

**THE ECONOMIC VALUE OF TRUST  
IN SUPPLIER-BUYER RELATIONS**

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### Abstract

In this paper we investigate the relationship between supplier trust in the buyer and transaction costs, information sharing, and relation-specific investments in a sample of 453 supplier-automaker exchange relationships in the U.S., Japan, and Korea. Our findings indicate that trust reduces transaction costs and increases information sharing in supplier-buyer relationships. Moreover, the findings suggest that the economic value created for transactors, in terms of lower transaction costs, may be substantial. In particular, we found that the automaker with the least trusting supplier relations spent twice as much of its face-to-face interaction time with suppliers on ex ante contracting and ex post haggling when compared to the most trusted automakers. This translated into procurement (transaction) costs which were as much as five times higher for the least trusted automaker compared to the most 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 other behaviors (i.e. information sharing, buyer technical assistance) that create 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. Thus, our findings indicate that trust in supplier-buyer relations can create economic value and may be an important source of competitive advantage.

The issue of trust in economic exchanges has recently received considerable attention in the academic literature (Sako, 1991; Williamson, 1993; Barney & Hansen, 1995; Mayer, et al 1995) as well as the popular press (Business Week, 1986, 1992; Economist, 1996; Fukuyama, 1995). Trust in exchange relationships has been hypothesized to be a valuable economic asset because it has been described as an important antecedent to effective interorganizational collaboration (Sako, 1991; Smith, Carroll, and Ashford, 1995). More specifically, trust is believed to: (1) *lower transaction costs* and allow for greater flexibility to respond to changing market conditions (Dore, 1983; Sako, 1991; Gulati, 1995; Barney & Hansen, 1995; Dyer, 1997), (2) *lead to superior information sharing routines* which improve coordination and joint efforts to minimize inefficiencies (Aoki, 1988; Clark & Fujimoto, 1991; Nishiguchi, 1994) , and (3) *facilitate investments in transaction or relation-specific assets*<sup>1</sup> which enhance productivity (Asanuma, 1989; Lorenz, 1988; Dyer, 1996a). Some scholars even claim that national economic efficiency is highly correlated with the existence of a high trust institutional environment (North, 1990; Casson, 1991; Hill, 1995; Fukuyama, 1995). For example, Fukuyama (1995:7) 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 the competitive advantage of Japanese firms relative to U.S. or U.K. firms (Dore, 1983; Smitka, 1991; Sako, 1991; Dyer, 1996b). The findings from these, and other, studies have increased our attention on the important role of trust in economic exchanges.

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<sup>1</sup> We use the terms transaction and relation-specific investments interchangeably, though we typically use the term "relation-specific" assets to suggest a shift in attention from the transaction to the economic relationship as the unit of analysis (see Kogut, 1989; Powell, 1990).

But 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; Sako, 1991; Fukuyama, 1995; Dyer, 1996b) there have been few, if any, large sample empirical studies on the relationship between trust and the various activities believed to create economic value in exchange relationships. As Zucker (1986:59) has observed, "For a concept that is acknowledged as central, trust has received very little empirical investigation." For example, trust is widely argued to reduce transaction costs in exchange relationships and yet empirical studies confirming this hypothesis are essentially non-existent. 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 (1985:105) has acknowledged: "A common characteristic of these studies [on transaction costs] is that direct measures of transaction costs are rarely attempted."

The purpose of this paper is to examine the relationship between trust and performance in a sample of supplier-buyer exchange relationships. More specifically, we seek to answer the following questions: *Do suppliers that have developed a high level of trust in a buyer (1) incur lower transaction costs, (2) share more information, and (3) make greater investments in relation-specific assets than suppliers with lower levels of trust.* We investigate the relationship between trust and information sharing, relation-specific investments, and transaction costs in a sample of 453 supplier-automaker exchange relationships in the U.S., Japan, and Korea. We also examine the extent to which supplier trust creates measurable economic value for the buyer by examining whether or not "trustworthy" automakers incur lower procurement (transaction) costs

than "less trustworthy" automakers. In summary, our objective was to empirically examine in a cross-national setting whether or not trust creates economic value in exchange relationships in the ways theorized in the academic literature.

## **THEORETICAL FRAMEWORK AND HYPOTHESES**

### **Defining Trust**

Among organizational scholars, trust has received attention as a mechanism of organizational control, and more specifically as an alternative to price, contracts, and authority (Ouchi, 1980; Bradach & Eccles, 1989; Powell, 1990). The literature on interorganizational relations offers two general definitions of trust: confidence or predictability in one's expectations about another's behavior, and confidence in another's goodwill (Ring & Van de Ven, 1992; Zaheer et al, forthcoming). We draw on the previous literature in defining trust as *one party's confidence that the other party in the exchange relationship will not exploit its vulnerabilities* (Dore, 1983; Sako, 1991; Ring & Van de Van 1992; Sabel, 1993; Barney & Hansen, 1995). 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 (i.e. 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. Thus, our definition characterizes interfirm trust as a construct based on three components: reliability, fairness, and goodwill. Our definition of trust is similar to the "goodwill trust" description given by Sako (1991) and the "trust" definitions offered by numerous scholars (Sabel, 1993; Ring & Van de Ven, 1992; Barney & Hansen, 1995). Thus, trust, as defined here, is not based upon contracts or third party sanctions but rather is based on non-contractual mechanisms.

Conceptually, organizations are not able to trust each other; trust has its basis in individuals. Trust can be placed by one individual in another individual or in a group of individuals, such as a partner 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 there is a collectively-held trust orientation by organizational members toward the partner firm” (Zaheer, McEvily & Perrone forthcoming)

In this study we consider trust (this collective orientation) by an automotive supplier in its automaker customer. This research setting was an unusually good test site because it was important to study a set of transaction relationships in which trust might be important and valuable. 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). 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 as a result suppliers must make automaker-specific investments (Nishiguchi, 1994; Dyer, 1996a). Since these investments are not easily re-deployable, suppliers are at risk if automakers choose to behave opportunistically. 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). Thus, a supplier’s trust in the automaker is of particular importance in the auto industry due to supplier investments in customer-specific assets and market uncertainty which places suppliers in a vulnerable position.

## **Trust and Economic Performance**

Trust is generally considered to be of most economic value when it is based on non-contractual, rather than contractual mechanisms. The rationale for the economic value of "non-contractual" trust is straightforward: trust eliminates the need for formal contracts, which are costly to write, monitor, and enforce (Hill, 1995; Barney & Hansen, 1995). 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 (Lorenz, 1988; Sako, 1991; Nishiguchi, 1994). Finally, high levels of interorganizational trust may prompt firms to make investments in productive relation-specific assets or technologies that are tailored to the exchange relationship. We examine each of these proposed relationships in greater detail.

### *Trust and Transaction Costs*

Transaction costs can be decomposed into four separate costs related to transacting: 1) search costs, 2) contracting costs, 3) monitoring costs, and 4) enforcement costs (Williamson, 1985; Hennart, 1993; North, 1990). *Search costs* include the costs of gathering information to identify and evaluate potential trading partners. *Contracting costs* refer to the costs associated with negotiating and writing an agreement. *Monitoring costs* refer to the costs associated with monitoring the agreement to ensure that each party fulfills the predetermined set of obligations. *Enforcement costs* refer to the costs associated with ex post haggling and sanctioning a trading partner that does not perform according to the predetermined agreement.

Trust may reduce the transaction costs incurred by exchange partners in three ways. First, under conditions of high trust transactors will spend less time on ex ante contracting

because they trust 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 allows transactors to achieve "serial equity" (equity/reciprocity 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.

Second, 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 take advantage even if it has the chance, then both parties can devote fewer resources to monitoring. Finally, 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, 1993). Consequently, trading partners 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 1: The greater the supplier trust in the buyer, the lower the transaction costs incurred by the exchange partners.*

### *Trust and Information Sharing*

We theorize a positive relationship between supplier trust and 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. 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 (i.e. with in-house supplier divisions or other external supplier 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, 1993).

Second, a lack of trust may cause exchange partners 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. direct feedback, joint problem solving) [Helper, 1991; Nishiguchi, 1994] rather than exit (termination of the relationship).

*Hypothesis 2: The greater the supplier trust in the buyer, the more the supplier will share valuable (confidential) work-related information with the buyer.*

#### *Trust and Investments in Relation-Specific Assets*

Recent studies indicate that investments in relation-specific investments can enhance productivity in exchange relationships (Asanuma, 1989; Parkhe, 1993; Dyer, 1996a). However, investments in relation-specific assets create appropriable quasi-rents which in turn creates the potential for opportunism (Klein, Crawford & Alchian, 1978). Thus, in order for trading partners

(i.e. suppliers) to willingly make investments in relation-specific assets, they must have assurances that the other party will not behave opportunistically and attempt to appropriate those quasi-rents. This is a real concern for suppliers as demonstrated by the empirical findings from recent studies (Lyons, 1994; Dyer, 1997). For example, Lyons (1994) found that 60 percent of U.K. transactors in a particular engineering field claimed that they were *not* utilizing the optimal level of specialized investments with their main customer. Lyons suggests that these suppliers did not make the optimal level of investments because they were unwilling to expose themselves to the risk of being opportunistically exploited. In the absence of trust, suppliers will be less likely to make investments in productivity-enhancing assets that are tailored to a particular customer.

*Hypothesis 3: The greater the supplier trust in the buyer, the greater the supplier's investment in relation-specific assets which are tailored/dedicated to the buyer.*

#### *Information Sharing and Transaction Costs*

When trading partners share information they reduce information asymmetry as well as the potential for opportunism. This in turn should reduce transaction costs in the exchange relationship. In neoclassical economics, transaction costs are assumed to be zero because transactors have perfect information. Information asymmetry is necessary in order for transactors to behave opportunistically. As North (1990:108) observes, "the costs of transacting arise because information is costly" and "asymmetrically held by the parties to the exchange." In a transaction world of perfect information, transaction costs should be negligible because transactors cannot behave opportunistically by concealing relevant information (Akerlof, 1970; North, 1990). Thus, a high degree of supplier-buyer information sharing would be expected to

have an inverse relationship with transaction costs.

*Hypothesis 4: The greater the level of supplier information sharing, the lower the transaction costs incurred in the exchange relationship.*

#### *Relation-Specific Investments and Transaction Costs*

Previous research has shown that productivity gains in the value chain are possible when firms are willing to make relation-specific investments (Williamson, 1985; Asanuma, 1989; Parkhe, 1993; Dyer, 1996a). However, increased specialization within a production network cannot be achieved without a cost. When transactors make investments in specialization, transaction costs arise because of the fear of opportunism. A central premise of transaction cost theory is that transaction costs increase as transactors make greater relation-specific investments. The standard reasoning is that as asset specificity increases, more complex governance structures (e.g., more complex contracts) are required to eliminate or attenuate costly bargaining over profits from specialized assets (Williamson, 1985). Thus, transaction costs are presumed to increase with an increase in asset specificity.

*Hypothesis 5: The greater the supplier's investment in relation-specific investments, the higher the transaction costs incurred in the exchange relationship.*

#### *Supplier Information Sharing and Buyer Technical Assistance*

The willingness of a buyer to commit resources to help suppliers solve problems and improve their operations may be contingent on the supplier's willingness to share information (Nishiguchi, 1994; Helper, Pil, & MacDuffie, 1997). For example, the international purchasing chief for Toyota made the following statement with regard to his firm's inability to work effectively with some U.S. suppliers,

Many U.S. suppliers do not understand our way of doing business. They do not want us to visit their plants and they are unwilling to share the information we require. This makes it very difficult for us to work with them effectively; we also can't help them to improve (Author interview, July 22, 1992).

In this particular case, the willingness of the supplier to share information influenced the buyer's commitment of resources to assist the supplier improve its operations. Moreover, the ability of exchange partners to effectively diagnose problems and jointly problem solve is based in large part on the willingness of the parties to share accurate, and sometimes confidential, information. Consequently, the supplier may have to share information in order to call forth the resources of the buyer for joint problem solving. Thus, we would expect a positive relationship between supplier information sharing and buyer technical assistance.

*Hypothesis 6: The greater the level of supplier information sharing, the greater the technical assistance offered by the buyer.*

See Figure 1 for a summary of the hypothesized relationships. We acknowledge that the direction of causality between trust and information sharing, and between buyer assistance and information sharing, is open to debate. For example, one can argue that information sharing leads to high trust rather than vice versa. We would 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 proprietary and confidential information with the buyer--information that would be unlikely to 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.

[Insert Figure 1 about here]

## **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 U.S. 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 long-standing partner relationships have been formed between Daewoo and General motors (GM owned 50 percent of Daewoo until 1994) and Kia and Ford. We were curious to see whether or not interfirm trust levels were similar to Japan's (perhaps due to cultural similarities) or more similar to the U.S. (perhaps due to similar management practices). Further, adding Korea allowed us to test whether or not the relationship between trust and performance outcomes was robust across numerous institutional environments.

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 suppliers. The authors visited each company's purchasing department and asked the department manager to select a representative sample of suppliers, which included both partners (i.e. *keiretsu/chaebol* suppliers) and non-partner (i.e. independent) suppliers. We interviewed a total of 31 purchasing executives at the eight automakers' purchasing departments to obtain feedback on the appropriateness, completeness, and clarity of the questionnaire, 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 the survey was pretested. The survey was translated (and back translated) into Japanese and Korean by a team of Korean and Japanese Ph.D. and MBA students at a major U.S. business school, some of whom had worked in the automotive industry. The language of the survey was refined during interviews at both the automakers and suppliers. Most importantly, the interviews helped us to gain a better understanding of the industry and the nature of the supplier-automaker relationship. 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. This person was typically the supplier's sales vice-president, sales account manager, or in some cases, the president. The final survey was then sent to the key supplier informant identified by the automaker.

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 would 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 and thus 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 variety of interactions between their and their customer's, employees. Further, in approximately 15 of our in-person interviews with suppliers, the key informants brought 2-3 other top supplier executives to the interview (e.g., vice president of engineering, key sales representatives) 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. In the rare case where there was some discussion about the "right" group answer, the key informant typically brought more information to the discussion than the other members. Consequently, we believe the key informant responses to reliably represent the responses we would have received had we surveyed multiple individuals at the supplier.

Usable responses were obtained from 135 U.S. (66% response rate), 101 Japanese (68% response rate) and 217 Korean (55% response rate) suppliers. The data collection was done between 1992 and 1994. The U.S. and Japanese data were collected in 1992, reflecting data for 1991, and the Korean data were collected in 1994, reflecting data for 1993. We do not believe this will bias the results since Korean suppliers indicated that their relationship with their largest automaker customer had not changed in any significant ways since 1992.

## **Operational Measures**

Recall that the survey was administered to the suppliers. Therefore, the measures reflect the perceptions of suppliers regarding the supplier-automaker relationship. However, during our interviews with the purchasing managers of the automakers 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.

### *Trust*

Consistent with previous studies we operationalized trust using multiple scale items designed to measure the extent to which the supplier trusted the automaker not to behave opportunistically (Anderson & Narus, 1990; Heide & John, 1988; Zaheer & Venkatraman, 1995). Trust (TRUST) was operationalized as the sum of the following submeasures.

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).

Our trust construct includes key elements of our definition of trust, including fairness, reliability, and goodwill (a willingness to forego opportunistic behavior even when the chance is available).

Each scale item was measured on a 7-point Likert scale (1=Not at all, 7=To a very great extent).

The Chronbach alpha for this construct was .84, indicating high reliability.

### *Transaction Costs*



To measure transaction costs, we asked suppliers to estimate how much of their face-to-face communication time with automakers involved negotiating a price or contract, or assigning blame for problems. Thus, transaction costs were measured as the sum of the following two submeasures:

1. The percent of face-to-face communication time, between the automaker and the supplier, that is spent negotiating a price/contract (ex ante contracting)[percent out of 100 percent].
2. The percent of face-to-face communication time, between the automaker and the supplier, that is spent assigning blame for problems (ex post haggling) [percent out of 100 percent].

Our construct includes two key elements of transaction costs, including ex ante bargaining/contracting and ex post haggling. Thus, it captures those activities which 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. Although these measures do not capture all of the transaction-related costs incurred by the companies (e.g., search costs are ignored because these are existing relationships), we believe this measure to be a reasonable proxy of the key elements of transaction costs.

### *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). However, the sharing of such sensitive information is also somewhat risky given the potential for opportunism on the part of the exchange partner.

### *Relation-Specific Assets*

Relation-specific assets are assets that are uniquely tailored to a particular exchange relationship and which have low salvage value outside of the relationship. Williamson (1985) identified site, physical, human, and dedicated assets as four distinct types of transaction-specific investments. In our study we operationalized relation-specific assets as the sum of two measures: one designed to measure physical asset specificity and one designed to measure dedicated asset specificity. We excluded human asset specificity as a measure because of the belief that investments in human-specific investments (e.g., dedicated personnel) are arguably a key antecedent to building interorganizational trust. We wanted to focus on investments in "hard" physical assets, thereby avoiding the potential confounding effects of using human asset specificity which some may view as even being a proxy of interfirm trust.

*Physical Asset Specificity.* Physical asset specificity refers to capital investments in customized machinery, tools, dies, etc. Naturally, it is not easy to measure the extent to which a piece of equipment is customized to a particular customer (unless it is 100 percent specialized). Physical asset specificity was operationalized as the percent of the supplier's total capital equipment investments which would have to be scrapped if they were prohibited from conducting any future business with the automaker. This percentage was estimated by supplier respondents. Physical specificity was assumed to increase with an increase in the percentage of capital investment which could not be redeployed.

*Dedicated Asset Specificity.* The supplier's sales to the automaker divided by the supplier's total sales to all customers was employed as a measure of dedicated asset specificity. Suppliers are assumed to have dedicated and tailored more processes, personnel, plant space, etc. to

automakers that purchase a large percentage of their total output. Thus, supplier investments in relation-specific assets are assumed to be higher in cases where they sell a greater percentage of their total output to a particular automaker.

We standardized the responses of each supplier on the physical and dedicated asset variables and then summed them to create an overall measure of investments in relation-specific assets for each supplier. The Chronbach alpha for the relation-specific asset construct was .77.

### *Buyer Technical Assistance*

Buyer technical assistance was operationalized as the sum of the following two sub-measures:

1. The extent to which the automaker provides assistance to help the supplier improve product quality (1-7 scale),
2. The extent to which the automaker provides assistance to help the supplier reduce manufacturing costs (1-7 scale).

The suppliers were asked to consider all forms of assistance they received from their automaker customer to help them improve quality and costs. The Chronbach alpha for the buyer assistance construct was .79.

## **MODEL AND DATA ANALYSIS**

The model that was estimated is shown in Figure 1. Note that in Figure 1, we have added dotted lines to indicate that greater information sharing and buyer technical assistance, greater investments in relation-specific assets, and lower transaction costs should lead to higher levels of joint economic performance/efficiency. These relationships are not tested as part of the LISREL model but are examined in greater detail in the discussion section and are supported by numerous

previous studies. For example, the important link between transaction costs and economic performance has been the focus of considerable discussion in the transaction cost literature (see Williamson, 1985/1991; Hennart, 1993). We also expect information sharing and relation-specific investments to lead to greater economic efficiency. The relationship between information sharing, technical assistance, and performance has been examined in some detail by numerous scholars (See Aoki, 1988; Nishiguchi, 1994). Similarly, the positive relationship between relation-specific assets and performance has been explored in great detail by Asanuma (1989) and Dyer (1996a). Although we do not explicitly address these relationships in the paper, the preponderance of research to date suggests that both information sharing and investments in relation-specific assets lead to improved economic performance. Naturally, if trust facilitates both, then trust would have an important, though indirect, effect on the joint economic performance of exchange partners.

## **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 also indicate lower variance in trust in Japan when compared to the U.S. or Korea (see standard deviations reported in Table 1). The findings from this industrial sector<sup>2</sup> support previous arguments that trust among Japanese transactors is high trust relative to the U.S. (Dore, 1983;

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<sup>2</sup> Of course, we only have data for this industry so we cannot say definitively that trust levels in the U.S. as a society are lower than in Japan.

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 indicate that Japanese suppliers share more confidential information and have slightly lower transaction costs when compared to their U.S. and 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 since some studies have found that 72 percent of Korean automotive suppliers supply to only one customer (Oh, 1995). Automaker assistance to suppliers was reported to be highest in Japan and Korea, with U.S. automakers offering significantly less assistance to suppliers.

[Insert Tables 1 & 2 about here]

The simple bivariate correlation presented in the correlation matrix in Table 2 represents only the direct relationships between each pair of variables. Therefore, the structural equations model, which separates direct and indirect effects will yield somewhat different results. The results of the LISREL model employed to test our hypotheses are shown in Table 3. The overall fit of the model can be measured by several different indicators. They are chi-squared statistic, root mean squared residual (RMR), goodness-of-fit index (GFI), and adjusted goodness-of-fit index (AGFI). For our model, we have a chi-squared statistic of 118.79 (p-value 0.000); RMR of 0.12; GFI of 0.92; and AGFI of 0.69. Therefore, the overall fit of the model is good. The chi-squared statistic is not particularly good, but this statistic is often adversely affected by a large sample size. Our sample size of 453 is large enough to affect this statistic. On the other hand, all other measures of fit are good, with GFI of 0.92 being very good.

First, our data indicate that greater supplier trust in the buyer leads to lower transaction costs for the exchange partners. These relationships are significant in the pooled sample, the

United States, and Korea. However, while the sign is in the expected direction, the relationship is not significant in Japan, perhaps in part due to the low variance in trust among Japanese transactors. Overall, hypothesis 1 is strongly supported. Second, our analysis suggests a positive relationship between supplier trust and the sharing of valuable and confidential work-related information by the supplier. Hypothesis 2 is strongly supported in the pooled sample, Japan, and Korea ( $p < .01$ ) and weakly supported in the U.S. ( $p < .10$ ). Third, our results do not support hypothesis 3, which proposed that greater trust leads to more investments in relation-specific assets. Our data indicate essentially no relationship between trust and investments in relation-specific assets. Fourth, we found, as expected, an inverse relationship between information sharing and transaction costs. However, while the sign was in the expected direction in each country the absolute value of the t-value is rather small. Thus, we do not find strong support for hypothesis 4. Fifth, consistent with transaction cost theory, our data indicate a positive relationship between investments in relation-specific assets and transaction costs in the pooled sample, Japan, and Korea. However this relationship was only statistically significant in Japan and in the United States there was a negative relationship between these variables. Therefore, hypothesis 5 receives mixed support. Finally, our results indicate a significant, positive relationship between supplier information sharing and buyer technical assistance in the pooled sample as well as in each country. Thus, hypothesis 6 receives strong support.

[Insert Table 3 about here]

## **DISCUSSION**

Our study is one of the first large-sample empirical tests of its kind to demonstrate an

inverse relationship between trust and transaction costs in supplier-buyer relations. To further explore the relationship between trust and transaction costs, as well as the extent to which trust may create *substantive economic value* in exchange relationships, we examined the impact of supplier trust on the transaction costs incurred by each automaker. First, we examined the percentage of the supplier-automaker's face-to-face interaction time spent on transaction-oriented activities such as negotiating a contract (ex ante contracting) or assigning blame for problems in the course of transacting (ex post haggling). We plot this percentage in Figure 2 along with each automaker's mean score for supplier trust on the three trust submeasures (in Figures 2 & 3, U.S. automakers are identified as A1, A2, A3; Japanese automakers as J1, J2; and Korean automakers as K1, K2, K3). The correlation between supplier trust (mean score for all suppliers for each automaker) and transaction costs for this small sample was 0.82. The findings show that the most trusted automakers, A3 and J1, spent only about 21 percent of their face-to-face interaction time negotiating contracts/prices (ex ante contracting) and assigning blame for problems (ex post haggling). By comparison, firm A1 spent 47 percent of its face-to-face interaction time on non-productive, transaction-oriented activities. Thus, A1 and its suppliers spent more than twice as much as their face-to-face interaction time on ex ante contracting and ex post haggling compared to J1 and A3 and their suppliers. While these differences may not be fully attributed to trusting relations between the firms, the fact that the most "trustworthy" automakers were 50 percent more productive in their face-to-face interactions with suppliers when compared to the automaker with the least supplier trust is certainly non-trivial.

[Insert Figure 2 about here]

To further confirm the link between trust, low transaction costs, and economic

performance, we obtained another measure of each automaker's transaction costs (or the productivity/efficiency of each automaker's procurement function) based on more objective data. Each automaker's procurement (transaction) costs was operationalized as the total number of individuals employed in procurement for production parts (including management, purchasing agents/buyers, lawyers, and support staff) divided by the total value of goods they procured. This is expressed as the dollar value of goods (parts) purchased per procurement employee. We believe this is a reasonably accurate measure of the relative procurement (transaction) costs incurred by each automaker because the procurement staff is: a) completely responsible for searching for new suppliers, b) completely responsible for contracting with suppliers, c) primarily responsible for gathering information from the other operational units to create an overall evaluation (monitoring) of performance, and d) primarily responsible for enforcing performance. Thus, we believe our measure is a reasonable proxy for the relative transaction costs incurred by automakers. We found that this measure was highly correlated with our previous measure of transaction costs as demonstrated by a Pearson's correlation of 0.61. When we plot this measure for each automaker, along with supplier trust, we come up with similar findings--though perhaps the differences are even more dramatic (See Figure 3). The correlation between supplier trust and automaker procurement productivity for this sample was 0.66. The findings indicate that firm A1, which had low supplier trust, incurred procurement (transaction) costs which were more than twice those of the other U.S. firms, A2 and A3, and almost six times higher than firm J1. Interestingly, at least one Korean firm had relatively high productivity on



this measure even though it had not cultivated high levels of trust with its suppliers.<sup>3</sup> This indicates that there are undoubtedly a number of factors that influence our measure of procurement productivity (costs), but clearly supplier trust seems to be one of the important factors. Our findings indicate that trust, as a governance structure, cannot be ignored in discussions regarding the factors that influence transaction costs and economic performance. Moreover, these findings suggest that in some industry settings the economic value created through trusting interfirm relationships may be considerable.

[Insert Figure 3 about here]

We also found that consistent with transaction cost theory there was a positive, though weakly significant, relationship between supplier investments in relation-specific assets and transaction costs. However, it is worth noting that trust was a more important predictor of transaction costs than were the supplier's relation-specific investments. Thus, although exchange partners may expect transaction costs to increase with investments in relation-specific assets, they may be able to keep transaction costs low if they are able to develop high levels of interfirm trust. Trust may be a key factor which enables exchange partners to enjoy the benefits associated with relation-specific investments while keeping transaction costs relatively low.

Additionally, in accordance with our predictions we found that trust was positively associated with information sharing. This finding was echoed in interviews with supplier executives who claimed that they were much more likely to bring new product designs and new

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<sup>3</sup> Of course, a number of factors will influence procurement productivity. Some anecdotal evidence suggests that the general productivity of a Korean white-collar worker is typically quite high if only because they typically work longer hours than their American, and even Japanese, counterparts.

technologies to "trustworthy" automakers. Stated one supplier executive,

We are much more likely to bring a new product design to [Automaker A3] than to [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.

Thus, trust facilitates the sharing of relevant task-related information, particularly information that may be viewed as proprietary by the supplier. This is particularly important because the supplier's new designs and innovations may be critical in helping the buyer to differentiate its product in the marketplace.

Contrary to our predictions, we did not find a positive relationship between trust and relation-specific assets. One interpretation of these findings is, of course, that transactors are simply not more likely to make greater relation-specific investments in trading partners simply because they have developed high trust relations. Trust may not be a strong enough safeguard to protect suppliers' relation-specific investments which clearly are subject to opportunistic exploitation. However, it is also possible that the suppliers in our sample who had not made significant investments in relation-specific assets simply had less at risk, were less vulnerable, and therefore reported relatively high levels of trust in the automaker. In effect, due to a lack of vulnerability, there was no reason for the supplier not to trust the automaker. There is some question as to whether this is really "trust" since vulnerability is a key prerequisite for trust.

Another possible explanation for this finding is that suppliers may be forced to make investments in relation-specific assets due to technological necessity, but they may do so reluctantly or they may rely on other governance mechanisms (other than trust) to protect those

investments. For example, stock ownership may act as a substitute for trust, particularly in Japan and Korea where automakers are known to take stock ownership positions in key suppliers. Similarly, in the relatively low trust U.S. institutional environment, suppliers may have relied on legal contracts rather than trust to protect their investments. Thus, stock ownership or legal contracts may have been used as substitutes for trust. Therefore, technological necessity may have forced suppliers to make investments in relation-specific assets even when they had not developed a high level of trust in the automaker. Under these conditions, the suppliers would have been forced to rely on other substitute governance mechanisms (e.g., stock ownership, legal contracts, etc.) to protect their investments.

### **The Distinctiveness of Trust as a Governance Mechanism**

In the process of examining the economic outcomes of trust, 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 and buyer assistance were antecedents or outcomes of trust. For example, does information sharing lead to trust, or does trust lead to information sharing? Of course, the answer is 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 and buyer investments in offering technical assistance 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, relation-specific investments, buyer assistance) and supplier trust (as a

dependent variable). We found significant positive relationships between information sharing and supplier trust (T value=4.0;  $p<.001$ ) and buyer assistance and supplier trust (T value=5.1;  $p<.001$ ). The other variables were found to be insignificant. Thus, trust leads 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. Trust is thus distinct from other governance mechanisms identified in the transaction cost literature (e.g., contracts, financial hostages) for which the investment in the governance mechanism is viewed as a *necessary cost* to be incurred by the transactors to prevent opportunistic behavior (Williamson, 1985). According to transaction cost theory, the relative attractiveness of each governance mechanism/safeguard 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 is a unique governance mechanism because it not only minimizes transaction costs, but also has a mutually causal relationship with other behaviors (i.e. information sharing, technical assistance) that create 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; Sako, 1992; Nishiguchi, 1994; Dyer, 1996b).

## **CONCLUSION**

This study empirically validates previous theoretical arguments and anecdotal data which has suggested that trust creates value in economic exchange relationships (Sako, 1991; Barney & Hansen, 1995; Fukuyama, 1995). In particular, our findings indicate that trust reduces transaction costs and increases information sharing (which in turn increases buyer technical assistance) 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. Thus, trust in supplier-buyer relations may be an importance source of competitive advantage in industrial settings in which: (1) there is a high value associated with information sharing (information is a particularly valuable resource due to product complexity and industry uncertainty) and (2) transaction costs are expected to be high due to conditions that create transactional difficulties (e.g., environmental uncertainty and high interfirm asset specificity).

## REFERENCES

- Anderson, J.C. & J.A. Narus (1990). "A Model of Distributor firm and Manufacturer firm working partnerships." *Journal of Marketing*, 54, 42-58.
- Aoki, Masahiko. (1988). *Information, Incentives, and Bargaining in the Japanese Economy*, New York: Cambridge University Press.
- Asanuma, Banri (1989). 'Manufacturer-Supplier Relationships in Japan and the Concept of Relation-Specific Skill'. *Journal of the Japanese and International Economies*, 3, 1-30.
- Barney, J. B. & M. H. Hansen (1995). "Trustworthiness as a Source of Competitive Advantage." *Strategic Management Journal*, Vol. 15, 175-190.
- Bradach, J.L. & Robert Eccles (1989). "Markets versus hierarchies: From Ideal Types to Plural Forms." *Annual Review of Sociology*, 15, 97-118.
- Business Week, (1986). "Japan, USA: Special Report," July 14, 45-55
- Business Week, (1992). "Learning from Japan," January 27, 52-60.
- Casson, M. (1991). *The Economics of Business Culture*. Oxford: Clarendon Press.
- Clark, Kim B. & Takahiro Fujimoto (1991). *Product Development Performance*. Boston: Harvard Business School Press.
- Dore, Ronald (1983). "Goodwill and the Spirit of Market Capitalism." *British Journal of Sociology*. Volume XXXIV, No.4.
- Deutsch, M. (1958). "Trust and Suspicion." *Journal of Conflict Resolution*, 2:265-279.
- Dyer, Jeffrey H. (1996a). "Specialized Supplier Networks as a Source of Competitive Advantage: Evidence from the Auto Industry," *Strategic Management Journal*, Vol. 17, 4, 271-292.
- Dyer, Jeffrey H. (1996b). "Does Governance Matter? Keiretsu Alliances and Asset Specialization as Sources of Competitive Advantage." *Organization Science*, Vol. 7, 6, 649-666.
- Dyer, Jeffrey H. (1997). "Effective Interfirm Collaboration: How Firms Minimize Transaction Costs and Maximize Transaction Value." *Strategic Management Journal*, Vol 18:7, 535-556.
- The Economist, (1996). "Trust in me." December, 16, p. 61.
- Fukuyama, Francis (1995). *Trust: The Social Virtues and the Creation of Prosperity*, New York: The Free Press.
- Gerlach, Michael L. (1992). *Alliance Capitalism*. Berkeley: University of California Press.
- Gulati, Ranjay (1995). "Familiarity breeds trust? The implications of repeated ties for contractual choice in alliances." *Academy of Management Journal*, 38, 85-112.
- Hamilton, Gary G. & Nicole W. Biggart (1988). "Market, Culture, and Authority: A Comparative Analysis of Management and Organization in the Far East." *American Journal of Sociology*. Vol. 94, Supplement S52-S94.
- Heide, Jan B. & G. John (1988). "The role of dependence balancing in safeguarding transaction-specific assets in conventional channels." *Journal of Marketing*, Vol. 52, 20-35.
- Helper, Susan (1991). "How much has really changed between U.S. automakers and their suppliers." *Sloan Management Review*, Summer.
- Helper, Susan & Dan Levine (1992). "Long Term Supplier Relations and Product-Market Structure." *Journal of Law, Economics, & Organization*, 8, 561-581.
- Hennart, Jean-Francois (1993). "Explaining the Swollen Middle: Why Most Transactions are a Mix of "Market" and "Hierarchy," *Organization Science*, Vol.4, No. 4, November, pp. 529-547.
- Hill, Charles W.L. (1995). "National Institutional Structures, Transaction Cost Economizing,

- and Competitive Advantage: The Case of Japan." *Organization Science*. Vol. 6, No. 2.
- Klein, Benjamin, Robert G. Crawford, & Armen A. Alchian (1978). "Vertical Integration, Appropriable Rents, and the Competitive Contracting Process." *Journal of Law and Economics*, 21, 297-326.
- Kumar, N., L.W. Stern, & J.C. Anderson (1993). "Conducting Interorganizational Research Using Key Informants." *Academy of Management Journal*, Vol 36, No. 9, 1633-1651.
- Larson, A. (1992). "Network Dyads in Entrepreneurial Settings: A Study of the Governance of Exchange Relationships," *Administrative Science Quarterly*, 37, 76-104.
- Larzelere, R., & T. Huston (1980). "The Dyadic trust scale: Toward understanding interpersonal trust in close relationships." *Journal of Marriage and the Family*, 42: 595-604.
- Lorenz, Edward H. (1988). "Neither friends nor strangers: Informal networks of subcontracting in French industry." Pp. 194-210 in *Trust: Making and Breaking Cooperative Relations*, edited by D. Gambetta. New York: Blackwell.
- Lyons, B. R. (1994). "Contracts and Specific Investment: An Empirical Test of Transaction Cost Theory." *Journal of Economic and Management Strategy*. Vol. 3, pp. 257-278.
- Mayer, R.C., J. H. Davis & F.D. Schoorman (1995). "An Integrative Model of Organizational Trust." *Academy of Management Review*, Vol. 20, No. 3, 709-734.
- Ministry of International Trade and Industry (1987). *White Paper on Small and Medium Enterprises in Japan*, Tokyo: MITI, pp.36-37.
- Nishiguchi, Toshihiro. (1994). *Strategic Industrial Sourcing*. New York: Oxford University Press.
- North, Douglass C. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge University Press, Cambridge, UK.
- Oh, Kyu Chang (1995). "An International Comparison of Product Development and Supply Systems in the Automobile Industry," Research Report 364, Korea Institute for Industrial Economics and Trade, Seoul, Korea.
- Ouchi, William G. (1980). "Markets, Bureaucracies, and Clans." *Administrative Science Quarterly*, 25, 124-141.
- Parkhe, Arvind (1993). "Strategic Alliance Structuring: A Game Theoretic and Transaction Cost Examination of Interfirm Cooperation." *The Academy of Management Journal*, Vol. 36, No. 4, 794-829.
- Powell, Walter W. (1990). "Neither Market Nor Hierarchy: Network Forms of Organization." In *Research in Organizational Behavior*, (Ed. B. Staw and L. Cummings) JAI Press. Vol. 12, pages 295-336.
- Ring, P. S. & A. H. Van de Ven (1992). "Structuring cooperative relationships between organizations." *Strategic Management Journal*, Vol. 18, 483-498.
- Sabel, Charles (1993). "Studied Trust: Building New Form of Cooperation in a Volatile Economy." *Human Relations*, 46, 9, 1133-1170.
- Sako, Mari (1991). "The Role of 'Trust' in Japanese Buyer-Supplier Relationships." *Ricerche Economiche*, XLV, 2-3, aprile-settembre, pp. 449-474.
- Shane, S. (1994). "The effect of national culture on the choice between licensing and direct foreign investment." *Strategic Management Journal*, Vol, 15, 627-642.
- Smith, K.G., S.J. Carroll, & S.J. Ashford (1995). "Intra- and Interorganizational Cooperation: Toward a Research Agenda." *Academy of Management Journal*, Vol. 38, No. 1, 7-23.
- Smitka, Michael J. (1991). *Competitive Ties: Subcontracting in the Japanese Automotive*

- Industry*. New York: Columbia University Press.
- Uzzi, B. (1993). *The Dynamics of Interorganizational Networks: Embeddedness and Economic Action*. Doctoral Dissertation, Sociology Department, SUNY, Stony Brook.
- Williamson, Oliver E. (1985). *The Economic Institutions of Capitalism*. New York: Free Press.
- Williamson, Oliver E. (1991). "Comparative Economic Organization: The Analysis of Discrete Structural Alternatives." *Administrative Science Quarterly*, 36, 269-296.
- Williamson, Oliver E. (1993). "Calculativeness, Trust, and Economic Organization." *Journal of Law & Economics*, vol. XXXVI, 453-486.
- Zaheer, A. & N. Venkatraman (1995). "Relational Governance as an Interorganizational Strategy: An Empirical Test of the Role of Trust in Economic Exchange." *Strategic Management Journal*, Vol. 16, 373-392.
- Zaheer, A., B. McEvily, & V. Perrone (forthcoming) Does Trust Matter? "Exploring the Effects of Interorganizational and Interpersonal Trust on Performance." *Organization Science*.
- Zajac, Edward J. & C. P. Olsen (1993). "From Transaction Cost to Transactional Value Analysis: Implications for the Study of Interorganizational Strategies." *Journal of Management Studies*, 30:1 January, pp. 131-145.
- Zucker, Lynne G. (1986). "Production of trust: Institutional sources of economic structure, 1840-1920." In B. M. Staw & L. Cummings (eds.) *Research in Organizational Behavior*. Greenwich, CT: JAI Press, 8:53-111.



**TABLE 1****Means and Standard Deviations: Pooled Sample and By Country**

| Variables     | Pooled<br>(n=453) | US<br>(n=135)   | Japan<br>(n=101) | Korea<br>(n=217) |
|---------------|-------------------|-----------------|------------------|------------------|
| 1. TRUST      | 14.11<br>(3.26)   | 13.63<br>(2.64) | 16.37<br>(2.60)  | 13.35<br>(3.36)  |
| 2. TRANSCOST  | .31<br>(.13)      | 0.31<br>(.12)   | 0.29<br>(.11)    | 0.31<br>(.15)    |
| 3. INFOSHARE  | 4.82<br>(1.54)    | 3.58<br>(1.73)  | 5.74<br>(1.09)   | 4.93<br>(1.34)   |
| 4. SPEC.ASSET | 0.83<br>(.48)     | 0.66<br>(.26)   | 0.70<br>(.32)    | 0.99<br>(.58)    |
| 5. ASSISTANCE | 6.74<br>(2.46)    | 5.95<br>(1.62)  | 6.82<br>(2.57)   | 7.20<br>(2.72)   |

Note:

1. Standard deviations reported in parentheses.

**TABLE 2**  
**CORRELATION MATRIX**

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| Variable               | 1    | 2    | 3   | 4   | 5   |
|------------------------|------|------|-----|-----|-----|
| 1. Trust               | 1.0  |      |     |     |     |
| 2. Transaction costs   | -.18 | 1.0  |     |     |     |
| 3. Information sharing | .31  | -.05 | 1.0 |     |     |
| 4. Specific assets     | -.05 | .06  | .11 | 1.0 |     |
| 5. Buyer Assistance    | .28  | .07  | .24 | .39 | 1.0 |

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**TABLE 3**  
**LISREL RESULTS POOLED SAMPLE AND BY COUNTRY**

| Relationship  | Expected Sign | Parameter | Standard Error | T-Value | Significance |
|---|---------------|-----------|----------------|---------|--------------|
| <b>H1: Trust → Transaction Cost</b>                     | -             | -0.18     | 0.05           | -3.74   | ***          |
| United States:  |               | -0.45     | 0.08           | -5.82   | ***          |
| Japan:  |               | -0.08     | 0.10           | -0.81   |              |
| Korea:  |               | -0.12     | 0.07           | -1.70   | **           |
| <b>H2: Trust → Information Sharing</b>                  | +             | 0.31      | 0.04           | 6.83    | ***          |
| United States:  |               | 0.11      | 0.09           | 1.28    |              |
| Japan:  |               | 0.23      | 0.10           | 2.37    | ***          |
| Korea:  |               | 0.23      | 0.07           | 3.40    | ***          |
| <b>H3: Trust → Relation Spec. Assets</b>                | +             | -0.05     | 0.05           | -0.98   |              |
| United States:  |               | 0.05      | 0.09           | 0.59    |              |
| Japan:  |               | 0.10      | 0.10           | 1.00    |              |
| Korea:  |               | 0.03      | 0.07           | 0.41    |              |
| <b>H4: Information Sharing<br/>→ Transaction Cost</b>   | -             | 0.00      | 0.05           | 0.04    |              |
| United States:  |               | -0.04     | 0.08           | -0.46   |              |
| Japan:  |               | -0.07     | 0.10           | -0.67   |              |
| Korea:  |               | -0.01     | 0.07           | -0.07   |              |
| <b>H5: Relation Spec. Assets<br/>→ Transaction Cost</b> | +             | 0.05      | 0.05           | 1.18    |              |
| United States:  |               | -0.03     | 0.08           | -0.36   |              |
| Japan:  |               | 0.23      | 0.10           | 2.33    | ***          |
| Korea:  |               | 0.06      | 0.07           | 0.89    |              |
| <b>H6: Information Sharing<br/>→ Buyer Assistance</b>   | +             | 0.24      | 0.05           | 5.34    | ***          |
| United States:  |               | 0.15      | 0.09           | 1.79    | **           |
| Japan:  |               | 0.19      | 0.10           | 1.92    | **           |
| Korea:  |               | 0.18      | 0.07           | 2.66    | ***          |

Goodness of fit for the pooled data model.

\*\*significant at  $\alpha = 0.05$ ; \*\*\*significant at  $\alpha = 0.01$

Chi-squared statistic with 4 degrees of freedom = 118.79 (P = 0.00)

Root mean square residual (RMR) = 0.12

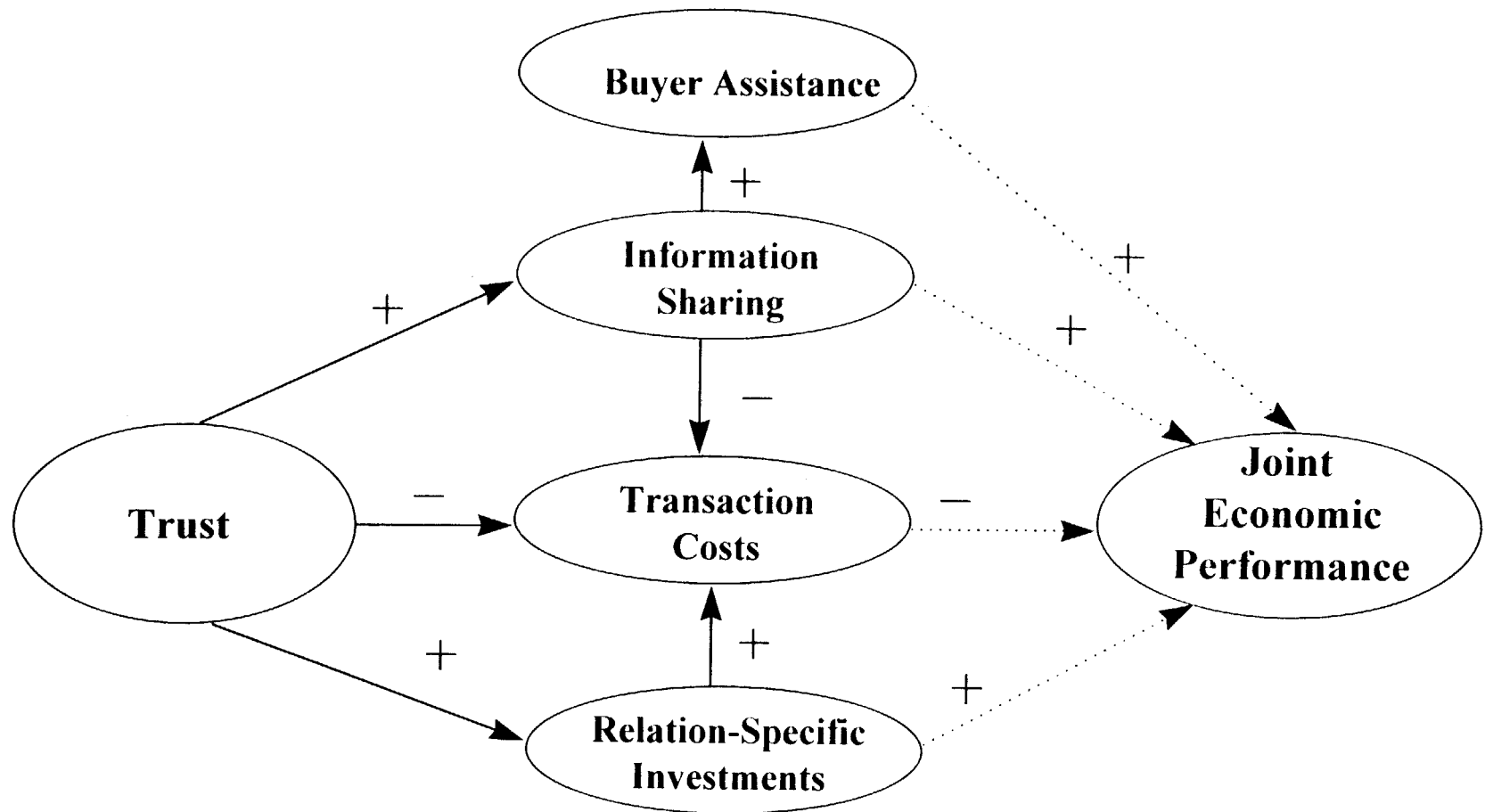
Goodness - of - fit index (GFI) = 0.92

Adjusted Goodness - of - fit index (AGFI) = 0.69

RMR = 0.08; GFI = 0.93; AGFI = 0.82

# FIGURE 1

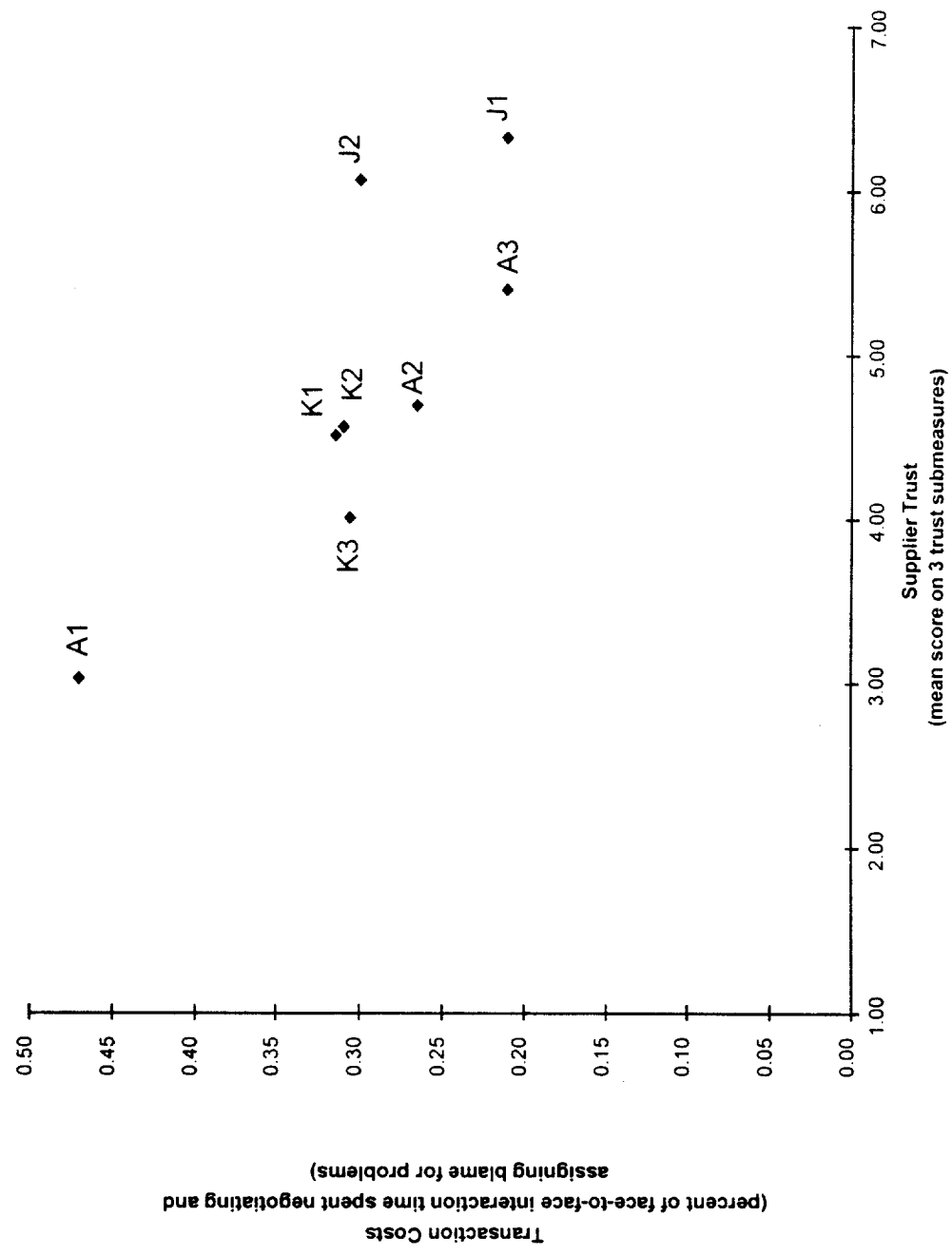
## MODEL OF HOW TRUST CREATES ECONOMIC VALUE IN EXCHANGE RELATIONSHIPS



Note: The relationships indicated by dotted lines are not tested as part of the LISREL model but are supported by numerous previous studies (Williamson, 1985; Aoki, 1988; Asanuma, 1989; Parkhe, 1993; Nishiguchi, 1994; Dyer, 1996a)

Figure 2

THE RELATIONSHIP BETWEEN SUPPLIER TRUST AND TRANSACTION COSTS



$r = .82$

Figure 3

THE RELATIONSHIP BETWEEN SUPPLIER TRUST AND PROCUREMENT PRODUCTIVITY

