
INTERNATIONAL MOTOR VEHICLE PROGRAM

FY '97 IMVP WORKING PAPERS

**THE DETERMINANTS AND ECONOMIC OUTCOMES OF
TRUST IN SUPPLIER-BUYER RELATIONS**

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Revised and resubmitted to *Administrative Science Quarterly*
Original submission: July 18, 1996
Revision: February 21, 1997

Earlier versions of this paper were presented at the Academy of Management Meetings in Cincinnati, August 12, 1996, the International Motor Vehicle Program's International Conference in San Paulo, Brazil, June 3, 1996, and the marketing workshop at the University of California, Berkeley, January 27, 1997. The Sloan Foundation and the International Motor Vehicle Program at M.I.T is gratefully acknowledged for funding this research.

THE DETERMINANTS AND ECONOMIC OUTCOMES OF TRUST IN SUPPLIER-BUYER RELATIONS

ABSTRACT

In this paper we examine the antecedents and outcomes of supplier trust in 453 supplier-automaker relationships in the U.S., Japan, and Korea. Our findings indicate that high supplier trust emerges when (1) automakers have developed assistance-giving routines to help suppliers improve, and (2) automakers maintain a continuing (repeated) exchange relationship with the supplier. We also found that trust reduces transaction costs and increases information sharing in supplier-buyer relationships. Moreover, the findings suggest that the economic value created for transactors may be substantial as evidenced by the fact that the automaker with the least trusting supplier relations had five times the procurement costs and 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. Thus, our findings suggest 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, 1994; Mayer, et al 1995) as well as the popular press (Business Week, 1986, 1992; Economist, 1995; Fukuyama, 1995). Some have described trust in exchange relationships as an important antecedent to effective *interorganizational* collaboration (Jarillo, 1990; Sako, 1991; Smith, Carroll, and Ashford, 1995), and have proposed that it is a valuable economic asset. Furthermore, some have proposed that trust in supplier-buyer relations: (1) *lowers transaction costs* and allows for greater flexibility in responding to changing market conditions (Dore, 1983; Sako, 1991; Barney & Hansen, 1994; Dyer, 1996b), (2) *leads to superior information sharing routines*, which improve both coordination and mutual to minimize inefficiencies (Aoki, 1988; Clark & Fujimoto, 1991; Nishiguchi, 1994), and (3) *facilitates investments in transaction or relation-specific assets¹ and technologies* 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.

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

In response to these studies, some have exhorted companies to build trust with their trading partners (Business Week, 1986, 1992) and called for increased research on the role of trust in coordinating economic activity (Smith, Carroll, and Ashford, 1995). However, despite considerable academic and managerial interest in trust between trading partners, to date there has been little empirical research on the antecedents or economic outcomes of interorganizational trust (i.e. between suppliers and buyers). 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."

In this paper we examine the determinants of trust, as well as the relationship between trust and performance outcomes, in a sample of supplier-buyer exchange relationships. More specifically, we seek to answer the following questions:

- (1) What variables influence the development of supplier trust in supplier-buyer relationships?*
- (2) Do suppliers that have developed a high level of trust in a buyer (a) incur lower transaction costs, (b) share more information, and (c) make greater investments in relation-specific assets than suppliers with lower levels of trust?*

We investigate the antecedents and outcomes of trust in a sample of 453 supplier-automaker exchange relationships in the U.S., Japan, and Korea. We also examine the extent to which trust creates "measurable" economic value for automakers by examining whether or not "trustworthy" automakers incur lower procurement (transaction) costs than "untrustworthy" automakers. In summary, our objective is to empirically examine in a cross-national setting: (1) the determinants of supplier trust, and (2) whether or not trust creates economic value in supplier-buyer relationships.

THEORETICAL FRAMEWORK AND HYPOTHESES

Defining Trust

Williamson (1993:453) has noted that "trust is a term with many meanings." Indeed, various scholars have offered different definitions of types of trust, including goodwill or relational trust (Sako, 1991; Sabel, 1993; Hesterley et al, 1995), process-based trust (Zucker, 1986; Zaheer & Venkatraman, 1995), institutional trust (Arrow, 1974; Zucker, 1986), competence trust (Sako, 1991), and calculative or contractual trust (Sako, 1991; Williamson, 1993). Among organizational scholars, trust has received attention as a mechanism of organizational control, especially as an alternative to price, contracts, and authority (Ouchi, 1980; Bradach & Eccles, 1989; Powell, 1990). In this study we consider trust between a supplier and its customer. We define trust as *one party's confidence that the other party in the exchange relationship will not exploit its vulnerabilities* (Dore, 1983; Sako, 1991; Sabel, 1993; Barney & Hansen, 1994). This confidence (trust) is expected to emerge in situations where the "trustworthy" party in the exchange relationship: (1) makes good faith efforts to behave in accordance with prior commitments, (2) treats the exchange partner in ways perceived as "fair" by that partner, and (3) does not take advantage of an exchange partner even when the opportunity is available. In many respects, opportunism may be viewed as the opposite of trust. A firm is opportunistic to the extent that it does not live up to prior commitments and takes advantage of an exchange partner's vulnerabilities. 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, 1994). As defined here, trust is self-enforcing and is not based upon contracts/legal sanctions.

The Determinants of Trust

A firm may trust trading partners to refuse to break confidences and exploit vulnerabilities for a variety of reasons. However, typically we would expect trading partners to behave in a trustworthy manner because failure to do so would result in *social sanctions* (Sahlins, 1972; Dore, 1983; Grannovetter, 1985; Powell, 1990) or *economic sanctions* (Klein, 1980; Williamson, 1983/1993).

Social Perspective

According to the sociological perspective, trust emerges through social interactions between exchange partners (Light, 1972; Grannovetter, 1985; Powell, 1990). If a transaction is embedded within a broader reciprocal social relationship, then transactors may rely on social sanctions to protect their interests. Various types of social sanctions may control opportunism: withdrawal of love, respect, prestige, and/or (worst of all) banishment from the social community (Light, 1972; Smith, 1983; Ellickson, 1991). Thus, a firm that takes unfair advantage of a trading partner may find any of a number of sanctions imposed by other members of the social network.² Furthermore, social interactions may be useful in identifying trading partners that embrace the value of being ethical or who are "hardcore trustworthy" due to internalized values, beliefs and norms (Mauss, 1967; Hill, 1990; Barney & Hansen, 1994).

Economic Perspective

Transactors may also behave in a trustworthy manner (refuse to be opportunistic) due to "credible commitments" that they have made with a trading partner (Klein, 1980; Williamson 1983).

² This assumes that exchange partners are part of the same social network.

For example, trading partners may make financial or investment arrangements (stock swaps, equity participation) that are purposefully designed to align their economic fortunes. These arrangements are often referred to as credible commitments or an exchange of hostages.

In summary, the social perspective (Grannovetter, 1985; Dore, 1983; Powell, 1990) suggests that trust will emerge due to social interactions between exchange partners. As the duration and intensity of interactions between transactors increases, we would expect bonds of attraction to develop and social sanctions to be more efficacious. Our first two hypotheses examine the effects of length of relationship and intensity of relationship (as measured by face-to-face contact) on the emergence of supplier trust. Thus, these hypotheses originate primarily from a sociological perspective. On the other hand, from an economic perspective, we might expect trust to emerge when the two parties incentives are effectively aligned and when credible commitments have been made. Our hypothesis regarding stock ownership and trust is fundamentally rooted in the institutional economic perspective. The supplier trusts the buyer to treat the supplier fairly because the buyer's incentives are properly aligned and there is an economic incentive to do so. Trustworthy behavior is due primarily to economic rather than social considerations. Our hypothesis regarding buyer assistance and trust is derived primarily from this same literature--the act of giving assistance to the supplier (making an economic investment) serves as a credible commitment. Assistance-giving behavior, however, also influences social interactions and feelings of attraction. Finally, from an economic perspective, actions that create a repeated game serve to lengthen the "shadow of the future" and result in more cooperative and trustworthy behavior. In economic parlance, agents are signalling to each other that they are playing the cooperative equilibrium. However, playing a repeated game also

increases social interaction and enhances continuity in the social relationship. Thus, "continuity" in an exchange relationship is influenced by both economic and social factors. We offer the following rationales and hypotheses regarding the determinants of supplier trust.

Length of Relationship

Various scholars have suggested that trust is a valuable asset which takes time to develop and can only be built slowly over time (Arrow, 1974; Sako, 1991). Related to this view is the notion that social knowledge, or knowledge gained through long term interactions, may be the basis for trust by allowing economic actors to understand and predict others' patterns of behavior (Tolbert, 1988; Sohn, 1994). For example, Sohn (1994) found that in-depth social and cultural knowledge facilitates coordination of transactions by making a potential partners' behavior both understandable and predictable. Moreover, as social knowledge between transactors increases, information asymmetries decrease, thereby reducing behavioral uncertainty. Higher levels of trust are believed to develop when information asymmetries are low (transaction conditions approximate perfect information) and there is less behavioral uncertainty (high predictability of behavior). Further, acquiring social knowledge through long-term interactions provides insights into the "moral character" of trading partners, thereby allowing transactors to screen more accurately for "honest" partners (Hill, 1990; Barney & Hansen, 1994).

Finally, when transactors engage in long-term exchange relationships, they develop a history together. The past history of interactions of transactors is extremely important in developing social ties. Most individuals are less likely to take advantage of those with whom they have had long and stable past interactions (e.g., family members, friends, etc.) because these parties can impose real social sanctions on the offending individual. Through long-term interaction, a "social memory" is

created and transactors can achieve "serial equity" (equity/reciprocity over a longer period of time) rather than requiring immediate or "spot equity" (Ouchi 1984). Thus, we would expect higher levels of trust to emerge in exchange relationships where the transactors have a long history of interacting.

Hypothesis 1: The longer the duration since the first supplier-buyer transaction, the higher the supplier's trust in the buyer.

Intensity of Relationship (Face-to-Face Communication)

Various studies have found that face-to-face interactions are likely to lead to the development of positive feelings of attraction (Lorenz, 1988; Argyle, 1991). Further, cooperation and trust between individuals has been found to emerge in laboratory settings when individuals can see and talk to each other and engage in social interaction (Argyle, 1991). Face-to-face communication has been described as having a high knowledge-carrying capacity because it presents immediate feedback opportunities and makes use of both visual and audio channels of communication (Daft & Lengel, 1986). Thus, it is considered useful for developing trust because it offers more cues for interpreting a trading partner's behavior and motivations. Moreover, face-to-face contact is viewed as an effective means of developing personal ties, thereby increasing the efficacy of social sanctions. From an economic perspective, previous studies have suggested that face-to-face contact leads to the development of interfirm cooperation and trust by increasing behavioral transparency and reducing information asymmetry (Heide & Miner, 1992; Sako, 1991). Accordingly, we would expect face-to-face communication to increase supplier-buyer trust by: (1) facilitating the development personal ties, thereby increasing the efficacy of social sanctions, and (2) providing superior information to assist transactors in detecting trading partners that are the untrustworthy "type." Thus, we would expect that as the frequency of face-to-face contact between transactors

increases, so does interorganizational trust.

Hypothesis 2: The greater the face-to-face interaction between the supplier and buyer, the higher the level of supplier trust in the buyer.

Continuity of Relationship

In addition to length of relationship, continuity in the supplier-buyer relationship may contribute to the development of interorganizational trust. It is possible for trading partners to have had a long-term relationship (i.e. many years have passed since the initial transaction) even though the relationship may not have been continuous. For example, some U.S. suppliers reported that although they began selling parts to a particular automaker 50 years ago, there have been occasions when they have lost the component business to competitors. In other instances, the supplier continues to re-win the "contract" year after year. In this situation, contract renewal may serve as a signal to the supplier that the automaker is playing a long-run "cooperative equilibrium." Thus, there is a high degree of continuity in the relationship and stability in the buyer's supplier-selection routines. Interfirm trust is built incrementally as firms interact repeatedly (Gulati, 1995).

The logic for how repeated games result in more cooperative behavior is well documented in the game theory literature (Axelrod, 1984; Fudenberg and Maskin, 1986). We expect supplier trust to emerge under conditions of repeated exchange due to buyer purchasing routines that are predictable and consistent and which do not switch (perhaps opportunistically) business to competitors (Butler, 1991; Heidi & Miner, 1992). Repeated exchange is particularly important to the development of supplier trust in situations where suppliers have invested in relation-specific assets. Under these conditions, a buyer's willingness to stay with the same supplier is likely to be interpreted by the supplier as a signal of commitment and trustworthiness. Thus, we expect supplier

trust to be higher when the buyer has a history of continuous, repeated exchange with the supplier.

Hypothesis 3: Supplier trust is higher when the buyer has a track record of continuous repeated exchange with the supplier.

Buyer Assistance

The importance of gift exchange in creating trust and reciprocity in exchange relationships has long been argued by a distinguished line of anthropologists and sociologists (Malinowski, 1932; Mauss, 1967; Gouldner, 1963). Gouldner (1963) suggested that a norm of reciprocity begins with a starting mechanism, which may take the form of a gift or other acts of generosity or assistance. More recently, Camerer (1988) has argued that even small, inefficient (with little practical value) gifts often serve as important and meaningful economic and social signals.

The rationale behind the trust-creating value of assistance/gift-giving behavior is that an exchange partner's offer of "free" assistance serves as a symbol of goodwill and benevolence because it suggests that the giving party is genuinely concerned with the well being of the receiving party. Also, the assistance may be viewed as a signal that the giving party does not have opportunistic intent (is the honest "type") and feels benevolently towards the receiving party. Benevolence is the perception of a positive orientation of the trustee toward the trustor and has been hypothesized to be positively associated with trust (Larzelere & Huston, 1980; Mayer et al, 1995). When a buyer offers "free assistance" to a supplier (i.e. if assistance is not fully costed), the supplier is likely to interpret such actions as a manifestation of commitment by the buyer, and may be a basis for 'goodwill trust' (Sako, 1991).

Hypothesis 4: The greater the assistance provided by the buyer to the supplier, the greater the supplier's trust in the buyer.

Stock Ownership

Klein (1980) and Williamson (1983) suggest that one way to foster trust and prevent opportunism is through the exchange of hostages. In particular, Klein (1980:358) argues that opportunism can be controlled by having the potential cheater put up a "forfeitable-at-will collateral bond equal to the discounted value of the premium stream." For example, in the case of a franchising contract "the franchisee may be required to make an initial lump sum payment to the franchisor, thereby largely shifting the potential threatened breach from the franchisee ('free riding' on a common trademark by supplying lower quality service) to the franchisor (terminating or threatening to terminate the franchisee without cause and purchasing the franchisee investment at a discounted price). The initial lump sum is equivalent to a collateral bond forfeitable at the will of the franchisor" (Klein & Kenny, 1989:41). Other financial hostages, which diminish in value if a transactor is opportunistic, include stock swaps or equity participation in a trading partner (Pisano, 1989; Dyer & Ouchi, 1993; Bolton et al, 1994). We argue, as has Pisano (1989) and Bolton et al (1994), that partial equity ownership constitutes a visible collateral bond that reduces opportunism by aligning the incentives of each partner. The fact that the equity stake will decrease in value if a party is opportunistic provides an incentive for trading partners to behave in a more trustworthy fashion. Shared equity may create conditions for informal trust to develop.³ Thus, we would expect equity ownership to be positively associated with interorganizational trust.

³ Of course, it is also possible for stock ownership to be inversely correlated with trust. To the extent that stock ownership serves as a credible signal of long term commitment, it may promote goodwill trust; however, stock ownership may also be viewed as a substitute for goodwill trust. We assume a positive relationship between stock ownership and trust because in most cases in our sample, the buyer had owned the supplier's stock for at least 10 years.

Hypothesis 5: The greater the buyer's ownership of supplier stock, the higher the level of supplier trust in the buyer.

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, 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 (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, transactors will spend less time on ex ante contracting under conditions of high trust because they believe 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. Various scholars have observed that trust allows transactors to achieve "serial equity" (equity/reciprocity over a longer period of time) rather than requiring immediate or "spot equity" (Ouchi, 1984). Thus, 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 behave opportunistically 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 its behaviors more positively (Uzzi, 1993). Consequently, exchange 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 6: 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 bring product design and process innovations to the buyer. 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). In the absence of trust, information sharing on new ideas or 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 problems they are experiencing 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 and problems in their operations 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) [Hirshman, 1970; Helper, 1991; Nishiguchi, 1994] rather than exit (termination of the relationship).

Hypothesis 7: 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 assets 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 create the potential for opportunism (Klein, et al., 1978). Thus, in order for suppliers to willingly make investments in

relation-specific assets, they must have assurances that the buyer will not behave opportunistically and attempt to appropriate these quasi-rents. This issue concerns many suppliers as demonstrated by the empirical findings from recent studies (Lyons, 1994; Dyer, 1996b). 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 suggested 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 8: The greater the supplier trust in the buyer, the greater the supplier's investment in relation-specific assets.

Research Setting

The auto industry in the U.S., Japan, and Korea was chosen as the research setting to examine the antecedents and outcomes of trust in supplier-buyer relationships. This research setting was an unusually good test site for two reasons. First, it was important to study a set of transaction relationships in which trust might be important and valuable. For example, many researchers have argued that risk, or having something invested, is requisite to trust. The need for trust arises only 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 redeployable, 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 also increases the risks associated with transacting as well as the importance of information sharing (Lorenz, 1988; Aoki, 1988). Supplier trust is of particular importance since suppliers make customer-specific investments that place them at risk and give automakers a position of stronger relative bargaining power.

Second, the automotive industry is a large and important industry in the U.S., Japan, and Korea. Studying supplier-buyer relationships in the same industry across different institutional environments allows for some control of extraneous variation, thereby allowing a focus on the impact of the institutional environment. Moreover, studying the antecedents and outcomes of trust in different institutional environments is valuable because numerous scholars have argued that national culture can influence trust and cooperation (Hill, 1995; Fukuyama, 1995). By studying supplier-buyer relationships in three countries, we can examine whether or not the antecedents and outcomes of trust differ in the different institutional environments.

Sample and Data Collection

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 level of trust at multiple levels between his/her supplier organization and the automaker. 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 few cases where there was some discussion, 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 our analysis focuses on rather stable measures (i.e. length of relationship, stock ownership, trust), which Korean suppliers indicated had not changed in any significant ways since 1992.

Operational Measures

Large-sample empirical studies on trust and transaction costs have rarely been attempted due to the difficulties associated with operationalizing these constructs. We briefly describe our measures of trust and transaction costs below. All other operational measures are summarized in Table 1.

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 was

operationalized as the sum of the following variables.

1. The extent to which the supplier trusts the automaker to treat the supplier fairly (1-7 scale).
2. The extent to which the automaker has a reputation for trustworthiness (following through on promises and commitments) in the general supplier community (1-7 scale).
3. If given the chance, the extent to which the supplier perceives that the automaker will take unfair advantage of the supplier (1-7 scale reverse scored).

Our trust construct includes key elements of our definition of trust, including fair dealing, a reputation and track record of following through on promises and commitments, and a willingness to forego opportunism even when the chance is available.

Transaction Costs: Transaction costs in the exchange relationship were measured as the sum of the following three 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].
3. The extent to which the supplier feels that the automaker uses the information provided by the supplier to check-up on (monitoring) the supplier (1-7 scale).

Since the three scales are different--the first two are represented as percentages and the last as a Likert scale--we standardized the variables before summing them. Our construct includes three key elements of transaction costs, including ex ante contracting, monitoring, and ex post haggling. Thus, it captures those activities which by themselves are not value-enhancing, but rather are 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 (i.e. search costs are ignored), we believe this measure to be a reasonable proxy of the

key elements of transaction costs. (See Table 1 for a summary of the operational measures and Chronbach alphas⁴; all 1-7 Likert scale items were scaled as follows: 1=not at all, 4=to some extent; 7=to a very great extent.)

MODEL AND DATA ANALYSIS

The model that was estimated is shown in Figure 1. We estimated this model for the pooled sample as well as by country. We used LISREL because TRUST is both a dependent and an independent variable. The antecedents and outcomes of trust can be estimated simultaneously with LISREL because it is an estimation procedure that jointly estimates a system of simultaneous equations. Other methodologies, such as regression, would have required a number of separate regression equations.

We acknowledge that the direction of causality between trust and the "determinant" variables LENGTH, CONTINUITY, and FACETIME is open to debate. For example, one can argue that high trust leads to long term, continuous relationships and face-to-face contact rather than vice versa. We have offered theoretical arguments which explain why these particular variables may lead to high trust. Nevertheless, we expect a high degree of reciprocal causality with these variables--in effect,

⁴ Although the Chronbach alphas are high for "Assistance" (.84) and "Specialized Assets" (.78), the relatively low alphas for "Trust" (.48) and "Transaction Costs" (.06) deserve some explanation. The items that make up the transaction costs measure are different dimensions of transaction costs rather than multiple measures of the same construct. For example, in the U.S. lower ex ante bargaining costs were associated with lower ex post haggling costs, but in Korea higher ex ante bargaining costs were associated with lower ex post haggling costs. In some cases spending more time in ex ante bargaining reduced ex post haggling. Thus, the items that make up the transaction costs measure are different and somewhat orthogonal dimensions of the measure. This is true, though to a much lesser extent, of our trust measure. For example, some suppliers reported that the automaker had treated them fairly (item 1) but they still felt the automaker would take advantage of them if the automaker had the chance (item 3). Thus, although the multiple measures of trust are positively correlated, they measure somewhat different dimensions of trust and thus are not perfectly correlated.

a virtuous circle where these variables both influence, and are influenced by, trust. We also acknowledge that the direction of causality between trust and information sharing and relation-specific assets is open to debate. For example, one can argue that information sharing and relation-specific investments lead to high trust (although it is unclear why suppliers would share confidential information or make initial relation-specific investments without some degree of trust present). Again, we expect some degree of reciprocal causality with these variables. We address the issue of reciprocal causality in greater detail in the discussion section. Some readers may prefer to consider our variables as "correlates of trust" that have a mutually causal relationship with trust.⁵

RESULTS

The simple descriptive statistics shown in Table 2 indicate that supplier trust is significantly higher in Japan than in Korea or the United States, which have similar levels of supplier trust. Automaker assistance to suppliers is highest in Japan and Korea, with U.S. automakers offering significantly less assistance to suppliers. The length of the supplier-automaker relationship is highest in Japan (41.4 years), followed by the U.S. (32.6 years) and Korea (12.4 years). This result is expected given the long history of the automobile industry in the two former countries compared to that of Korea, where the industry is less than 30 years old. There is much greater continuity in the supplier-automaker relationship in Japan than in the U.S. or Korea. Japanese suppliers re-win the "contract" 91 percent of the time at a model change whereas U.S. and Korean suppliers re-win the contract 71 and 77 percent of the time respectively. Our data also indicate that there is more face-to-

⁵ In fact, we ran alternative LISREL models with causality running both ways. However, the results were inferior to the model presented in this paper.

face communication between suppliers and automakers in Japan than in the U.S. or Korea. We conjecture that face-to-face contact among Japanese automotive transactors may be facilitated by the physical proximity of suppliers and automakers in Japan.⁶ Finally, Japanese automakers are far more likely to hold minority stock ownership positions in suppliers than Korean and U.S. automakers.

[Insert Table 2 about here]

The correlation matrix for all of the variables in this study is presented in Table 3. The simple bivariate correlation presented in the correlation matrix represents all the direct relationships between each pair of variables. Therefore, the structural equations model, which separates direct and indirect effects, could yield somewhat different results. The overall fit of the model can be measured by several different indicators, including the chi-squared statistic, the root mean squared residual (RMR), the goodness-of-fit index (GFI), and the adjusted goodness-of-fit index (AGFI). In our model we have a chi-squared statistic of 166.6 ($p=0.000$); RMR of 0.09; GFI of 0.93; and AGFI of 0.82. Therefore, the overall fit of the model is quite good with a GFI of 0.93 being very good.

[Insert Table 3 About Here]

The results of the LISREL model employed to test our hypotheses are shown in Figure 2.

In summary, from Figure 2 we may conclude the following:

- (1) Automaker assistance to the supplier had a significant positive relationship with supplier trust in the pooled sample. Thus, Hypothesis 1 is supported.
- (2) Length of the supplier-automaker relationship had a significant positive effect on supplier trust in the pooled sample.⁷ Therefore, Hypothesis 2 receives support.

⁶ In our sample, the average distance between supplier plants and automaker plants was 82 miles in Japan, 129 miles in Korea, and 477 miles in the United States.

⁷ Though as we shall show in Table 4, this relationship held true only within Japan.

(3) Continuity in the supplier-automaker relationship (i.e., history of re-winning the contract) had a significant positive effect on supplier trust. Thus, Hypothesis 3 is supported. The LISREL coefficients are highest for the CONTINUITY and ASSISTANCE constructs which suggests that they are most significant and robust determinants of trust.

(4) Face-to-face communication did not have an effect on trust in the pooled sample or within any of the individual countries. Therefore, we did not find support for Hypothesis 4, which proposed a positive relationship between face-to-face contact and trust.⁸

(5) Stock ownership did not have a significant relationship with trust in the pooled sample or within any of the individual countries. Thus, we did not find support for Hypothesis 5, which predicted that stock ownership would be positively associated with supplier trust.

(6) Our data indicate that in the pooled sample and in each country, high supplier trust was associated with low transaction costs. These data were robust across all countries. Thus, Hypothesis 6 is strongly supported.

(7) Our findings indicate a significant positive relationship between supplier trust and the sharing of confidential work-related information. Thus, Hypothesis 7 is supported.

(8) Finally, our data do not support Hypothesis 8, which proposed that greater supplier trust would lead to more investments in relation-specific assets. Our data indicate essentially no relationship between trust and investments in relation-specific assets.

[Insert Figure 2 about here]

Individual Country Results

One reason for doing this research with samples from different countries was to examine how the determinants and outcomes of trust may differ across countries (see Table 4). Previous research suggests that trust between trading partners will vary not only with the attributes of the transaction, but may also vary due to differences in societal culture, networks, and business norms in the

⁸ We acknowledge a weakness in our face-to-face contact measure, which did not take into account personnel turnover. Two sets of exchange partners could engage in the same number of days of face-to-face contact, but the quality of those days of contact could be different if one set of trading partners experienced personnel turnover while the other did not. We would expect social interactions and face-to-face contact to be more effective at establishing trust when turnover is low.

institutional environment in which the transaction is embedded (Granovetter, 1985; Hill, 1995). Consequently, a brief discussion of the country-specific differences in our results is warranted.

[Insert Table 4 about here]

In Japan, supplier trust was universally high in Japan and there was very low variance on both the trust measures and many of the "antecedent" variables (See Table 1). These findings offer empirical support for Dore's (1983) observation that "moralized trading relationships of mutual goodwill" generally pervade Japanese transaction relationships. Of the variables in our model, the most important determinant of supplier trust in Japan was assistance from the automaker to supplier. Length of relationship followed assistance as the second most important antecedent variable in the Japanese sample. Interestingly, continuity of relationship was a less important explanatory variable in Japan than in Korea or the U.S. It is worth noting, however, that the "re-win" percentage was universally high in Japan with extremely low variance. Thus, our findings do not necessarily mean that continuity was not important in developing trust, but rather that it was not as useful in discriminating between higher and lower levels of supplier trust in Japan. Finally, stock ownership did not have an effect on trust in the Japanese sample. One interpretation of this finding is that stock ownership has continued for such a long time in Japan that it has lost its significance as a governance mechanism and thus does not affect "trust" anymore. Another interpretation is that stock ownership is simply not an important determinant of supplier trust in Japanese supplier-automaker relations. Lincoln et al (1992:4) have argued that in Japan, firms "purchase shares in suppliers to increase their control over pricing and production" and that they dispatch personnel to monitor their investment. Although these practices may result in cooperative interfirm behavior, they do not necessarily result in high trust as we have defined it in this study.

Like Japan, the most important determinant of trust in Korea was assistance from the automaker to the supplier. Continuity of relationship followed assistance as the second most significant explanatory variable in the Korean sample. Re-win rates, and trust, were generally lower in Korea than Japan, with greater variance on both variables. Length of relationship and face-to-face contact were found to be unimportant as predictors of trust in Korea. Interestingly, stock ownership had a slightly negative (though not significant) relationship in the Korean sample. Consistent with Lincoln et al (1992), some Korean suppliers indicated that they thought the automaker used their stock ownership position to exert control over the supplier. If true, this may explain why stock ownership was not positively correlated with trust in Korea.

In the United States, continuity of relationship and transaction costs were the only variables significantly correlated with trust. The relationship between automaker assistance and trust was positive, but not significant. One plausible explanation for this finding (offered by suppliers we interviewed) is that U.S. automakers have only recently been offering assistance to suppliers. As U.S. automakers provide increased assistance to suppliers, supplier trust may increase. Interestingly, the relationship between face-to-face contact and trust was slightly negative in the U.S. sample. Some U.S. suppliers claimed that they spent a considerable amount of their face-to-face interaction time with U.S. automakers on unproductive activities, such as negotiating contracts and assigning blame for problems. Thus, quantity of face-to-face contact may be less important to developing trust than quality of communication (Roberts & O'Reilly, 1974; Sako, 1992). U.S. suppliers also offered a possible explanation for the lack of a relationship between length of relationship and trust. Suppliers claimed that length of relationship did not necessarily have a bearing on trust. Indeed, some suppliers suggested that the longer they had worked with a particular automaker, the more time

they had to learn that the automaker was not to be trusted. Increases in time and experience with a particular partner may only mean that one can better trust one's own judgements about an uncertain situation. Finally, stock ownership was not a significant explanatory variable because U.S. automakers did not own supplier stock.

DISCUSSION

The Determinants of Trust

The results offer a number of important insights regarding the development of supplier trust. First, they suggest that providing assistance to suppliers is perhaps one of the best ways to create high levels of supplier trust. Gouldner's (1963) observation that one-sided generosity may act as a starting mechanism for non-exploitive exchange relations is empirically supported. Automotive suppliers appear to interpret assistance-giving behavior as an act of goodwill or benevolence as well as a signal of commitment to future exchange. This translates into a high degree of supplier trust. In addition, supplier trust increases when the buyer has a track record of maintaining a repeated, continuous exchange relationship with the supplier. One interpretation of these findings is that trust is built on a past history of behaviors or routines. Thus, *revealed committed behavior* is more important than social interaction (mere length of relationship or face-to-face contact) or stock ownership (financial hostages).

Second, our findings suggest that although the institutional environment appeared to influence the development of specific practices used to create supplier trust, we found evidence of similarities in the determinants of trust across countries. For example, "continuity of relationship" and "assistance giving" appeared to be quite robust as determinants of trust across countries,

especially when the experience of Japanese automakers working with U.S. suppliers is included (See Appendix A for the data and analysis on a small sample of U.S. suppliers selling to both Japanese and U.S. automakers). In our survey of U.S. suppliers selling the same component to both U.S. and Japanese automakers within the United States (reported in Appendix A), we found that *Japanese automakers were more effective than U.S. automakers at building trusting relations with U.S. suppliers.*⁹ Japanese automakers developed a high degree of U.S. supplier trust through the same mechanisms identified in the pooled sample, notably by offering assistance and continuity to suppliers. In addition, U.S. suppliers reported in our interviews that Japanese automakers were more trustworthy than U.S. automakers due to their lifetime employment and "promotion from within" policies, which foster continuity in personnel and policies. Stated one supplier executive:

We cannot trust U.S. automakers as much as Japanese automakers because whenever they bring in new management, we get a whole new set of procurement rules and policies. The rules of the game are constantly changing. With Japanese companies we don't seem to have the same problems because their policies and personnel are consistent and stable (Interview, September 12, 1992).

Another executive noted, "It's not that I don't trust the person sitting across from me at the U.S. automaker. I may trust him completely. But I don't trust that he will be sitting there a year from now." The predictable consequence of frequent changes in purchasing management and policies is that suppliers realize implicit, and explicit promises made by the automaker may be broken when new management arrives.¹⁰ The ability of Japanese automakers to build high levels of trust with

⁹ These findings are consistent with those of a market research firm, Planning Perspectives Inc., which conducted a survey of 700 U.S. suppliers for Chrysler and Ford in 1992. This large sample survey found that U.S. suppliers had significantly higher trust in Toyota, Nissan, and Honda than they did in the U.S. automakers.

¹⁰ To test these assertions we examined employee tenure in the Japanese and U.S. automakers in our sample. We surveyed 100 U.S. purchasing and engineering employees (at 2 U.S. automakers) and 100

suppliers in the United States suggests that the institutional environment may be less important than firm-level practices in influencing trust.

In summary, an examination of the specific practices employed by the most trustworthy (i.e. Japanese) automakers suggests that they are effective at building supplier trust because they have created interorganizational routines that serve as credible signals of long term commitment to suppliers. In particular, their assistance-giving routines and their supplier-selection routines provide credible assurances to suppliers that the buyer is committed to the exchange relationship. These findings suggest that supplier trust is based on *trustworthy behavior that is institutionalized and embedded within the buying firms' culture and routines*. Moreover, our interview data suggest that suppliers are much more likely to believe that the automaker's interorganizational routines are credible signals of commitment when they have confidence in the stability of *intraorganizational* routines--notably the stability of automaker personnel and policies.

The Economic Value of Trust

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. Further, given that the relationship held true in each country, our findings appear to be robust. To further explore the relationship between trust and transaction costs--as well as the extent to which trust may create

Japanese employees (at 2 Japanese automakers) to determine their average tenure of employment. Japanese automaker employees had been with their employer for an average of 16.2 years, while U.S. automaker employees had only been at their company for 8.8 years. Helper and Sako (1995) found similar results among 472 executives of Japanese suppliers and 671 executives at U.S. suppliers. Japanese supplier executives had been with their companies an average of 22 years, while U.S. executives had only been with their companies for 11 years. These data suggest significantly greater employment stability at the Japanese firms.

substantive economic value in exchange relationships--we examined the relationship between supplier trust and the procurement (transaction) costs incurred by each automaker through the use of a more objective cost measure. 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. For ease in understanding, this figure 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 monitoring supplier performance, and d) primarily responsible for enforcing performance. Thus, our measure should be a reasonable proxy for the relative transaction costs incurred by automakers.¹¹ When we plot each automaker's procurement costs (or rather procurement productivity), along with each automaker's mean score for supplier trust (using our three trust submeasures), the findings suggest a significant, positive relationship between supplier trust and automaker procurement productivity (See Figure 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 automaker procurement productivity for this small 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

¹¹. 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.

than firm J1. There are undoubtedly a number of factors that are likely to influence procurement costs (or alternatively, procurement productivity), but supplier trust seems to be an important factor which has an impact on procurement costs. Trust, as a governance mechanism, cannot be ignored in discussions regarding the factors that influence transaction costs and economic performance. Moreover, these findings suggest that the economic value created through trusting interfirm relationships may be considerable.

[Insert Figure 3 about here]

In accordance with our predictions, we also 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 proprietary 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 high trust relationships alone do not provide a sufficient reason for transactors to make greater relation-specific investments in

trading partners. Trust may not be a strong enough safeguard to protect suppliers' relation-specific investments which are subject to opportunistic exploitation. It is also possible, however, that suppliers make investments in relation-specific investments due to technological necessity, regardless of whether or not they have developed a high level of trust in the buyer. But they may do so reluctantly or they may rely on governance mechanisms other than trust to protect those investments. For example, suppliers may rely on legal contracts or stock ownership as substitutes for trust. Thus, technological necessity may force suppliers to make relation-specific investments in automakers they do not trust. Under these conditions, suppliers are forced to rely on other substitute governance mechanisms to protect their investments.

The Distinctiveness of Trust as a Governance Mechanism

In the process of specifying our model to examine the antecedents and outcomes of trust, we discovered an interesting, and perhaps important phenomenon that explains why trust may be particularly valuable as a governance mechanism. This finding emerged as we attempted to determine which variables were antecedents of trust, and which were outcomes of trust. As our reviewers pointed out, many of the variables we chose as antecedents of trust could also be considered to be outcomes of trust (and vice versa). 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, investments in information sharing and assistance giving not only build trust, but also simultaneously create economic value in their own right. Thus, trust leads to certain value-creating behaviors (i.e. information sharing) and these value creating behaviors lead in turn 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 (i.e. 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 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 (Jarillo, 1990; Lorenz, 1988; Powell, 1990; Sako, 1992; Nishiguchi, 1994; Dyer, 1996b).

CONCLUSION

In this paper we examined the antecedents and economic outcomes of trust in 453 automotive supplier-buyer relationships in the U.S., Japan, and Korea. Our findings indicate that supplier trust is highly correlated with stable and consistent buyer routines that represent credible commitments toward long term interactions--notably assistance-giving routines and supplier-selection routines that promote relationship continuity. Furthermore, this study empirically validates previous theoretical arguments and anecdotal data, which has suggested that trust creates value in economic exchange

relationships. In particular, our findings indicate that trust reduces transaction costs and increases 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. We should note, however, that while trust may be unique in its ability to create value in exchange relationships, buyers (i.e. automakers) incur real costs in developing high-trust supplier relations. These costs come in two forms. First, buyers must expend resources to provide assistance to suppliers. In 1992, Nissan and Toyota supported large teams of more than 75 internal consultants to provide assistance to suppliers. Although the Japanese automakers get a "return" on their investment in the form of more efficient suppliers, they still must incur the expense of maintaining a staff of qualified individuals to assist suppliers. Furthermore, there is an opportunity cost associated with maintaining long-term, continuous relationships with suppliers. The cost of maintaining continuity in supplier relationships includes the opportunity cost of not taking advantage of one's suppliers and the loss of the opportunity to use lower cost suppliers if they come along. The fact that building supplier trust creates value but also imposes costs suggests that buyers should carefully consider both the costs and benefits of trust-building behavior.

TABLE 1
Summary of Operational Measures

| <u>Variables</u> | <u>Description</u> |
|--------------------------|--|
| TRUST | <ol style="list-style-type: none"> 1. The extent to which the supplier trusts the automaker to treat the supplier fairly (1-7 Likert scale). 2. The extent to which the automaker has a reputation for trustworthiness (following through on promises and commitments) in the general supplier community (1-7 Likert scale). 3. If given the chance, the extent to which the supplier perceives that the automaker will take unfair advantage of the supplier (reverse scored on 1-7 Likert scale). Chronbach alpha=.48. |
| ASSISTANCE | <ol style="list-style-type: none"> 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). 3. The extent to which the automaker provides assistance to improve inventory management/delivery (1-7 scale). Chronbach alpha=.84. |
| LENGTH | Number of years since the supplier first began selling products to the automaker. |
| CONTINUITY | The percentage of time the supplier's business has been renewed when there is a model change. |
| FACETIME | The annual "person-days" that the supplier-automaker spent in face-to-face contact during the past year. |
| STOCK | Percent of supplier stock owned by the automaker. |
| INFOSHARE | 1. The extent to which the supplier shares confidential/proprietary information (i.e. technical information) with automaker buyers and engineers (1-7 scale). |
| TRANSACTION COSTS | <ol style="list-style-type: none"> 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]. 3. The extent to which the supplier feels that the automaker uses the information provided by the supplier to check-up on (monitor) the supplier (1-7 scale). Chronbach alpha=.06. |
| SPECIFIC ASSETS | <ol style="list-style-type: none"> 1. <i>Physical asset specificity</i>: 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 (as estimated by supplier respondents). 2. <i>Dedicated Asset Specificity</i>. The supplier's sales to the automaker divided by the supplier's total sales to all customers. Chronbach alpha=.78. |

TABLE 2**Descriptive Statistics: Pooled Sample and By Country**

| Variables | Pooled (n=453) | US (n=135) | Japan (n=101) | Korea (n=217) | Sig. Diff. |
|---------------|-------------------|---------------|------------------|------------------|------------|
| 1. TRUST | 14.11 | 13.63 | 16.37 | 13.35 | *** |
| 2. LENGTH | 21.61 | 32.56 | 41.4 | 12.44 | *** |
| 3. FACETIME | 2042.56 | 1245.01 | 4989.54 | 1413.41 | *** |
| 4. CONTINUITY | 0.78 | 0.71 | 0.91 | 0.77 | *** |
| 5. ASSISTANCE | 9.83 | 7.39 | 10.15 | 10.51 | *** |
| 6. STOCK | 0.04 | 0.00 | 0.11 | 0.03 | *** |
| 7. TRASCOST | 0.01 | 0.09 | -0.40 | 0.16 | *** |
| 8. INFOSHARE | 4.82 | 4.18 | 5.46 | 4.93 | *** |
| 9. SPEC.ASSET | 0.83 | 0.66 | 0.74 | 0.99 | *** |

Note:

1. TRASCOST is a standardized measure.
2. The last column indicates whether the country means are significantly different from each other (F-test).
3. *** Country samples are significantly different at $\alpha = 0.01$.

TABLE 3

CORRELATION MATRIX

| Measures | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1. TRUST | 1.000 | | | | | | | | |
| 2. LENGTH | .27 | 1.000 | | | | | | | |
| 3. FACETIME | .14 | .19 | 1.000 | | | | | | |
| 4. CONTINUITY | .40 | .15 | .05 | 1.000 | | | | | |
| 5. ASSISTANCE | .30 | -.10 | .11 | .16 | 1.000 | | | | |
| 6. STOCK | .01 | .07 | .16 | .01 | .03 | 1.000 | | | |
| 7. TRANSCOST | -.44 | -.05 | -.04 | -.19 | -.11 | -.05 | 1.000 | | |
| 8. INFOSHARE | .28 | -.00 | .10 | .22 | .26 | .13 | -.15 | 1.000 | |
| 9. SPEC.ASSET | -.04 | -.25 | .12 | .04 | .37 | .18 | .07 | .11 | 1.000 |

**TABLE 4
LISREL RESULTS BY COUNTRY**

| Relationship | Expected Sign | Parameter | Standard Error | T-Value | Significance |
|---|---------------|-----------|----------------|---------|--------------|
| H1: LENGTH →Trust | + | .24 | .04 | 5.86 | *** |
| United States: | | -.02 | .08 | -.30 | |
| Japan: | | .25 | .10 | 2.62 | *** |
| Korea: | | -.10 | .06 | -1.57 | |
| H2: FACETIME →Trust | + | .05 | .04 | 1.29 | |
| United States: | | -.09 | .08 | -1.21 | |
| Japan: | | .08 | .10 | .79 | |
| Korea: | | -.02 | .06 | -.36 | |
| H3: CONTINUITY →Trust | + | .32 | .04 | 7.90 | *** |
| United States: | | .53 | .08 | 6.97 | *** |
| Japan: | | .05 | .10 | .50 | |
| Korea: | | .21 | .06 | 3.38 | *** |
| H4: ASSISTANCE →Trust | + | .27 | .04 | 6.60 | *** |
| United States: | | .04 | .08 | .57 | |
| Japan: | | .34 | .10 | 3.48 | *** |
| Korea: | | .35 | .06 | 5.75 | *** |
| H5: STOCK →Trust | + | -.02 | .04 | -.49 | |
| United States: | | .04 | .07 | .50 | |
| Japan: | | -.02 | .10 | -.21 | |
| Korea: | | -.07 | .06 | -1.14 | |
| H6: Trust →Transaction Cost | - | -.44 | .04 | -10.31 | *** |
| United States: | | -.58 | .07 | -8.24 | *** |
| Japan: | | -.39 | .09 | -4.23 | *** |
| Korea: | | -.36 | .06 | -5.65 | *** |
| H7: Trust →Information Sharing | + | .28 | .05 | 6.16 | *** |
| United States: | | .06 | .09 | .71 | |
| Japan: | | .06 | .10 | 1.38 | ** |
| Korea: | | .19 | .07 | 2.81 | *** |
| H8: Trust →Relation Spec. Assets | + | -.05 | .05 | -.97 | |
| United States: | | .05 | .09 | .59 | |
| Japan: | | .10 | .10 | .99 | |
| Korea: | | .02 | .07 | .32 | |

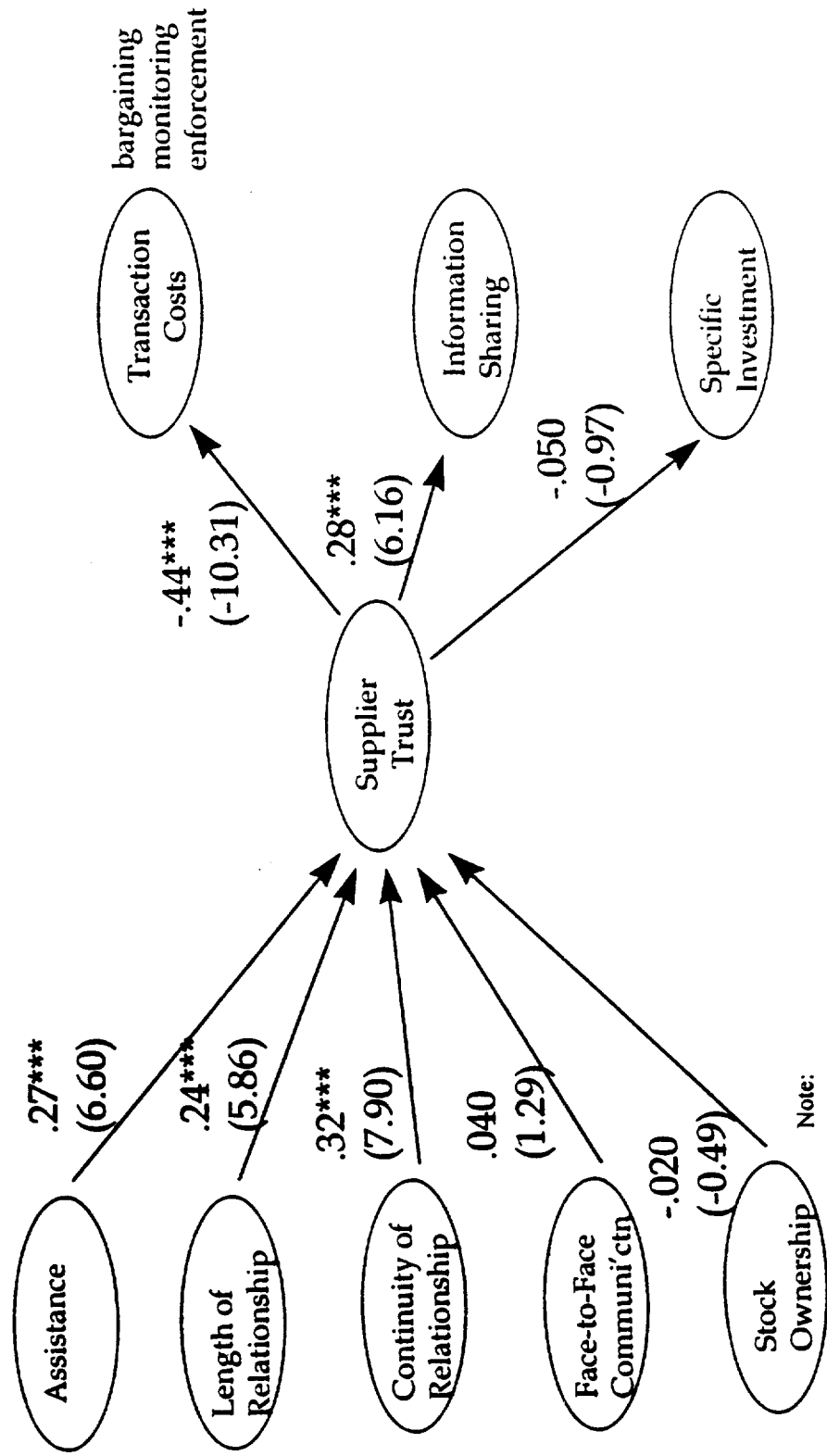
Goodness of fit for the pooled data model.

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

Chi-squared statistic = 166.6 ($p = .000$) 18 d.f.

RMR = 0.08; GFI = 0.93; AGFI = 0.82

Figure 2: Determinants & Outcomes of Trust (LISREL Results)
Pooled Data



Note:

1. Numbers in the first line indicate parameter estimates.
2. Numbers in the second line, in parentheses, indicate t-values.
3. *** significant at alpha = 0.01

Figure 1: Model of the Determinants and Economic Outcomes of Trust in Supplier-Buyer Relationships

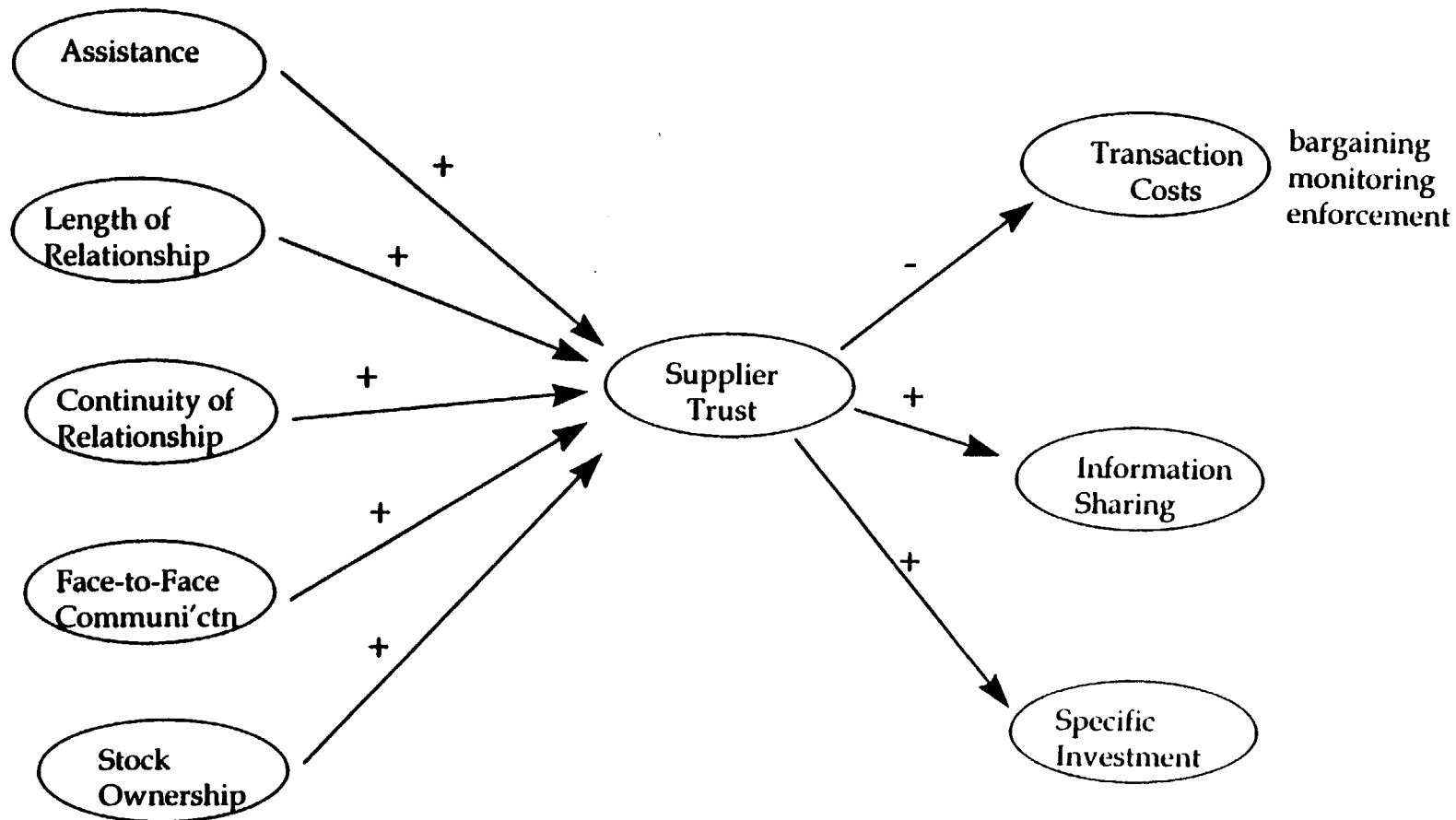
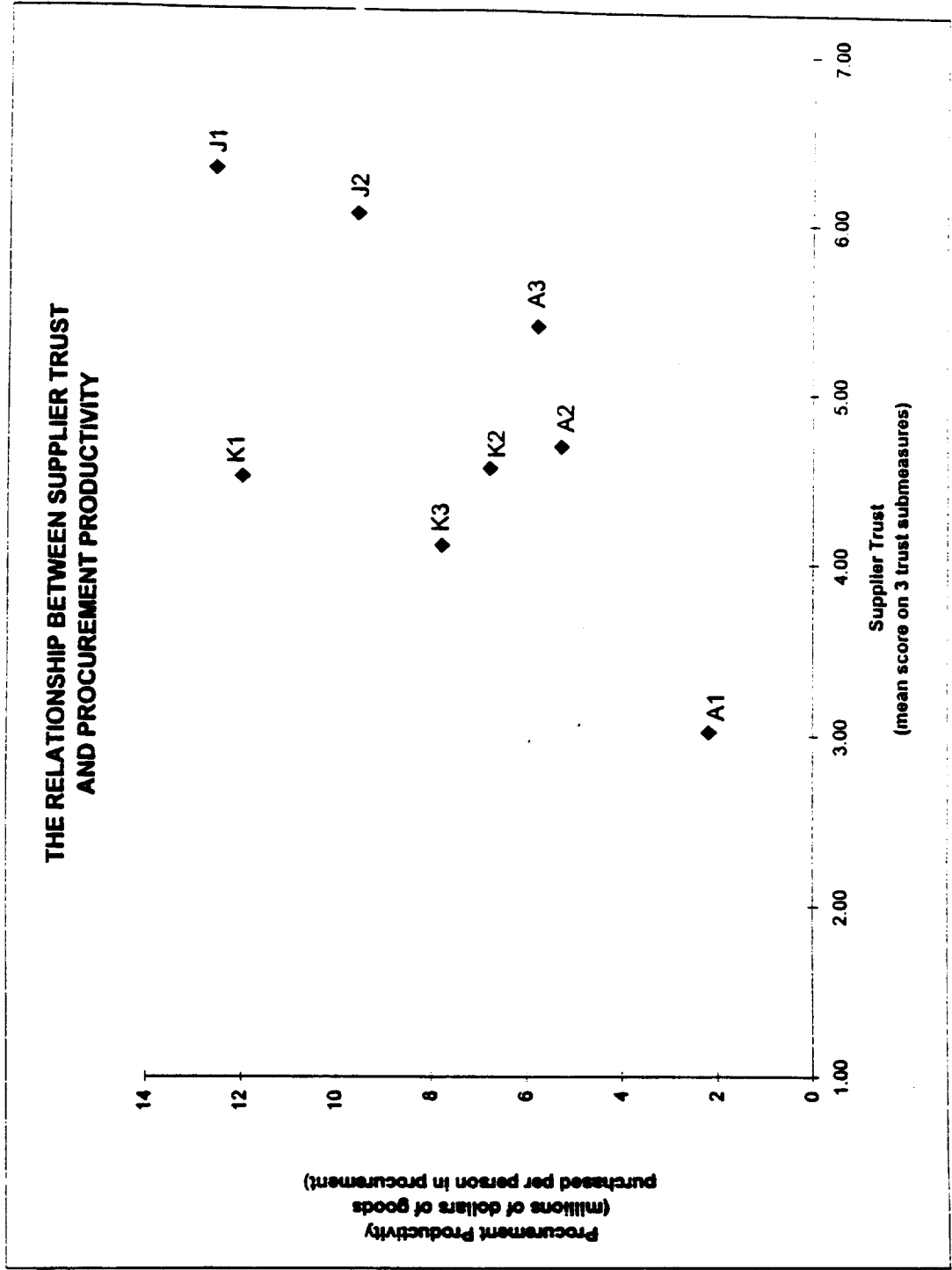


FIGURE 3



APPENDIX A-

To test whether or not trusting supplier relations could be purposefully created across national boundaries, we surveyed a small sample of U.S. suppliers who worked with both U.S. automakers and Japanese automaker "transplants" in the United States. By surveying U.S. suppliers selling the same component to both U.S. and Japanese automakers within the United States, we were able to control (to some extent) for cultural and component (technical) differences that might influence trust. The sample consisted of only U.S. suppliers with at least three years experience and five percent of their total sales to Japanese automakers. This was done to exclude U.S. suppliers without significant experience working with Japanese automakers. These 20 suppliers were randomly selected from the U.S. supplier sample.

The table below provides a summary of the sample means for a number of the antecedent trust variables used in this study. The results indicate that *Japanese automakers are more effective than U.S. automakers at building trusting relations with U.S. suppliers.*

SURVEY OF U.S. SUPPLIERS SELLING TO BOTH U.S. AND JAPANESE AUTOMAKERS

| | <i>U.S. SUPPLIER/ U.S. AUTOMAKER N=20</i> | <i>U.S. SUPPLIER/ JAPANESE AUTOMAKER N=20</i> |
|---|---|---|
| TRUST <i>THE EXTENT TO WHICH THE SUPPLIER TRUSTS THE AUTOMAKER TO TREAT SUPPLIER FAIRLY†</i> | 4.1 | 5.7** |
| <i>IF GIVEN THE CHANCE, AUTOMAKER MIGHT TRY TO TAKE UNFAIR ADVANTAGE OF SUPPLIER†</i> | 4.0 | 1.7** |
| LENGTH <i>LENGTH OF RELATIONSHIP</i> | 22 YEARS | 6 YEARS |
| CONTINUITY <i>PERCENT OF TIME THE SUPPLIER RE-WINS THE BUSINESS AT A MODEL CHANGE</i> | .77 | 1.00* |
| FACETIME <i>ANNUAL MAN DAYS OF FACE-TO-FACE CONTACT</i> | 1654 | 1475 |
| ASSISTANCE <i>EXTENT OF COST REDUCTION ASSISTANCE†</i> | 1.7 | 4.1** |
| <i>EXTENT OF QUALITY IMPROVEMENT ASSISTANCE†</i> | 2.5 | 4.5** |
| <i>EXTENT OF DELIVERY/INVENTORY MANAGEMENT ASSISTANCE†</i> | 1.5 | 2.9** |
| † ANSWERS ARE ON A 1-7 LIKERT SCALE: 1=NOT AT ALL; 4=TO SOME EXTENT; 7=TO A VERY GREAT EXTENT. * IN EACH OF FIVE CASES WHERE THE MODEL CHANGED, SUPPLIERS RE-WON THE BUSINESS FOR THE NEXT MODEL. ** TESTS OF GROUP DIFFERENCES ARE ONE-TAILED T-TESTS ASSUMING UNEQUAL VARIANCES; P < .01 LEVEL. | | |

Appendix A (cont.)

An examination of these results in light of our hypotheses provides further support for our findings regarding the determinants of supplier trust. The key factor which enabled Japanese automakers to develop trusting relationships with U.S. suppliers was offering assistance. U.S. suppliers indicated that, compared to U.S. automakers, they received more assistance from Japanese automakers in reducing costs, increasing quality, and improving delivery. Some U.S. suppliers indicated that they received more help from the Japanese automaker than they felt they deserved given their short term relationship. They were surprised at the willingness of the Japanese automaker to send consultants, free of charge, to help them improve.

Moreover, our interviews with U.S. suppliers revealed that they believed that they would re-win their business with Japanese customers at the model change because: (1) Japanese automakers had told them that they would re-win the business if they performed well, and (2) Japanese automakers had a reputation for not switching suppliers at the model change (in five cases where suppliers were faced with a model change, suppliers reported re-winning the business in each case). Thus, suppliers had the expectation of a high degree of continuity in the relationship.¹

Finally, U.S. supplier relationships with Japanese automakers were only of short duration, 6 years versus 22 years with U.S. automakers. A long term relationship was not an important determinant of high trust in the United States. With regard to face-to-face contact, the sample engaged in 1475 man days of face-to-face contact with Japanese automakers versus 1657 man days with U.S. automakers. On an absolute basis there are no significant differences. Stock ownership was not a factor in these relationships since Japanese automakers did not own stock in any suppliers in the sample.

¹ These findings are consistent with those of a market research firm, Planning Perspectives Inc., who conducted a survey of 700 U.S. suppliers for Chrysler and Ford in 1992. This large sample survey found that U.S. suppliers had significantly higher trust in Toyota, Nissan, and Honda than they did in the U.S. automakers.

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