The Role of Trustworthiness in Reducing Transaction Costs and Improving Performance: Empirical Evidence from the United States, Japan, and Korea

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Abstract

In this paper we investigate the relationship between supplier trust in the buyer and transaction costs and information sharing in a sample of 344 supplier-automaker exchange relationships in the United States, Japan, and Korea. Our findings indicate that perceived trustworthiness reduces transaction costs and is correlated with greater information sharing in supplier-buyer relationships. Moreover, the findings suggest that the value created for transactors, in terms of lower transaction costs, may be substantial. In particular, we found that the least-trusted automaker spent significantly more of its face-to-face interaction time with suppliers on contracting and haggling when compared to the most trusted automaker. This translated into procurement (transaction) costs that were five times higher for the least trusted automaker. Finally, we argue that trust is unique as a governance mechanism because it not only minimizes transaction costs, but also has a mutually causal relationship with information sharing, which also creates value in the exchange relationship. Other governance mechanisms (e.g., contracts, financial hostages) are necessary costs incurred to prevent opportunistic behavior, but do not create value beyond transaction-cost minimization. Our findings provide empirical evidence that trustworthiness lowers transaction costs and may be an important source of competitive advantage.

(Trust; Transaction Costs; Information Sharing)

The issue of trust in economic exchanges has recently received considerable attention in the academic literature (Barney and Hansen 1994, Mayer et al. 1995, Zaheer et al. 1998) as well as the popular press (*Business Week* 1992, *Economist* 1996, Fukuyama 1995). Trust in exchange relationships has been hypothesized to be a valuable economic asset because it is believed to: (1) *lower transaction costs* and allow for greater flexibility to respond to changing market conditions (Gulati 1995, Barney and Hansen 1994, Uzzi 1997, Dyer 1997) and (2) *lead to superior information sharing* that improves coordination and joint efforts to minimize inefficiencies (Aoki 1988, Clark and Fujimoto 1991, Nishiguchi 1994). Some scholars even claim that national economic efficiency is highly correlated with a high-trust institutional environment (North 1990, Casson 1991, Fukuyama 1995). For example, Fukuyama (1995, p. 7) argues that the economic success of a nation, "as well as its ability to compete, is conditioned by . . . the level of trust inherent in the society." Indeed, numerous scholars have suggested that interorganizational trust is a key factor in explaining alliance success (Dyer 1996b, Doz and Hamel 1998). These claims have increased our attention to the important role of trust in economic exchanges.

However, does trust really pay off in hard economic benefits, or does this feel-good approach to economic exchange relationships bring only marginal benefits? Although the theoretical literature on the potential economic value of trust is well developed, empirical research is lacking. In fact, with the exception of some anecdotal, case-study evidence (Dore 1983, Lorenz 1988, Fukuyama 1995) there are virtually no large-sample empirical studies on the relationship between trust and the various activities believed to create economic value in exchange relationships (see Zaheer et al. 1998 for an exception). As Zucker (1986, p. 59) has observed, "For a concept that is acknowledged as central, trust has received very little empirical investigation." For example, Barney and Hansen (1994) argued that trustworthiness reduces transaction costs in exchange relationships and could be a

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source of competitive advantage, yet empirical studies confirming this hypothesis are essentially nonexistent. One reason for the lack of empirical work examining this important topic is that concepts such as "trust" and "transaction costs" are difficult to operationalize. As Williamson (1985, p. 105) has acknowledged: "A common characteristic of these studies [on transaction costs] is that direct measures of transaction costs are rarely attempted." To date, we are unaware of any other studies that have directly examined the relationship between firm trustworthiness, transaction costs, and firm profit performance.

In this paper we examine the relationship between trust and performance in a large sample of supplier-buyer exchange relationships. More specifically, we seek to answer the following questions: *Does a high level of supplier trust in a buyer result in: (1) lower transaction costs for the transactors, (2) greater information sharing among the transactors, and (3) better performance for the trustworthy party?* We investigate the relationship between perceived trustworthiness and transaction costs and information sharing in a sample of 344 supplier-automaker relationships in the United States, Japan, and Korea. We also explore the extent to which trustworthiness creates economic value for the automaker by examining whether "trustworthy" automakers incur lower procurement (transaction) costs than "less trustworthy" automakers. In summary, our goal is to examine empirically in a cross-national setting whether trust creates value in exchange relationships in the ways theorized in the academic literature.

Theoretical Framework and Hypotheses

Defining Trust

We draw on prior literature in defining trust as *one party's confidence that the other party in the exchange relationship will not exploit its vulnerabilities* (Sako 1991, Ring and Van de Van 1992, Barney and Hansen 1994, Zaheer et al. 1998). This confidence (trust) would be expected to emerge in situations where the "trustworthy" party in the exchange relationship: (1) is known to reliably make good-faith efforts to behave in accordance with prior commitments, (2) makes adjustments (e.g., as market conditions change) in ways perceived as "fair" by the exchange partner, and (3) does not take excessive advantage of an exchange partner even when the opportunity is available (Mayer et al. 1995). Thus, our definition characterizes interfirm trust as a construct based on three related components: reliability, fairness, and goodwill/benevolence. Because the notion of "goodwill" is part of our definition, trust, as defined here, is not based upon contracts but rather on noncontractual mechanisms.

Conceptually, organizations are not able to trust each other; trust is a microlevel phenomenon and has its basis in individuals. Trust can be placed by one individual in another individual or in a group of individuals (e.g., within an organization). However, individuals in an organization may *share an orientation* toward individuals within another organization. From this perspective, "*interorganizational trust describes the extent to which organizational members have a collectively held trust orientation toward the partner firm*" (Zaheer et al. 1998, p. 142).

In this study we consider trust (this collective orientation) by an automotive supplier in its automaker customer (the perceived trustworthiness of the automaker). This was a good research setting because it was important to study a set of transaction relationships in which trust might be important. Many scholars have argued that risk, or having something invested, is requisite to trust. The need for trust only arises in a risky situation (Deutsch 1958, Mayer et al. 1995). Generally speaking, risk would be present, and trust necessary, in settings where transactors make transaction-specific investments and where there is a high degree of environmental uncertainty.

The automobile is a complex product with thousands of components that must work together as a system. Components are often tailored to specific models and, therefore, suppliers must make automaker-specific investments in people, plant, tools, equipment, etc. (Dyer 1996a). Because these investments are not easily redeployable, suppliers are at risk if their automaker customers behave opportunistically. For example, after a supplier has invested in a dedicated asset, the automaker may opportunistically try to renegotiate a contract, threatening to switch to another supplier if the price is not lowered. Furthermore, the auto industry is characterized by a high degree of market uncertainty (Pine 1993), which increases both the risks associated with transacting as well as the importance of information sharing (Lorenz 1988, Aoki 1988). For example, the automaker may expect to sell 100,000 units of a particular model and request that the supplier make the necessary investments to produce parts for 100,000 units. However due to market uncertainty, the automaker may sell only 75,000 units, thereby placing the supplier in the difficult situation of having invested in assets that are not needed. The supplier will lose money on this investment unless it can trust the automaker to help it recoup its investment (or the supplier must anticipate the potential problem and write provisions for it in a legal contract). Unfortunately, many potential problems are impossible to foresee. Thus, an automaker's trustworthiness is of particular importance due

to relation-specific investments and market uncertainty that make suppliers vulnerable. Because suppliers are in the vulnerable position, in this study we focus on the buyer as the referent of trust, and the supplier as the "trustor."

Trust and Economic Performance

Trust is of most economic value when it is based on noncontractual, rather than contractual mechanisms.[1] The rationale for the economic value of "noncontractual" trust is straightforward: Trust eliminates the need for formal contracts, which are costly to write, monitor, and enforce (Hill 1995, Barney and Hansen 1994). Thus, trust is believed to reduce transaction costs. Furthermore, some anecdotal evidence suggests that transactors are more likely to share valuable work-related information when they have developed a high level of trust (Sako 1991, Nishiguchi 1994, Uzzi 1997). We examine these proposed relationships in greater detail.

Trust and Transaction Costs. Historically, economists have viewed the firm as a "production function." Consequently, the firm with the most efficient (lowest cost) production function would win in the marketplace. The value chain reflected the combined production functions of all of the firms that engaged in exchanges, from "upstream" raw materials to "downstream" final assembly. Theoretically, the value chain comprised of firms with the combined "low-cost" production functions would produce the final assembled product at the lowest total cost. However, transaction-cost economics has recognized that the productivity of a value chain is a function of *both production costs and transaction costs* (Williamson 1985). *Transaction costs* involve all of the costs associated with conducting exchanges between firms and can be decomposed into ex ante transaction costs, or search and contracting costs, and ex post contracting costs, or monitoring and enforcement costs (Williamson 1985, Hennart 1993, North 1990). *Search and contracting costs* include the costs of locating a desirable trading partner and then negotiating and writing a mutually acceptable agreement. *Monitoring and enforcement costs* refer to the costs associated with monitoring the agreement and then taking the actions necessary to ensure that each party fulfills the predetermined set of obligations. Most previous studies have lumped these "subtypes" of transaction costs together when discussing transaction costs. However, while together they comprise total transaction costs, they need not be perfectly correlated. In fact, if partners spend more time up front negotiating a mutually acceptable agreement, it is possible that this may reduce ex post monitoring and enforcement costs because all of the expectations and obligations will have been clearly specified during the contracting phase. Consequently, in this study we not only consider the total transaction costs incurred by automakers, we also consider *ex ante contracting costs* separately from *ex post contracting costs*. Transaction costs take many everyday forms—meetings, sales calls, bidding rituals—but their underlying economic purpose is to enable the exchange of goods and services. The sales, procurement, and legal functions within most companies represent a firm's investment in transacting with other parties.

Some scholars claim that transaction costs are significant and have a major impact on economic efficiency (North 1990, Williamson 1991). Indeed, Nobel Prize winner Douglas North (1990) estimates that transaction costs may represent as much as 35–40% of the costs associated with economic activity. Similarly, a study by strategy consultant McKinsey & Company (Butler et al. 1997, p. 5) found that "Interactions—the searching, coordinating, and monitoring that people and firms do when they exchange goods services or ideas—account for over a third of economic activity [GDP] in the United States." These studies suggest that firms that achieve the lowest transaction costs are likely to realize efficiency advantages in the marketplace.

Once an exchange partner is identified, trust may reduce transaction costs in a number of ways. First, under conditions of high trust, transactors will spend less time on ex ante contracting because they are confident that payoffs will be fairly divided. As a result, they do not have to plan for all future contingencies because they are confident that equitable adjustments will be made as market conditions change. Thus, trust promotes negotiating efficiency by enabling each party to be more flexible in granting concessions because of the expectation that the exchange partner will reciprocate in the future (Dore 1983). This allows transactors to achieve "serial equity" (equity over a longer period of time) rather than requiring immediate or "spot equity" (Ouchi 1984, Dyer 1997). Consequently, it reduces the need for transactors to invest heavily in ex ante bargaining. In addition, negotiations will likely be more efficient because transactors will have greater confidence that information provided by the other organization is not misrepresented. As observed by Zaheer et al. (1998, p. 144), "Trust reduces the inclination to guard against opportunistic behavior (i.e., deliberate misrepresentation on the part of the exchange partner)." In a study of supplier-buyer relationships in the electrical equipment industry, Zaheer et al. (1998) found support for a negative relationship between interorganizational trust and negotiation costs.

HYPOTHESIS 1. *The greater the supplier trust in the buyer, the lower the ex ante transaction costs (contracting costs) incurred by the exchange partners.*

Trust is also believed to have an inverse relationship with monitoring and enforcement costs for two main reasons. First, under conditions of high trust, trading partners will spend less time and resources on monitoring to see if the other party is shirking or fulfilling the "spirit" of the agreement. If each exchange partner is confident that the other party will not be opportunistic, then both parties can devote fewer resources to monitoring. In contrast, transactors without goodwill trust (who rely only on contract-based trust) will need to invest resources both in monitoring the other party's actions (to ensure compliance with the contract) and in enforcing the contract.

Second, trust may reduce transaction costs by reducing the amount of time and resources that transactors spend on ex post bargaining and haggling over problems that arise in the course of transacting. If trust is high, then each party will assume that the other party is acting in good faith and will interpret behaviors more positively (Uzzi 1997). Consequently, trading partners with high trust will spend less time haggling over problems that have emerged during the course of transacting due to mutual confidence that inequities will be fairly addressed and remedied.

HYPOTHESIS 2. *The greater the supplier trust in the buyer, the lower the ex post transaction costs (monitoring and enforcement costs) incurred by the exchange partners.*

Finally, when we consider Hypotheses 1 and 2 together (the greater the trust, the lower the ex ante and ex post transaction costs), we naturally must conclude that the greater the supplier trust in the buyer, the lower the total transaction costs incurred by the exchange partners. We do not state this as a separate formal hypothesis because it follows directly from the first two hypotheses.

Trust and Information Sharing. We theorize a positive relationship between buyer trustworthiness and supplier information sharing for two primary reasons. First, if the supplier can trust the buyer not to behave opportunistically, it will be more willing to share confidential information, such as on production costs or on product design and process innovations (Aoki 1988, Nishiguchi 1994). However, a supplier will voluntarily share this information only if it trusts the buyer not to steal its ideas and/or share them with competitors or will not attempt to "squeeze" the supplier's profit margins. In the absence of trust, information sharing on costs or new ideas/technologies is unlikely because this information could be "poached" or used opportunistically (Larson 1992, Uzzi 1997).

Second, a lack of trust may cause suppliers to suppress potentially relevant information that would be useful for problem solving. For example, suppliers may be unwilling to share information on production or design problems if they do not trust the buyer to work cooperatively in joint problem solving. In particular, suppliers may be reluctant to share any information that exposes weaknesses in their operations or their cost structure, even though the sharing of such information could result in valuable suggestions from the buyer that could lead to effective solutions. In contrast, high trust may lead to the mechanisms associated with "voice" (i.e., joint problem solving) (Helper 1991) rather than exit (termination of the relationship).

HYPOTHESIS 3. *The greater the supplier trust in the buyer, the more the supplier will share valuable (confidential) work-related information with the buyer.*

Trust, Transaction Costs, and Performance. If trust does indeed lower transaction costs (and increase information sharing) in the ways previously described, then greater trustworthiness on the part of a buyer should reduce the buyer's total costs, thereby increasing profitability. Williamson (1991), among others (see North 1990, Hennart 1993), has argued that firms that are effective at economizing on transaction costs will exhibit superior performance. Indeed, he argues that "strategy is economizing" on transaction costs. Thus, all else being equal, a buyer with a "trustworthy" reputation in exchange relationships should have lower transaction costs, which in turn should translate into better profit performance. Of course, this would be particularly true if transaction costs are as high a fraction of total costs as suggested in the studies by North (1990) and McKinsey & Company (Butler et al. 1997).

HYPOTHESIS 4. *All else being equal, the greater the buyer trustworthiness, the lower the buyer transaction costs and the better the buyer's profit performance.*

Control Variables: Investments in Relation-Specific Assets and Supplier Size. We employ a supplier's investment in relation-specific assets as a variable to control for: (1) the *vulnerability* of the supplier with regard to transaction-specific investments (and hence the need for trust) and (2) the supplier industry, or type of part exchanged. According to TCE, exchanges differ in their need for trust (safeguards) and information sharing. In situations where investments in relation-specific assets are low, trust may be unnecessary. Trust is necessary when transactors have made transaction-specific investments that create appropriable quasi-rents (Klein et al. 1978). Greater asset specificity would also be likely to

increase the need for information sharing because idiosyncratic exchanges tend to require greater coordination than standardized exchanges. Thus, we control for asset specificity because any examination of the effects of trust on transaction costs and information sharing must take into account exchange attributes (notably asset specificity) that may influence these constructs.

In addition, asset specificity is a good control for "supplier industry" or type of part. Some suppliers provide commodities such as extruded plastic parts or fasteners, while others provide unique complex parts or subassemblies such as airbags, heating systems, etc. The degree to which parts are customized may change the nature of the relationship between the buyer and the seller. There is currently no consensus on how supplier parts should be grouped together. However, one way to control for type of part is to control for physical and dedicated asset specificity. Because "generic parts" (e.g., fasteners, belts) will have a low level of asset specificity and "highly customized parts" (airbags, heating systems) will have a high level of asset specificity, controlling for physical asset specificity should provide a useful control for "type of part" exchanged.

We also employed a control for supplier size (sales volume to the automaker) because the relationship between automakers and their large and small suppliers may differ. Overall we think that by sampling only "tier one" suppliers, controlling for supplier size, and employing asset specificity controls, we are able to effectively control for supplier industry and size.

We acknowledge that the direction of causality between trust and information sharing is open to debate. For example, one can argue that information sharing leads to high trust rather than vice versa. We expect some degree of reciprocal causality with these variables where trust both influences, and is influenced by, information sharing. However, we have operationalized information sharing as the extent to which the supplier shares *confidential/proprietary information* with the buyer—information that would not be shared without some degree of trust. Of course, after this information is shared (and the other party behaves in a trustworthy manner) this would further increase trust. We explore the issue of reciprocal causality in greater detail in the discussion section.

Sample and Data Collection

We chose a cross-national setting to test our hypotheses for the following reasons. First, Japan has been described as a high-trust environment where interfirm trust is a key factor that facilitates exchange and creates competitive advantages for Japanese firms (Dore 1983, Sako 1991, Hill 1995). Thus, we wanted to empirically examine the extent to which interfirm trust is correlated with value-creating behaviors (e.g., information sharing, low transaction costs, etc.) in Japan. In contrast, the United States has often been characterized as a low-trust environment relative to Japan (Dore 1983, Sako 1991, Shane 1994). However, Fukuyama (1995) has recently argued that the United States, like Japan, is a high-trust environment—particularly when it is compared to other less developed countries. Our data allow us to examine whether levels of trust are reported as the same or different, and whether the relationship between trust and performance outcomes holds in both the United States and Japan. Finally, Korea was added because Korea's culture is similar to Japan's, and yet management practices in Korea have been influenced by U.S. firms, particularly in the auto industry where longstanding partner relationships have been formed between Daewoo and General motors (GM owned 50% of Daewoo until 1994) and Kia and Ford. Further, adding Korea allowed us to test whether or not the relationship between trust and performance outcomes was robust across numerous institutional environments, including a newly industrializing economy.

The sample consisted of three U.S. (General Motors, Ford, Chrysler), two Japanese (Toyota, Nissan), and three Korean (Hyundai, Daewoo, Kia) automakers and a sample of their Tier I suppliers. These companies represented more than two-thirds of the automotive market in each country. We visited each company's purchasing department and asked the procurement head to select a representative sample of suppliers, which included both partners (i.e., *keiretsu/chaebol* suppliers) and nonpartner (i.e., independent) suppliers. The procurement head also provided us with the total number of individuals employed in procurement for production parts (including management, purchasing agents/buyers, lawyers, and support staff) as well as the total value of goods they procured. This allowed us to develop a measure of automaker transaction costs, expressed as the dollar value of goods (parts) purchased per procurement employee. We interviewed a total of 31 purchasing executives to obtain feedback on the survey and to gain a better understanding of the issues arising in automaker-supplier relations. We also interviewed sales and engineering vice presidents at 70 suppliers (30 U.S., 20 Japanese, 20 Korean), during which a survey was pretested. To minimize key-informant bias and follow the general recommendation to use the most knowledgeable informant (Kumar et al. 1993), we asked the purchasing managers at each automaker to identify the supplier executive who was most responsible for managing the day-to-day relationship.

One may question whether a single informant has sufficient knowledge and ability to assess the collective trust

orientation of individuals at her organization towards the automaker organization. Although responses from multiple informants may have been preferred (with a cost of a smaller sample), we believe that our informants were well positioned to make this assessment for the following reasons. First, key informants had been employed at their respective organizations for an average of 16 years; thus they had a long history of working with the automaker. These individuals had primary responsibility for managing the day-to-day relationship with the customer and were well aware of the history of interactions between their, and their customer's, employees. Further, in approximately 15 of our in-person interviews with suppliers, the key informants brought two to three other top supplier executives to the interview who had previously filled out our questionnaire separately from the key informant. During the interview, the group of supplier executives would look at each other's answers and come to a consensus on the "group" answer (we were able to see their individual responses). The degree of similarity in their responses was remarkable; rarely did the responses vary more than one point on a seven-point Likert scale. Consequently, we believe the key informant responses to reliably represent the responses of multiple informants.

Usable responses were obtained from 135 U.S. (66% response rate), 101 Japanese (68% response rate), and 108 Korean (55% response rate) suppliers. The data collection was done between 1993 and 1994. The U.S. and Japanese data were collected in 1993, reflecting data for 1992, and the Korean data were collected in 1994, reflecting data for 1993. We do not believe this will bias the results because Korean suppliers indicated that their relationship with their largest automaker customer had not changed in any significant ways since 1992.

Operational Measures

Trust. Consistent with previous studies, we operationalized trust (buyer trustworthiness) using multiple scale items designed to measure the extent to which the supplier trusted the automaker not to behave opportunistically[2] (Anderson and Narus 1990, Heide and John 1988, Zaheer and Venkatraman 1995). Trust (TRUST) was operationalized as the sum of the following submeasures that are reflections of a single unidimensional construct:

(1) The extent to which the supplier trusts the manufacturer to treat the supplier fairly;

(2) The extent to which the automaker has a reputation for trustworthiness (following through on promises and commitments) in the general supplier community;

(3) If given the chance, the extent to which the supplier perceives that the automaker will take unfair advantage of the supplier (reverse scored).

Each scale item was measured on a seven-point Likert scale (1 = not at all; 7 = to a very great extent). Cronbach's alpha for this construct was 0.84, indicating high reliability.

Transaction Costs. To measure transaction costs, we asked suppliers to estimate: (a) the number of "person-days" of contact between their organization and the automaker during the previous year[3] and (b) what percentage of their face–to–face communication time with automakers involved negotiating a price or contract, or ex post haggling in the form of assigning blame for problems. According to suppliers, face-to-face communication represents the most important, and expensive, form of communication between suppliers and automakers. We consider ex ante transaction costs (negotiating) and ex post transaction costs (haggling) as separate constructs to examine whether trust affects ex ante, and ex post, transaction costs differentially. Thus, ex ante and ex post transaction costs were measured as the number of days per year between the automaker and the supplier that is spent negotiating a price/contract (ex ante contracting) or haggling and assigning blame for problems (ex post haggling). More precisely, these measures are calculated as follows:

Ex ante transaction costs (ExanteTC)
= (total annual "person-days" of face-to-face time spent) × (percent of time spent on price negotiation/contracting) ÷ (supplier sales to the buyer).

Ex post transaction costs (ExpostTC)
= (total annual "person-days" of face-to-face time spent) × (percent of time spent haggling and assigning blame for problems) ÷ (supplier sales to the buyer).

Therefore, our measures represent *transaction cost per dollar of sales*. Because these measures are divided by the supplier's sales to the buyer, we control for supplier sales to the buyer in our model. Our ex ante contracting and ex post haggling constructs capture those activities that by themselves are not value-enhancing activities, but rather are activities associated with completing the transaction and ensuring that each party lives up to its part of the agreement.

Supplier Information Sharing. Information sharing was operationalized as the extent to which the supplier shares *confidential/proprietary information* with automaker buyers and engineers (1–7 Likert scale). In particular, the sharing of sensitive information, such as costs and proprietary technology, has been demonstrated to be a critical factor for the successful implementation of automaker and suppliers' joint efforts to minimize costs (Nishiguchi 1994).

Control Variable: Asset Specificity. Asset specificity refers to capital investments in customized machinery,

tools, dies, etc. Asset specificity was operationalized as the percent of the supplier's total capital equipment investments that would have to be scrapped if they were prohibited from conducting any future business with the automaker. This percentage was estimated by supplier respondents. Asset specificity was assumed to increase with an increase in the percentage of capital investment that could not be redeployed. Finally, a confirmatory factor analysis was carried out to test the overall fit of the measures with the data.[4]

Model and Data Analysis

The first three hypotheses were tested with data collected from the suppliers (i.e., unit of analysis is the supplier) using the following regressions:

H1: Ex Ante TC = a + (b1) TRUST + (b2) ASSET.SPECIFICITY + e;

H2: Ex Post TC = a + (b1) TRUST + (b2) ASSET.SPECIFICITY + e;

H3: Suppl. Info.Share = a + (b1) TRUST + (b2) ASSET.SPECIFICITY + e.

To examine the relationship between buyer trustworthiness and buyer transaction cost, we tested the following model using data collected at the buyer (automaker) level (i.e., unit of analysis is the automaker).

H4: BUYER TRANSACTION COST = a + (b1) BUYER TRUSTWORTHINESS.

The proxy we use for BUYER TRANSACTION COST is the average procurement dollars per person in the purchasing department of the automaker. Automakers incur lower transaction costs as they increase the dollars of goods procured per person. Also, BUYER TRUSTWORTHINESS is the mean trust score for all the suppliers who are associated with the particular automaker.

Results

The simple descriptive statistics for the pooled sample and each country are shown in Table 1. The descriptive statistics indicate that supplier trust is significantly higher in Japan than in Korea or the United States, which have similar levels of supplier trust. The findings from this industrial sector[5] support prior arguments that trust among Japanese transactors is high relative to the United States (Dore 1983, Sako 1991, Shane 1994) and contradict Fukayama's (1995) claims that Japan and the United States have similar levels of trust. The descriptive statistics also show that Japanese suppliers have the lowest ex post transaction costs, followed by U.S. suppliers, while comparable measures for Korean suppliers are very high. This is largely because our measure of transaction cost is measured in terms of transaction cost per dollar sales. Because the average Korean supplier is less than one-twentieth in size compared to that of the Japanese and U.S. suppliers, the denominator is very small, resulting in the high transaction costs per dollar of sales. It seems that the high ex ante and ex post transaction cost per dollar of sales for Korean suppliers is more a result of diseconomies of scale, rather than inherent inefficiencies in the way that they conduct their business with the automakers (as we will show later in Figure 2, the percent of face-to-face time that Korean automakers spend on transaction-oriented activities is greater than Japanese automakers, but falls in line with U.S. automakers). The descriptive statistics also indicate that Japanese suppliers share more confidential information than their U.S. and

Table 1 Means and Standard Deviations: Pooled Sample and by Country

Variables	Pooled (n=344)	U.S. (n=135)	Japan (n=101)	Korea (n=108)
1. TRUST	14.30	13.63	16.37	13.21
	(3.20)	(2.64)	(2.60)	(3.48)
2. Ex Ante TRANSCOST	3.42	.83	.73	4.8
	(10.51)	(1.62)	(1.04)	(12.72)
3. Ex Post TRANSCOST	1.26	0.20	0.15	1.86
	(3.37)	(0.30)	(0.26)	(4.08)
4. SUPPL. INFOSHARE	4.81	3.57	5.74	5.00
	(1.63)	(1.73)	(1.08)	(1.37)
5. ASSET. SPECIFICITY	0.32	0.16	0.21	0.50
	(0.28)	(0.14)	(0.20)	(0.28)

Note. Standard deviations reported in parentheses.

Table 2 Correlation Matrix

	TRUST	Ex ante TC	Ex post TC	Suppl. Infoshare
Ex ante TC	−0.071			
	(0.369)			
Ex post TC	−0.186	0.433		
	(0.016)	(0.000)		
Suppl. Infoshare	0.322	−0.004	−0.038	
	(0.000)	(0.959)	(0.637)	
Asset.Specificity	−0.040	0.221	0.116	0.129
	(0.547)	(0.006)	(0.156)	(0.050)

Note. Figures in parentheses are significance levels.

Korean counterparts. Supplier investments in relation-specific assets were found to be highest in Korea, followed by Japan, and the United States. This is not surprising because some studies have found that 72% of Korean automotive suppliers supply to only one customer (Oh 1995). The correlation matrix in Table 2 shows that the independent variables used in the regression results do not have multicollinearity problems.

The results of the regression analysis for our first three hypotheses are shown in Table 3.

First, our data indicate that the relationship between trust and ex post transaction costs is much stronger than the relationship between trust and ex ante transaction costs. Greater supplier trust in the buyer leads to lower ex post transaction costs for the exchange partners in the pooled sample,[6] the United States, and Korea. However, while the sign is in the expected direction, the relationship is short of being significant in Japan. The relationship between trust and ex ante transaction costs falls short of being significant (though the *F*-statistic for the pooled sample model is significant). It seems that even for high-trusting relationships, it is necessary to spend some effort up-front to make sure that the responsibilities of each party are clearly spelled out (particularly when there is high asset specificity). Overall, Hypothesis 1 is not supported, while Hypothesis 2 receives strong support in the pooled sample and in the United States, and weaker support in Korea ($p<0.10$).

Table 3

Relationship	Expected Sign	Parameter	*T*-Value	R^2	*F*
H1: Trust → Ex ante TC	−	−0.085	−0.241	0.05	4.88***
(Holding Asset.Spec. constant)					
United States:		0.014	0.373	0.00	0.19
Japan:		−0.000	−0.009	0.00	0.00
Korea:		0.062	0.066	0.01	0.61
H2: Trust → Ex post TC		−0.344***	−2.299	0.06	4.49***
(Holding Asset.Spec. constant)	−				
United States:		−0.019***	−2.367	0.05	4.22***
Japan:		−0.003	−.247	0.01	0.51
Korea:		−0.641*	−1.599	0.02	1.29
H3: Trust → Suppl.Infoshare	+	0.088***	3.804	0.19	20.45***
(Holding Asset.Spec. constant)					
United States:		0.034	0.744	0.01	1.14
Japan:		0.068**	1.989	0.04	2.05
Korea:		0.115***	3.069	0.09	4.97***

Note. Size is being controlled for in the transaction cost variables, which include supplier sales to the automaker. The first line represents results for the pooled sample ($N=344$). The 2nd, 3rd, and 4th lines represent results for United States ($N=135$), Japan ($N=101$), and Korea ($N=108$), respectively.
*** sig. at alpha = 0.01 (one-tailed test).
** sig. at alpha = 0.05 (one-tailed test).
* sig. at alpha = 0.10 (one-tailed test).

Second, our analysis suggests a positive relationship between supplier trust and the sharing of confidential work-related information by the supplier. Hypothesis 3 receives strong support in the pooled sample, Japan, and Korea, but is just short of being significant in the U.S. sample.

Finally, to test Hypothesis 4 we examined the correlation between buyer trustworthiness and buyer transaction costs as measured by dollars of goods procured per procurement employee. When we plot relative procurement costs for each automaker, along with the automaker's mean score for trustworthiness, we find a strong positive and significant correlation of $r = 0.66$. The findings indicate that Firm A1, which had low supplier trust, incurred procurement (transaction) costs that were more than twice those of the other U.S. firms, A2 and A3, and almost six times higher than Firm J1. Thus, the data offer support for Hypothesis 4. Finally, to confirm the link between trustworthiness and low transaction costs and financial performance, we examined the correlation between each buyer's trustworthiness and its transaction costs and its average profitability (ROA or pretax profits divided by assets) from 1985–1995. The results indicate a strong correlation between automaker trustworthiness and transaction costs (measured as procurement productivity); see Figure 1. The results also show a strong correlation between automaker trustworthiness and profit performance; see Figure 2. Although there are a number of factors that undoubtedly influence performance differences among automakers, these findings suggest that trustworthiness is a contributing factor because it reduces the automaker's transaction costs, thereby improving automaker profitability.

Discussion

Our study is one of the first large-sample, cross-national empirical tests of its kind to demonstrate an inverse relationship between trust and transaction costs in supplier-buyer relations. It is also one of the first studies to show a relationship between firm trustworthiness and firm performance. While it is not possible in this research to partition out all of the factors that account for these relative performance differences, the fact that trustworthiness was strongly linked to low transaction costs, and low transaction costs strongly linked to performance, suggests that a reputation for trustworthiness improves performance.

As one of the first cross-national studies on trust, we would like to briefly comment on country-specific differences. First, consistent with prior anecdotal evidence we found supplier trust was universally high in Japan, and there was very low variance on the trust measures. These

Figure 1 The Relationship Between Automaker Trustworthiness and Automaker Transaction Costs (Procurement Productivity)

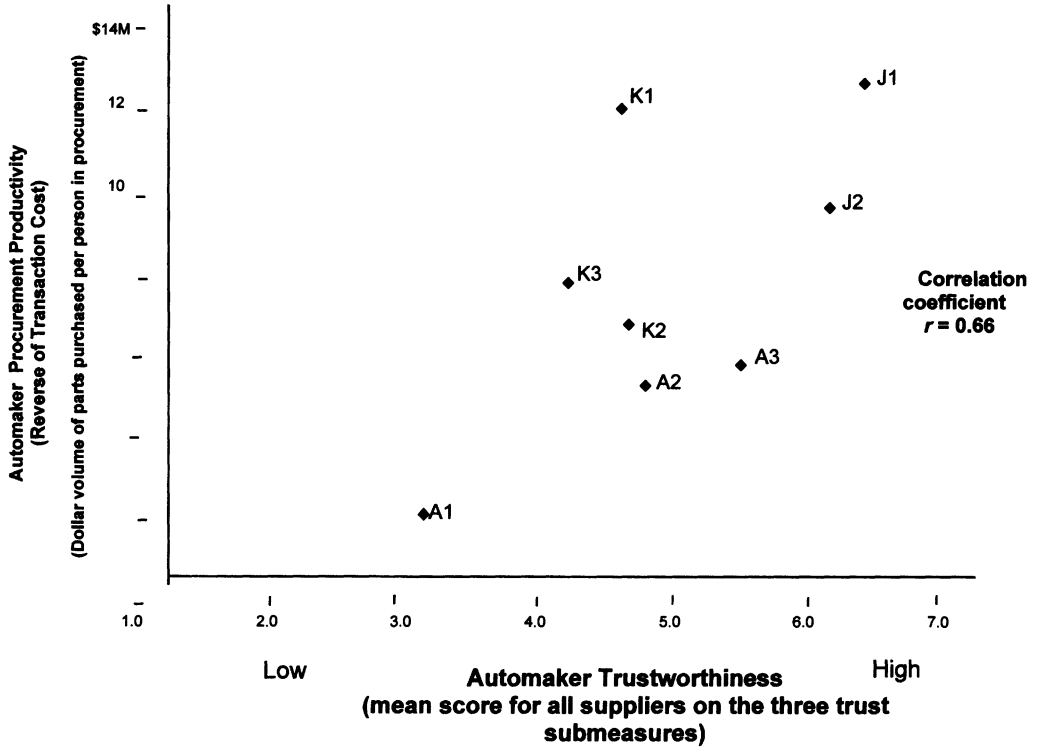
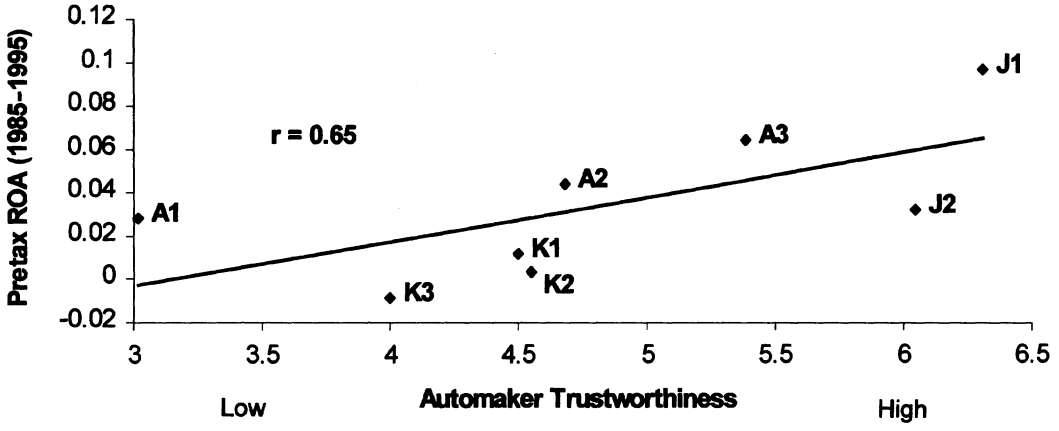


Figure 2 Automaker Trustworthiness and Profitability



findings offer empirical support for Dore's (1983) observation that "moralized trading relationships of mutual goodwill" (p. 463) generally pervade Japanese transaction relationships. Moreover, our finding that transaction costs were lower in Japanese transaction relationships confirms the theoretical arguments made by Hill (1995) that Japanese economic relationships are likely to be characterized by low transaction costs for a variety of cultural reasons. In addition, we found greater information sharing among Japanese transactors. The fact that interfirm relationships in Japan were generally characterized by greater trust, lower transaction costs, and greater information sharing may account for the success of Japanese firms in complex product industries (Abbeglen and Stalk 1985, p. 63; Kotler et al. 1985a; Clark and Fujimoto 1991).

We were somewhat surprised to find that trust levels in Korea were much lower than in Japan and even slightly lower than trust levels in the United States. This was surprising because Korean culture is more similar to Japanese culture and because previous research suggests that many Korean suppliers and automakers have an exclusive relationship. One plausible reason for this finding is the Korean government's policy of nurturing large conglomerates (*chaebols*) and its failure to set up laws to protect small-to-medium-sized businesses in their dealings with the powerful *chaebols*. As a result, many small businesses have been at a relative disadvantage in trading with the *chaebols,* which have been in a position to dictate the terms of trading agreements and the relationship in general.

U.S. supplier-automaker relationships were characterized by lower asset specificity and lower information sharing compared to Japanese and Korean relationships. This is consistent with the general desire to minimize dependence in exchange relationships in the United States. Interfirm trust, while lower than in Japan, was actually higher in the United States than in Korea. This is consistent with Fukuyama's argument that interfirm trust in the United States is actually quite high relative to most other countries, especially emerging economies. We should also note, however, strong firm-specific differences within the United States (and indeed within each country), which suggests that institutional environment may be less important than firm-level practices in influencing levels of interfirm trust, transaction costs, and information sharing.

Finally, we want to briefly comment on our finding that trust was positively correlated with information sharing. First, we acknowledge that our measure of information sharing was a single-item measure, which naturally has some validity and reliability concerns. However, we conducted interviews with 70 supplier executives who repeatedly claimed that they were much more likely to bring new product designs and new technologies to "trustworthy" automakers. The following statement by a supplier executive is representative of the comments we heard,

> We are much more likely to bring a new product design to [Automaker A3] than [Automaker A1]. The reason is simple. [Automaker A1] has been known to take our proprietary blueprints and send them to our competitors to see if they can make the part at lower cost. They claim they are simply trying to maintain competitive bidding. But because we can't trust them to treat us fairly, we don't take our new designs to them. We take them to [Automaker A3] where we have a more secure long-term future (Author interview, October 1995).

We caution, however, that due to the cross-sectional nature of the data, we cannot be certain as to the direction of causality. We can only state that we know trust and information sharing are related. Future longitudinal research might more explicitly test the causal relationship between trust and information sharing by examining how a change in trust results in changes in information sharing (or vice versa).

The Distinctiveness of Trust as a Governance Mechanism

In the process of examining the influence of trust on transaction costs and information sharing, we discovered an interesting phenomenon that may explain why trust is particularly valuable as a governance mechanism. This finding emerged as we attempted to determine whether information sharing was an antecedent, or an outcome, of trust. For example, does information sharing lead to trust, or does trust lead to information sharing? Of course, the answer appears to be both—trust and information sharing are subject to mutual causality and each variable is therefore both an antecedent and an outcome of the other. Furthermore, supplier investments in information sharing not only build trust, but also simultaneously create economic value in their own right. To confirm this we ran a regression model to test the relationship between our previous dependent variables (information sharing, transaction costs) and supplier trust (as a dependent variable). We found a significant positive relationship between information sharing and supplier trust (T value = 4.0; $p<0.001$), but not between transaction costs and supplier trust. Thus, trust appears to lead to certain value-creating behaviors (i.e., information sharing) and these value-creating behaviors in turn lead to higher levels of trust.

This phenomenon makes *trust unique as a governance mechanism because the investments that trading partners make to build trust often simultaneously create economic value (beyond minimizing transaction costs) in the exchange relationship.* According to transaction cost theory, the relative attractiveness of each governance mechanism is based on its differential ability to lower transaction costs. Indeed, the theory's focus is almost completely on *cost minimizing* rather than *value creation.* By comparison, trust not only minimizes transaction costs, but also appears to have a mutually causal relationship with information sharing that also creates value in the exchange relationship. This uniqueness may explain why trust has been described as a key factor, and the primary governance mechanism, in most studies of high-performing dyads/networks (Lorenz 1988, Powell 1990, Dyer 1996b). It may also explain why Zaheer et al.

(1998) found a direct relationship between interorganizational trust and performance. Zaheer et al. (1998, p. 155) speculate that

> The basis for performance enhancement does not appear to be based on efficiencies gained from eased negotiation processes. Rather, we speculate that the enhancement of transaction value (Zajac and Olsen 1993)—such as cooperation in the exploration of new information and coordination technologies, new market opportunities, and product and process innovation—may account for the link between interorganizational trust and exchange performance.

Conclusion

This study validates previous theoretical arguments that trustworthiness lowers transaction costs in exchange relationships (Barney and Hansen 1994). In particular, our findings indicate that trust reduces ex post transaction costs and is correlated with increased information sharing in supplier-buyer relationships. Moreover, the economic value created for transactors, in terms of lower transaction costs, appears to be substantial in the automotive industry. However, we should caution that the validity of the implied causal links of our model is limited by the cross-sectional nature of our research design. We also caution that our findings may only be generalizable to the auto industry or other industries with similar characteristics (i.e., complex-product industries where suppliers are vulnerable because they have made substantial transaction-specific investments). Complex product industries (see Clark and Fujimoto 1991, pp. 10–11) tend to be characterized by a high degree of mutual (reciprocal) interdependence on the part of intermediate component makers and final assemblers. Investments in relation-specific assets are often necessary to coordinate on nonroutine, complex tasks that are reciprocally interdependent. Examples of industries that fit these characteristics include aircraft, heavy machinery, robotics, machine tools, supercomputers, microelectronics, etc.

We believe that trust in supplier-buyer relations may be an important source of competitive advantage in industrial settings in which: (1) transaction costs are expected to be high due to conditions that create transactional difficulties (e.g., environmental uncertainty and high interfirm asset specificity) and (2) there is a high value associated with information sharing (information is a particularly valuable resource due to product complexity and industry uncertainty). Future longitudinal research, and research across multiple industry settings, could shed light on both the validity of the causal links we suggest as well as the generalizability of our findings to other industry settings.

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Endnotes

[1]Some have argued that it is possible to generate trust contractually (Williamson 1991). However, to do so requires the time and expense associated with writing the contract (which would increase transaction costs).

[2]The survey was administered to the suppliers so the measures reflect the perceptions of suppliers regarding the supplier-automaker relationship. However, during our interviews with the automaker purchasing managers we discovered that both the supplier and automaker perceptions regarding the relationship were very similar in specific cases we discussed. There were no instances where the perceptions of suppliers and automakers were dramatically different. Our anecdotal findings are similar to those of Anderson and Narus (1990), who found that suppliers' and buyers' perceptions of levels of trust were quite consistent.

[3]This construct includes face-to-face contact between supplier sales personnel and automaker purchasing personnel. We used the identical methodology as Dyer (1996a), where days of contact was calculated by having the supplier's sales vice president identify the number of sales people that worked directly with the particular automaker. Then, s/he indicated the average number of days per week that the typical salesperson would spend having a face-to-face meeting with automaker personnel.

[4]We executed confirmatory factor analysis to confirm unidimensionalities of TRUST and to verify the discriminant validity between SUPPL.INFOSHARE, EX ANTE TC, and EX POST TC. Overall fitness of the confirmatory factor analysis model was satisfactory with high goodness of fit and low root mean squared (Chi-squared = 36.97 (d.f. = 16; $p = 0.0021$), GFI = 0.98, AGFI = 0.94, RMR = 0.021). So, we conclude that our measurement model fits well with the actual data. For TRUST, standardized parameters for each item are sufficiently high to confirm convergent validity so that the individual items are internally consistent measures. (Bagozzi and Yi 1989).

[5]Of course, we only have data for this industry so we cannot say definitively that trust levels in the United States as a society are lower than in Japan.

[6]In the pooled data, we have included dummy variables for the countries.

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