

Trust in Buyer-Supplier Relationships: Supplier Competency, Interpersonal Relationships and Outcomes

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ABSTRACT

In this paper, we develop a model that links the antecedents of trust, trust itself and outcome success. We test the model using data from a questionnaire and present the path analytical results. The data suggest that performance outcomes are based on both direct effects from objective supplier performance and indirect effects through trust. However, many of the “people oriented” trust enablers (e.g. engineering personnel exchange) have no bearing on the establishment of trust. Additional discussion and a number of suggestions for future research are provided.

Keywords: Supplier-Buyer Relationships, Supply Chain Management, Trust

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BACKGROUND

The past 20 years has seen a paradigm shift in both academic research and practitioner interest in supply chain management, particularly with respect to the manner in which buying firms and suppliers interrelate. Supplier-buyer relationships that had traditionally operated in an adversarial form have since been promoted in a more positive frame encompassing collaboration, joint problem solving, and strategic supplier integration. Part of this has been driven by necessity. Supply chains have grown longer with increased risk from disruption and lean/just-in-time process management has increased inter-firm dependency. As a result, buying firms have invested in more cooperative relationships as a risk reduction strategy. Part of this new approach can also be traced to a reassessment of what constitutes best supply management practice, a more holistic and multi dimensional view of value based purchasing and the isomorphic influence of notable industry exemplars such as Toyota, Honda, John Deere, Harley Davidson and Tektronix. Management research has increasingly focused on what is necessary to make this form of interorganizational collaboration work.

The objective of this research is to examine the relative importance that people-oriented mechanisms (e.g. exchange of personnel, social contact) and process oriented mechanisms (product delivery reliability and conformance quality) play in establishing trust between supplier and buyer firms as well as the impact that trust has on performance outcomes (e.g. customer satisfaction, market share, profitability). We first review the extant literature and establish our conceptual model. We empirically test the proposed relationships and then offer our assessment and recommendations for further research.

TRUST: ENABLERS AND OUTCOMES

An integral element to achieve the reported benefits from more collaborative supplier relationships is the establishment of trust (Smith, Carroll and Ashford 1995). Trust is purported to replace a variety of costly governance mechanisms including complex legal contracts and conditions, superfluous quality assurance, time consuming communication and duplication of effort in product planning, forecasting and replenishment. The establishment and nurturing of trust between suppliers and buyers is consistent with a cost minimization strategy when “cost” is broadly defined. Buyers can rely on a supplier’s quality management system, assume that incoming parts will be defect free and have them delivered directly to the workstation in a just-in-time manner. Buyers and suppliers can share product demand forecasts and work towards optimal inventory positions and customer service levels. Likewise, the establishment of trust between the two parties can enhance individual motivation (Dirks 1984) and lead to synergistic relationships for the development of new products and services without the need for onerous “legal” constraints. And most recently, trust in a supplier has resulted in a number of retail firms yielding product management, control and responsibility to the supplier – from product forecasting to inventory control to replenishment – under a vendor managed inventory (VMI) model. From a theoretical perspective, therefore, trust helps lower transaction costs (Sako 1991; Dyer 1996; Zaheer et al. 1998), leads to superior and more effective information flows (Aoki 1988; Clark and Fujimoto 1991; Nishiguchi 1994) and permits risk-free, relation specific investments (Dyer 1996; Chu and Fang 2006). Higher levels of trust should result in improved financial performance, greater market penetration and enhanced customer relationships.

Trust can be defined as one party's belief that the other party in the relationship will not exploit its vulnerabilities even when such exploitation would not be detected (Ring and Van de Ven 1992; Sako 1991; Barney and Hansen 1994; Dyer and Chu 2000). Trust is thought to be a function of repeated contact between people, through third party transference or through demonstrated capability (Doney and Cannon 1997). Yet despite its apparent importance in effective supply chain management and a significant body of research in social psychology, building trust between organizations is not a fully understood process, can be difficult to measure objectively and is both reciprocal and iterative in nature (Dyer and Chu 2000) making identification of direct causality a challenge. Some claim that trust is a concept that is only relevant at an interpersonal level. A buyer can trust a supplier's sales representative but an organizational entity trusting a supplying firm is inconceivable, except as it might represent a collection of consistent individual views (Zaheer et al 1998).

There have been some recent empirical efforts to fully understand the role of trust in interorganizational success. For example, Petersen, Ragatz and Monczka (2005) identify trust as one of three key inputs to decision making effectiveness. Trust is measured based largely on reliability and honesty but how trust is formed was not included in the study.

Dyer and Chu (2000) examined the antecedents of trust using three theoretical frameworks: social relationships and embedded ties, institutional processes and routines, and economic incentive alignment. Social relationship strength used length of time from first interface and frequency of interactions (Gulati 1995) as surrogate measures. Institutional processes used supplier selection procedures (including automatic contract renewal), and problem resolution mechanism (e.g. problem solving teams) as surrogate measures. Finally, economic incentive alignment was based on the extent of equity ownership. For US companies, Dyer and Chu only found significant links between continuity (contract renewal) and trust. In contrast, trust in Japanese buying firms was a function of length of time since first contract and the usage of joint problem solving teams.

There were a number of weaknesses of Dyer and Chu's (2000) study. For one, the authors only examined mechanisms that helped form trust, assuming a positive outcome dependency. For commodity like items where productivity is linked to capital intensity and raw material utilization, any trust-performance link may be a spurious one. And the stronger the use of just-in-time supply, the more likely that it is the supplier's reliability that is linked to success rather than how good one "feels" about the relationship. Sako (1991) would argue that, for a majority of firms, the fundamental foundation for establishing trust is the repetitive instances of a supplier's product reliability, conformance quality and delivery competency.

Second, at least some of the study's surrogate measures lacked complete face validity. Simply counting face-to-face contact between suppliers and buyers is a simplistic measure of people related mechanisms and that a cursory weekly sales visit (52 times per year) differs dramatically from an exchange of technical personnel to help redesign processes, something that might occur much less frequently but is much "richer" (Daft and Lengel 1986; Cannon and Homburg 2001). And if a supplier continuously improves their product and process while delivering reliable products on time, does this low need for corrective action mean that there is an absence of trust?

In contrast, a recent study by Paulraj, Lado and Chen (2008) focused on inter-organizational communication as the antecedent of performance and as a consequence of long term relationship orientation, network governance and information technology. While the authors provided a more complete model than Dyer and Chu (2000), their focus was almost

exclusively on information technology and network governance as the basis for estimating the level of inter-organizational communication (and by implication, trust). The strongest path to inter-organizational communication was from long term relationship orientation, a construct consistent with Dyer and Chu's "relationship continuity/supplier selection" and with strategic purchasing intent from an earlier study by the same authors (Chen, Paulraj and Lado 2004).

Our purpose with this study is to begin to correct these deficiencies by examining the relative importance of people and process enablers of trust and determining the link between trust and performance. We find it reasonable to classify trust building activities into two separate antecedents: those that use mechanisms based on social exchange and relationship development (people oriented) and those that employ mechanisms involving tangible product exchange (process and economic oriented). We define trust as a consequence of actions undertaken in the relationship including those that are "people" based (e.g. sharing of embodied knowledge workers) and those that are competency based (e.g. consistent and reliable delivery times of products and services). Our *a priori* assumption, based on the extant research, is that both of these will contribute to the establishment and nurturing of trust. And it is through trust that buying firms can take the steps necessary to realize the benefits from collaborative relationships. We also include direct links from supplier performance to outcomes in the hopes of better understanding the direct and indirect effects of trust on performance.

METHODOLOGY

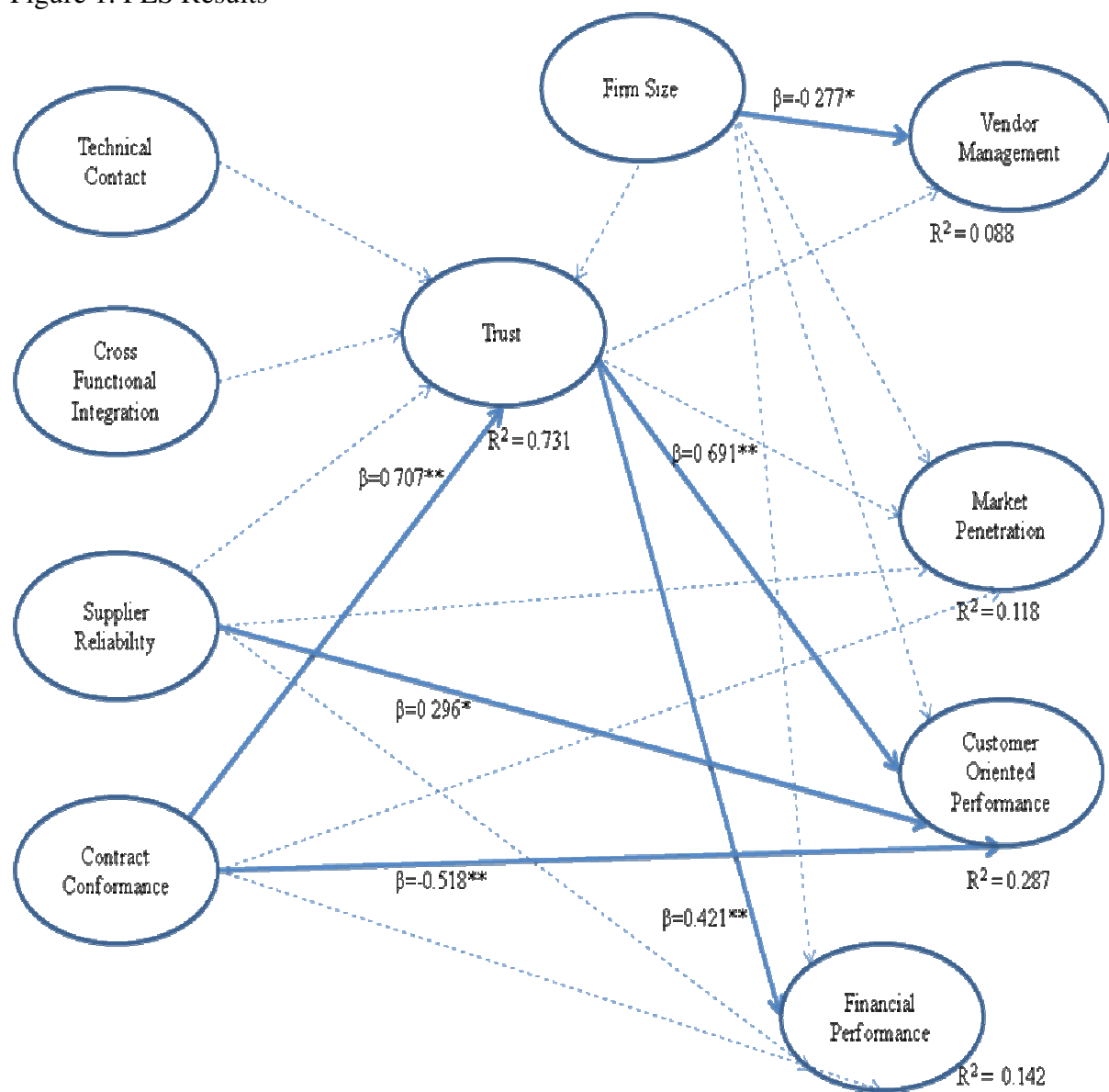
Data for this study was collected via a mail survey sent to senior procurement managers in 852 organizations in the US. The instrument was pre-tested with 25 respondents to clarify the question wording and remove ambiguities. Usable responses numbered 107, a response rate of 12.6 percent. Partial Least Squares (PLS) a second generation multivariate method, was used to analyze the data. PLS evaluates both the measurement and theoretical model simultaneously and adjusts the relationships among the variables accordingly (Chin et. al 2003). PLS is best suited where the objective is to maximize multivariate variance of the manifest variables rather than in reproducing population parameters that underlie all the covariances, where the sample size is relatively small and where the theoretical background (and measurement instrument) is less complete or developed (Chin 1995).

Scales were developed to measure *technical contact* (face-to-face contact in product development, visits, knowledge exchanges), *cross functional integration* (development teams, assembly line improvement teams), *supplier reliability* (on time delivery, meeting product specifications, quality conformance), *contract conformance* (honest, meet expectations, contract compliance), *trust* (belief in supplier compliance, high level present), *vendor management* (vendor monitoring of inventory, flow, speed), *marketing penetration* (sales growth, market share), *customer oriented performance* (loyalty, satisfaction), *financial performance* (profitability, ROI). Because size (and organizational slack) may have an influence on the implementation of these activities, we included *size* (number of employees) as an intervening variable.

Using Structural Equation Modeling (SEM) and latent variables require reliability assessment of the model (Rencher 1998). Cronbach's alpha coefficient is frequently used for reliability assessment to identify how well the latent variables are correlated (Rosenthal and Rosnow 1991) with recommended suggested values of 0.7 or above (Nunally 1978) and minimum values of 0.6 (Gilner and Morgan 2000). Our results reveal that the model is reliable since

the alpha values are greater than 0.7. Average variance extracted (AVE) is generally used for the measurement of discriminant validity in SEM. AVE values (square root of AVE values for more conservative approaches) are expected to be greater than the correlation with other variables (Fornell and Larcker 1981). All AVE values and square root of AVE values are greater than the related Spearman correlations indicating that the constructs pass the threshold value and have good discriminant validity. Based on the validity and reliability assessments, structural equation modeling can be applied in this study.

Figure 1. PLS Results



** Significant at the .01 level
 .05 level

* Significant at the

DISCUSSION AND FUTURE RESEARCH

Because of the relatively small sample size, we caution that our results, illustrated in Figure 1, should be viewed as directional rather than conclusive. However, it is worth noting that

only the path loading from supplier contract conformance to trust is significant, results that are intellectually consistent with Dyer and Chu's results for North American firms in which trust was linked to contract renewal. In contrast, people oriented mechanisms, including engineering exchange and joint problem solving teams are not significant. Nor does supplier reliability (e.g. on time delivery) load significantly on trust. Overall, trust for these firms appears to depend on a very basic premise of meeting expectations and contract obligations.

Trust loads significantly on two performance outcomes: customer performance (satisfaction and loyalty) and financial performance (profitability and financial returns). Trust does not significantly load on the implementation of vendor managed inventory systems or on market penetration (market share). Instead, vendor managed inventory systems are a function of buyer firm size which is consistent with anecdotal evidence that it seems to be a practice that is dominated by larger retailers, such as WalMart, rather than being broadly implemented. Finally, there are significant direct links between supplier reliability and contract conformance on both customer and financial performance. This indicates a compound effect from suppliers' efforts at meeting the most basic of their contract compliance – an indirect effect through enhancing trust and a direct effect. Equally interesting, there are no links either directly or indirectly, to market penetration. It may be possible that the surveyed firms have reached the point whereby reliability and conformance quality will not be viewed as significant differentiator in the marketplace.

For researchers examining inter-organizational cooperation and supply chain linkages, our research suggests the need to reorient the focus away from interpersonal relationships as a priority area for building trust. The interpersonal contact may still be a necessary ingredient to achieving trust but it comes indirectly through, for example, problem solving teams that yield concrete improvement ideas that result in higher levels of product conformance and delivery reliability. Collaboration and social integration, in and of itself, does not provide a basis for the establishment of trust. Rather, it is the demonstrated performance improvement that enhances trust.

Our results come from surveying buyers in a product based environment. It would be of particular interest to see if the model results hold as strongly for service type environments where customer contact might play a larger role in defining service quality. And given that there appears from Dyer and Chu's (2000) work that there are significant differences between Japanese, Korean and U.S. based buying firms in the antecedents of trust, trying to generalize outside of North America would be premature at best. More research in a broader geographical sphere would be a natural next step. Other future research opportunities may include examining the relationship between level of integration/involvement in a supply chain relationship and trust as well as cultural and country specific differences in global supply chain network.

Finally, the explained variances for the outcome measures are lower than we would have expected. There are obviously variables missing from the model that need to be incorporated. For example, labour productivity and technological innovation (i.e. plant investments, flexible manufacturing systems, relative use of SCM software) might help to explain some of the observed differences and neither of these was incorporated into the questionnaire. Expanding the model in terms of constructs and sample size would be highly recommended.

References

- Aoki, M. (1988). *Information, Incentives and Bargaining in the Japanese Economy*. New York: Cambridge University Press.
- Barney, J. and Hansen, M. (1994). Trustworthiness as a Source of Competitive Advantage. *Strategic Management Journal*. Vol. 15, 175-190.
- Cannon, J.P. and Homburg, C. (2001). Buyer-Supplier Relationships and Customer Firm Costs. *Journal of Marketing*. Vol. 65, No. 1, 29-44.
- Chen, I.J., Paulraj, A. and Lado, A.A. (2004). Strategic Purchasing, Supply Management and Firm Performance. *Journal of Operations Management*, Vol. 22, 505-523.
- Chin, W.W., Marcolin, B.L. and Newsted, P.R. (2003). A Partial Least Squares Latent Variable Modeling Approach for Measuring Interaction Effects: Results from a Monte Carlo Simulation Study and Voice Mail Emotion/Adoption Study. *Information Systems Research*. Vol. 14, 189-217.
- Chin, W.W. (1995). Partial Least Squares is to LISREL as principal components analysis is to common factor analysis. *Technology Studies*. Vol. 2, 315-319.
- Clark, K.B. and Fujimoto, T. (1991). *Product Development Performance*. Boston: Harvard University Press
- Chu, S. And Fang, W. (2006). Exploring the Relationships of Trust and Commitment in Supply Chain Management. *Journal of American Academy of Business*. Vol. 9, No. 1, 224-229.
- Daft, R. and Lengel, R. (1986). Organizational Information Requirements, Media Richness and Structural Design. *Management Science*. Vol. 32, No. 5, 554-571.
- Dirks, K.T. (1984). The Effects of Interpersonal Trust on Work Groups' Performance. *Journal of Applied Psychology*. Vol. 84, 445-455.
- Doney, P.M. and Cannon, J.P. (1997). An examination of the nature of trust in buyer-seller relationships. *Journal of Marketing*. Vol. 61, No. 2, 35-51.
- Dyer, J.H. (1996). Does Governance Matter? Keiretsu Alliances and Asset Specificity as Sources of Japanese Competitive Advantage. *Organization Science*. Vol. 7, No. 6, 649-666.
- Dyer, J.H. and Chu, W. (2000). The Determinants of Trust in Supplier-automaker Relationships in the U.S., Japan and Korea. *Journal of International Business Studies*, Vol.31, No.2, 259-285.

- Fornell, C., & Larcker, D.F. (1981). Evaluating Structural Equation Models With Unobservable Variables And Measurement Error. *Journal of Marketing Research*, Vol.18, No.1, 39-50.
- Gilner, J.A. and Morgan, G.A. (2000). *Research Methods in Applied Settings: An Integrated Approach to Design and Analysis*. Lawrence Erlbaum Associates: Philadelphia, PA.
- Gulati, R. (1995). Does Familiarity Breed trust? The Implications of Repeated Ties for Contractual Choice in Alliances. *Academy of Management Journal*. Vol. 38, No. 1, 85-112.
- Nishiguchi, T. (1994). *Strategic Industrial Sourcing*. New York: Oxford University Press.
- Nunnally, J. (1978). *Psychometric Theory*. McGraw Hill: New York.
- Paulraj, A., Lado, A.A. and Chen, I.J. (2008). Inter-Organizational Communication as a Relational Competency: Antecedents and Performance Outcomes in Collaborative Buyer-Supplier Relationships. *Journal of Operations Management*. Vol. 26, 45-64.
- Petersen, K.J., Ragatz, G.L. and Monczka, R.M. (2005). An Examination of Collaborative Planning Effectiveness and Supply Chain Performance. *The Journal of Supply Chain Management*. Spring, 14-25.
- Rencher, A.C. (1998). *Multivariate Statistical Inference and Applications*. New York, NY: John Wiley & Sons.
- Ring, P.S. and Van de Ven, A.H. (1992). Structuring Cooperative Relationships Between Organizations. *Strategic Management Journal*. Vol. 13, 483-498.
- Rosenthal, R., & Rosnow, R.L. (1991). *Essentials of Behavioural Research: Methods And Data Analysis*. Boston, MA: McGraw Hill.
- Sako, M. (1992). *Prices, Quality and Trust*. Cambridge: Cambridge University Press.
- Smith, K.G., Carroll, S.J. and Ashford, S.J. (1995). Intra- and Interorganizational Cooperation: Toward a Research Agenda. *Academy of Management Journal*, Vol. 38, No.1, 7-23.
- Zaheer, A., McEvily, B. and Perrone, V. (1998). Does Trust Matter? Exploring the Effects of Interorganizational Trust on Performance. *Organizational Science*, Vol. 9, No. 2, 141-159.