grounded in observable choices made by an actor in an interpersonal context. For example, Tan and Lin (2009) explain, "A person may trust a gardener to take care of the plants, but not to repair the car. Similarly, a person may trust a mechanic to be someone who can repair the car, but not someone to whom they can give personal information" (p. 48). Supporting this notion, Lewicki et al (2006) note, "We may trust someone in some contexts, but not in others…. You may trust another individual to arrive on time for a meeting, but not to complete the required paperwork with the care that must be shown toward it". Thus, researchers have found trust in different referent types to be related to different sets of antecedents and outcomes. The earliest and clearest example of this approach is found in the work of Deutsch (1958), who described state-trust in terms of behavior that is motivated by positive expectations of the others' behavior in risky circumstances that pose greater loss than gain. He asserts " an individual may be said to have trust in the occurrence of an event if he expects its occurrence and his expectation leads to behavior which he perceives to have greater negative motivational consequences if the expectation is not confirmed than positive motivational consequences if it is confirmed" (1958, p. 266).

2.2.2 Psychological approach (Disposition to trust)

Psychological approach is embedded in people's general tendency to be willing to trust other people, across a broad spectrum of situations and persons/objects (Erikson, 1968; Rotter, 1967, 1971, 1980). This approach to trust has also been called as propensity to trust in the Mayer model (Mayer, Davis & Moorman, 1995) and disposition to trust in the McKnight model (McKnight, Choudhury&Kacmar, 2002; McKnight, Cummings &Chervany, 1998). "A disposition is a property of an organism or object which is inferred from predictable responses in appropriate circumstances" (Eysenck, 1992, p. 38). A *disposition to trust* influences how much trust one has on others prior to any interaction or direct information being available (Mayer, Davis &Schoorman, 1995). An individual with a strong disposition to trust tends to initially trust others until something happens to prove him/her wrong (McKnight et al., 2002). McKnight maintains that one's predisposition to trust explains trust in initial interactions before the trustor has had the opportunity to gain more specific information regarding a particular trustee. For example, such a situation may emerge in a buyer and supplier interacting for the first time, where either of them have very little prior information about the other.

According to McKnight, Cummings &Chervany (1998), disposition to trust is grounded in a value-based *faith in humanity* and *trusting stance*, each of which affects trust formation in a different way. Generally, faith in humanity means that one assumes others are well meaning and dependable. Faith in humanity can be decomposed into faith in competence, faith in benevolence, and faith in integrity (McKnight et al., 2002; Doney& Cannon, 1997). On the other hand, trusting stancerefers to the concept that one assumes better outcomes will result from dealing with objects as though they are well meaning and reliable. An individual with strong trusting stance believes that it is better to be trusting in general than non-trusting. He/she tends to initially trust every object until something happens to prove him/her wrong.

Rotter (1980) reports that people with a high disposition to trust are less likely to lie, cheat or steal and they are more likely to respect the rights of others, are liked by others and are sought out as friends. Moreover, people with high disposition to trust tend to be less critical of others and are usually more forgiving of their mistakes (McKnight &Chervany, 2001). In contrast, people who have a low disposition to trust, see others as self-centered, conniving and potentially dangerous (Mooradian, Renzl & Matzler, 2006). Colquitt, Brent and Pine (2007) in their meta-analytic study reveal that trust propensity is negatively related to counterproductive behaviors.

3. TRUST AND SCM

SCM, being a relatively new field, has borrowed extensively the definition of trust from the management strategy literature, where the notion of trust is predominantly used between organizations (Zaheer et al., 1998; Edwards & Kidd, 2003). Within the supply chain management discipline, the most cited definition of trust seems to be that of Mayer et al. (1995). Trust is “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party” (Mayer et al., 1995, p.712).

In SCM discipline, the literature on trust can be separated into three research streams. The first literature stream examines the uncertainties and interdependence within the operations of SCM, thus making a strong case for the need for trust. The second research stream examines the benefits resulting from trust. And the third research stream examines trust in the context of developing partnership models. Each of these literature streams is discussed in detail below.

3.1 Uncertainties and interdependence - need for trust in SCM

More than one-third of partnerships fail due to a lack of trust among trading partners (Sherman, 1992). Not surprising, this first stream of literature in SCM has been channeled towards establishing ‘trust’ as a key partnership variable. The two conditions central to the concept of trust in supply chain management on which there is a widespread agreement amongst researchers are uncertainty and interdependence (e.g. Bigley& Pearce, 1998; Hosmer, 1995; Lane & Bachmann, 1996; Mishra, 1996; Rousseau, Sitkin, Burt &Camerer, 1998; Whitener, Brodt, &Korsgaard, 1998; Zand, 1972). Uncertainty is almost always acknowledged to be a fundamental characteristic of situations that require trust. And uncertainty is something that all organizations must deal with, but within SCM area uncertainty takes on gigantic proportions due to two explicit reasons. First, is the global nature of business that is rapidly increasing due to outsourcing, as discussed earlier. Besides the logistics aspect of uncertainty there is also the issue of dealing with SCM personnel from different countries with many diverse cultures, languages, background and work ethics.The globalization of world economy, internationalization of consumer markets, constantly rising cost pressure in international competition and ever shorter product life cycles have created greater uncertainties and many new challenges for supply chain managers. The second aspect of this uncertainty stems from the inter-connectedness and interdependencies of the supply chains, making the requirement for trust extremely important. Supply chain networks are a complex set of systems, subsystems, operations, activities and interrelationships belonging to its various members. These members could include manufacturing plants, suppliers, carriers, distribution centers, retailers, and even consumers (Batt, 2004). For example, the finished goods may be manufactured in one part of the world while the raw material may be procured from many different parts of the world and the product may be designed in a different country all together. Any delay in one part of the operations has a direct impact on another and may even necessitate shutdowns. A number of studies have empirically documented how any action on the part of one party has an immediate impact on the other (Chopra & Sodhi, 2004).

3.2 Benefits from trust based relationships

The second stream of literature in SCM has focused on examining the benefits emerging from trust based inter-organizational relationships (Chandra & Kumar, 2001; Handheld & Bechtel, 2002; Myhr & Spekman, 2005; Williams, 2007).The competitive benefits accrue in the form of reduced uncertainty, lower product cost, enhanced quality, reduced cycle time, reduced transaction cost of doing business - thus providing gains to all (Gulati, 1995; Lambert, Emmelhainz, & Gardner, (1996). 1996; Carter and Narasimhan, 1993; Hendrick, 1994). Consequently, the organizations with superior partnerships enjoy higher profitability and improved competitive advantage in the marketplace (Johnston, McCutcheon, Stuart, & Kerwood, 2004; Sahin& Robinson, 2002; Shin, Collier & Wilson, 2000; Choi & Hartley, 1996). Success stories like Dell, Wal-Mart, GE, and Honda demonstrate the high value added by their supply chains (Anderson & Katz, 1998). Once trust is established, firms learn that coordinated, joint efforts will lead to outcomes that far exceed what the firm would achieve if it acted solely in its own best interest (Anderson &Narus, 1990). A buyer and seller who trust each other are more likely to share cost breakdowns with each other (Ellram, 1996). Open access to such information enables partners to identify and manage inefficiencies and potential redundancies, whereby the total cost incurred can be reduced. In addition, a trust based partnership reduces the need for details in a contract, and reducing monitoring and transaction costs (Gulati, 1995; Ba &Pavlou, 2002). In a low trust environment, decision makers end up spending their time mostly on analyzing their partner's credibility, reliability and trustworthiness, rather than optimizing their operations. For instance, in a study of 344 automaker-supplier relationships Dyer and Chu (2003) found that the costs of doing business with suppliers for the least trusted automaker were nearly six times higher than those for the most trusted.

3.3 Supplier-partnership models and trust

The third stream of research in SCM has examined trust in the context of developing partnership models, where the express objective was to identify the stages that buyers and suppliers go through as they evolve progressively in their possibilities as systems (Kanter, 1994; Reck and Long, 1988).The underlying idea behind these and other such strategic-supplier-partnership

(SSP) models is that ‘supplier development’ maybe construed as a continuum. As a firm moves along the continuum, it builds inter-dependence, mutual trust and long-term relationship with its suppliers through a reactive process of self-selection. Within this stream of literature, two fundamental distinctions are made on how trust emerges between partnering firms. One school of thought maintains that trust is based on the reputation and image an organization builds through demonstrated reliability and credibility in its previous interactions (Kwon &Suh, 2004). This is a reactive process of self-selection that is anchored in the past. This line of reasoning for building trust, will not work for an entity that is new or about whom there is no critical mass of past information. The other school of thought attributes the emergence of trust incrementally, through the ongoing interactions between partners (Dyer & Chu, 2000). Such a process of trust building is also reactive, but anchored in future interactions. In the following section we explore each of these perspectives in greater detail.

3.3.1. Reputation: Reputation has been commonly described as what outsiders attribute to the entity based on which the entity can either be trusted or not trusted. Burt and Knez (1996) define reputation as what each party perceives about the other through commentaries in the press and/or third party gossip. Thus, organizations develop reputations based on how they have interacted with the other organizations in past alliances or partnerships. For example, Microsoft is a firm with a well-documented reputation for opportunistic dealings with its partners (Auletta, 2001).

A partnering firm’s reputation is an especially critical trust-building agent for those who have had no previous track record with this firm, but base their willingness to do business solely on the firm’s recognized reputation in the market. The argument is that collaborations between firms do not commence in a vacuum. An entity enters into negotiations for a potential partnership with a set of a priori expectations about (1) the standards of behavior it expects the other party to hold, and (2) the probability that the partner will abide by those standards. In the absence of direct experience of dealing with the perspective partner one has only reputation to rely on. Doz (1996) concurs that although many other elements unfold and influence partnership success or failure over time, initial perception is derived primarily from reputation of the organization. Doney and Cannon (1997) agree that trustors, when evaluating the trustworthiness of the other party, look for signs of trustworthiness in both past and current interaction. They go on to say that this is especially true at the very early stages of the relationship when the reputationof the other party strongly affects perceptions of its trustworthiness.

To give an example, in a supply chain context a ‘good’ reputation would be based on the perception of a buyer that the supplier is honest, delivers quality products, keeps her word and never second-guesses the other's intentions. Once such qualities are presented, the supply chain partner will gain a reputation in the market. Empirical research supports the link between supplier’s reputation and buyer’s trust. In a study of industrial channel dyads, Ganesan (1994) found that a retailer's favorable perception of a supplier's reputation led to increased credibility. Similarly, Anderson, and Weitz (1989) also found that a channel member's trust in a manufacturer is positively related to the manufacturer's reputation for fair dealings with channel members. In another study conducted among Chinese manufacturing companies, Chu and Fang (2006) found perceived satisfaction, partner’s reputation, and communication to have a positive impact on the level of trust among supply chain partners; and perceived conflict influenced trust negatively. The *size* of a company may also be taken as a proxy indicator of its reputation. The size of a supplying firm signals that it “walks its talk" because otherwise it would not have been able to maintain this position in the industry. Second, it can be assumed that less trustworthy, more opportunistic suppliers would be unable to build sales volume or market share (Hill, 1990).

An important observation to make in this literature stream is that the focus is on the supplier’s reputation, which is impacting the buyer’s trust. There is no discussion on how variation in the buyer’s disposition to trust may impact their perception of the reputation of the supplier.

3.3.2 Length and intensity of interactions between partners: Trust tends to develop through a mutually reinforcing process (Luhmann, 1979; Axelrod, 1984; Deutsch, 1958, 1973; Lindskold, 1978; Pilisuk& Skolnick, 1968). In the absence of any history between partners or absence of knowledge of other firm’s reputation, social exchange theory (Granovetter, 1985; Dore, 1983; Powell, 1990; Uzzi, 1997) suggests that trust will emerge due to repeated interactions between exchange partners. According to social exchange theory (Whiteker, Brodt, Korsgaard& Werner, 1998), sharing of vital information, advice, and recognition are important means in trust building, which is created by repeated interactions and reciprocity. Early in the relationship there is zero point of trust or distrust because the parties lack information about the trustworthiness of their counterpart. In such a scenario, development of trust is often slow and incremental because parties tend to be reticent about trusting. With increased experience, firms are more likely to have successfully weathered the critical period in their relationships (Dwyer, Schurr& Oh, 1987; Scanzoni, 1979) and gained a greater understanding of each other's idiosyncrasies (Williamson, 1985). Within the context of interactions between partners, the two sub-streams are *length of relationship* and the *intensity of relationship* (Sahay, 2003; Dwyer et al., 1987; Scanzoni, 1979; Williamson, 1985), each of which is discussed below.

Various scholars have suggested that *length of relationship* is an important factor because trust takes time to develop and can only be built slowly overtime (Arrow, 1974; Sako, 1991). These authors maintain that it takes time for exchange partners to develop the concrete personal relations necessary to generate trust and discourage malfeasance (Granovetter, 1985; Larson, 1992). Related to this view is the notion that social knowledge, or knowledge gained through long term interactions, is the basis for trust because it allows partners to understand and predict others' patterns of behavior. As information sharing between partners increase, information asymmetries decrease, thereby reducing behavioral uncertainty. Higher levels of trust are believed to develop when information asymmetries are low and there is less behavioral uncertainty. Some researchers (Hill, 1990; Barney & Hansen, 1994) maintain that acquiring knowledge through long-term interactions also provides insights into the moral character of trading partners, thereby allowing partners to screen more accurately for "honest" partners. Finally, when partners engage in long term exchange relationships, they develop a history together, and most individuals are less likely to take advantage of those with whom they have had long and stable past interactions. Thus, higher levels of trust are expected to emerge in exchange relationships where the partners have a long history of interacting. In addition, the process of prediction also can be invoked, as a relationship grows older. When exchange relationships have a history, the outcomes of previous business episodes provide a framework for subsequent interaction (Doney& Cannon, 1997). Longer term relationship allows you to better predict the expected behavior of the supplier and assumes that you are comfortable dealing with such behavior.

The literature portrays buyer's trust as building incrementally over time as a result of the supplier's choice to reciprocate cooperation; and buyer's trust to decline drastically when the supplier chooses not to reciprocate. According to this process, buyers pursue a Bayesian-like decision process, carefully scrutinizing all trust-relevant information to ensure that trusting choices are wisely made and quickly withdrawing trust should it be misplaced (Hardin, 1993; Kramer, 1996). This initial calibration and subsequent updates (Kramer, 1996) roughly describes how trust increases or decreases over time. Such a practice is based on trial and error and is reactive in nature. Some researchers explain that the length of time of the relationship itself is an indicator of trusting behavior between the buyer and the seller (Doney& Cannon, 1997; Sahay, 2003) because it represents an investment both parties have made in the relationship. To the extent that buyers perceive such investments on the part of suppliers, they could calculate that a supplier would incur losses by acting in an opportunistic (i.e. untrustworthy) manner.

Besides the length of time, the *intensity of interaction* is another important factor that is said to impact trust. As the intensity of interactions between partners' continues to increase, bonds of greater trust can be expected to develop. Clear communication and the intensity of communication can act as signals of trust (Swinth, 1967; Axelrod, 2004). Intensity of interaction is commonly defined as frequency of interaction and face-to-face communication to increase supplier-buyer trust by (1) facilitating the development of personal ties, thereby increasing the efficacy of social sanctions, and (2) providing superior information to assisting partners in detecting trading partners that are the untrustworthy "type." Thus, we would expect that as the frequency of face-to-face contact between partners' increases, so does trust (Dyer & Chu, 2000).

However, there are other researchers who caution that the length and intensity of relationship between organizations and/or individuals cannot be simply taken as a proxy of trust (Krishnan, Martin &Noorderhaven, 2006; Parkhe, 1998; Sako, 1991; McEvily, Perrone&Zaheer, 2003; Poppo& Zenger, 2002). Dyer and Chu (2000) studied the determinants of trust in supplier-automaker relationships in the U.S, Japan and Korea and found no evidence of a relationship between length of relationship and trust. Many suppliers in the study claimed that length of relationship did not have a bearing on trust. Some suppliers even suggested that the longer they had worked with a particular automaker, the more time they had to learn that the automaker was not to be trusted. Therefore, it seems that longer relationships only facilitate the supplier's ability to predict the buyer's future behavior, so that one can better trust one's own judgment about a partner's attitude and behavior and be better prepared. Doney and Cannon (1997) found that frequency of social interaction with the salesperson and length of time the salesperson called on the buying firm were unrelated to the buying firm's trust of the salesperson.

Arguing against the theory that trust develops over time, McKnight et al. (1995) contend that by positing that trust develops over time, researchers implicitly assume that these relationships start from low levels of trust and then over time move to the formation of higher trust or full blown trust. However, these inferences are in sharp contrast to some empirical findings where researchers found the participants displayed initial high levels of trust (Berg, Dickhaute&McCab, 1995; Kramer 1994). Berg et. al (1995) expected to find participants of their study exhibit low levels of trust with each other when faced with a trust dilemma. Instead, the participants exhibited high levels of trust towards each other. Likewise, in a study conducted on MBA students, Kramer (1994) found participants exhibited high levels of trust despite no prior interaction history. Kim et al. (2004) also found that people reported substantial trust in others whom they had never met and that allegations of untrustworthy behavior were needed before people would reduce their high expectations. Could the above deviations be attributed to different disposition to trust in individuals? Mayer et al. (1995) point out that the variance in trust can often be attributed to individual's disposition to trust. A study by Moorman, Zaltman&Deshpande (1992) supported the hypothesis that buyers that trust their counterparts are likely to be engaged in collaborative joint efforts and exchange relevant, comprehensive, accurate and timely information, thereby contributing to problem-solving and planning efforts.

Limitations in the existing SCM literature and future direction

A few broad limitations that can be drawn from the above discussion along with the direction for future research in SCM discipline are discussed below.

1. Although supply chain management scholars have devoted a significant amount of attention to examining the numerous potential benefits of trust in partnerships, they have devoted significantly less attention to examining the different ways trust can develop between buyers and suppliers. Heavy reliance is placed on theories borrowed from other fields with older lineage in studying trust. Research identifies two primary factors that impact trust amongst supply chain partners, namely, reputation of the supplier and the length of interaction. The reputation of a supplier is anchored in the past and may not work effectively for a relatively new supplier with little past. On the other hand, there is no conclusive evidence that the length and intensity of interaction between buyers and suppliers, which is embedded in a Bayesian-like reactive process of trial and error, has a positive impact on trust building. Some research provides supporting evidence while the other negates the relationship. The above discussion on development of trust suggest that one simply cannot rely on 'time' or 'the length of interaction', but have to take proactive measures to build trust. In addition, the above findings raise pertinent question such as - Can the organizations risk 'substantial' resources and costs to build an 'interaction history' without any guarantee of success in developing mutual trust? Are they willing to wait around hoping to form a partnership based on trust without having any guarantee of how long this process may take? In addition, in case of failure in developing trust with a certain partner, as the case may be, do they start all over again with another partner? Future studies should explore other factors that impact trust, with greater emphasis at the individual level.

2. Despite the compelling contribution of inter personal trust to building strong inter organizational partnerships, there is sparse research on interpersonal trust in supply chain management. The research in SCM is primarily focused on examining trust at the organizational level taking a situational approach to studying trust. Consequently, most measurements of trust neglect the role of individuals and differences amongst individuals (Evans &Revelle, 2008). In a supply chain environment there is a close connection between organizational and individual level trust. The buying and supplying organizations come together to do business based on trust, but the real transactions take place between the individuals representing the buying and supplying firms. Recognizing

the importance of individuals in impacting trust within supply chain partners, future studies should examine trust at the individual level of analysis.

3. In the trust literature, the trusting party is called trustor or trusting subject, and the party to be trusted is called trustee or trusting object. Predominantly the topic has been approached from the viewpoint of what the trustee needs to do to promote trust development within a relationship. The dominant paradigm under which trust has been researched in SCM only considers the trustworthiness of the supplier, embedded in characteristics such as honesty, integrity, and benevolence. No discussion is presented on the impact that the trustor's own disposition to trust may have on their assessment of the trustee's ability, benevolence, and integrity. Future research should focus on the self, on the individual's own disposition in building trust within a partnership.

4. Examining trust at the individual level brings the notion of trust within team members when more than one individual represents the buying or supplying firm. When putting teams together, pertinent questions to ask is whether gender, age, educational level, and ethnicity impact trust. Such knowledge would help SCM managers put teams with highest disposition to trust, which would increase the chances of striking a cooperative behavior and partnership. Some trust researchers are intrigued by the question of whether or not men and women exhibit different levels of general trust. The results have been mixed (Scharlemann, Eckel, Kalcelnik, & Wilson, 2001; Chaudhari and Gangadharan, 2003; Croson and Buchan, 1999; Berg, Dickhaut, & McCabe, 1995; Buchan, Croson, and Solnick, 2008; Furukoma and Pearson, 2007). Thus, the literature on trust has been inconclusive on whether difference in gender have any impact on trust and/or which of the two genders trusts more. Similarly, no research is reported in SCM literature that can shed light on the impact of age and education level on trusting behavior of an individual. Outside SCM discipline, few studies have been done to understand the impact of age on trust (Sutter and Kocher, 2005; Nee, Junn, and Stehlik-Barry, 1996; Oreopoulos and Salvanes, 2009). In addition, ethnicity and cultural impact on trusting behavior would be important in today's SCM environment, especially when so many companies are going global and outsourcing is an important aspect of businesses.

Appendix-1: *Source and Definitions of Trust*

Source	Definitions
Barber (1983)	Trust ‘‘as expectation of the persistence of the moral social order, ... The first ... as the expectation of technically competent role performance ... The second meaning of trust ... concerns expectations of fiduciary obligation and responsibility, that is, the expectation that some others in our social relationships have moral obligations and responsibility to demonstrate a special concern for other’s interests above their own’’ (p. 14)
Barney and Hansen (1994)	‘‘[T]rust is the mutual confidence that one’s vulnerability will not be exploited in an exchange’’ (p. 177)
Bhattacharya, Devinney, and Pillutla (1998)	‘‘Trust is an expectancy of positive (or nonnegative) outcomes that one can receive based on the expected action of another party in an interaction characterized by uncertainty’’ (p. 462)
Boon and Holmes (1991)	‘‘[T]rust as a state involving confident positive expectations about another’s motives with respect to oneself in situations entailing risk’’ (p. 194)
Cummings and Bromiley (1996)	‘‘Trust will be defined as an individual’s belief or a common belief among a group of individuals that another individual or group (a) makes good-faith efforts to behave in accordance with any commitments both explicit or implicit, (b) is honest in whatever negotiations preceded such commitments, and (c) does not take excessive advantage of another even when the opportunity is available’’
Currall and Judge (1995)	Trust as ‘‘an individual’s behavioral reliance on another person under a condition of risk’’ (p. 153)
Dasgupta (1988)	‘‘I am using the word ‘trust’ in the sense of correct expectations about the actions of other people that have a bearing on one’s own choice of action when that action must be chosen before one can monitor the actions of those others’’(p. 51)

Deutsch (1960)	‘‘To trust another person to produce a beneficial event X (or to suspect that another person will produce a harmful event Y) an individual must have confidence that the other individual has the ability and intention to produce it’’ (p. 125)
Gabarro (1978)	‘‘Trust has been defined or operationalized in the literature in many different ways including the level of openness that exists between two people, the degree to which one person feels assured that another will not take malevolent or arbitrary actions, and the extent to which one person can expect predictability in the other’s behavior in terms of what is ‘normally’ expected of a person acting in good faith.”(p.294)
Gambetta (1988)	‘‘Trust ... is a particular level of the subjective probability with which an agent assesses that another agent or group of agents will perform a particular action’’ (p. 217)
Hosmer (1995)	‘‘Trust is the reliance by one person, group, or firm upon a voluntarily accepted duty on the part of another person, group, or firm to recognize and protect the rights and interests of all others engaged in a joint endeavor or economic exchange’’. (p. 393)
Lewicki, McAllister, and Bies (1998)	Trust is ‘‘confident positive expectations regarding another’s conduct’’ (p. 439)
Luhmann (1979).	Trust is ‘‘confidence in one’s expectations’’ (p. 4)
Kee and Knox (1970)	‘‘Subjective trust and suspicion can be defined in terms of P’s certainty or uncertainty about O’s trustworthiness’’ (p. 359)
Madhok (1995)	‘‘Trust is the perceived likelihood of the other not behaving in a self-interested manner.”(p.120)
Mayer, Davis, and Schoorman(1995)	Trust is ‘‘the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party’’ (p. 712)
McAllister (1995)	‘‘Interpersonal trust as the extent to which a person is confident in, and willing to act on the basis of, the words, actions, and decisions of

	another'' (p. 25)
McKnight, Cummings, and Chervany (1998)	Trust means that ''one believes in, and is willing to depend on, another party'' (p. 474)
Moorman, Zaltman, and Deshpande (1992)	Trust ''as a willingness to rely on an exchange partner in whom one has confidence'' (p. 315)
Ring (1996)	''Two distinct forms of trust can be observed in economic exchanges: fragile and resilient trust'' (p. 150)
Rotter (1967)	Trust ''as an expectancy held by an individual or a group that the word, promise, verbal or written statement of another individual or group can be relied upon'' (p. 651)
Schlenker, Helm, and Tedeschi (1973)	''Interpersonal trust may be defined as a reliance upon information received from another person about uncertain environmental states and their accompanying outcomes in a risky situation'' (p. 419)
Scott (1980)	''Interpersonal trust as a two-factor variable: one being a broad-based stable factor, the second being a situational influenced factor'' (p. 810)
Sitkin and Roth (1993)	Trust refers to ''belief in a person's competence to perform a specific task under specific circumstances'' (p. 373)
Zucker (1986)	''From a sociological perspective, trust is defined as a set of expectations shared by all those involved in an exchange'' (p. 54)

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