Structural and Social Bonds of Commitment in Inter-Firm Relationships

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Firms are forming inter-organizational relationships requiring increasing levels of cooperation, communication, trust, mutuality and openness, and information exchange amongst the network members. Building on previous industrial buyer supplier relationship research we developed and tested a comprehensive structural equation model of determinants influencing successful long-term commitment. The final model successfully specified relationships among mutual goals, process adaptation, technology investments, trust, communication, structural bonding and cooperation as antecedents of long term commitment. Several key findings suggest directions managers might take to build more effective relationships.

INTRODUCTION

As industrial relationships continue evolving toward long-term purchase agreements, partnerships, alliances, joint ownership and integrated global sourcing, they replace traditional arms-length, transactional buyer-seller relationships (Heide and John, 1990; Hertz, 2001; Kidd, Richter, and Stumm, 2003; Landeros and Monczka, 1989) to create higher value for the firms. To foster collaborative advantage (Kanter, 1994) firms are forming inter-organizational cooperative relationships (Thurow, 1992), requiring increasing levels of cooperation and trust amongst the members of these relationship networks (Morgan and Hunt, 1994). Strong competitors are collaborating to achieve common standards for reducing costs and enhancing the acceptance of products into the marketplace (Bowersox, Closs and Stank, 2000). Organizational relationships between suppliers and customers are moving from modular entities to virtual, barrier-free structures (Dess, McLaughlin and Priem, 1995). Supply chain management is increasingly vital as a means of adding additional value to products and for developing a company's competitive advantage (Li and Kumar, 2005). The development of expanded inter-firm relationships naturally follows from shared common experiences, and this integration is having a profound impact on the manner in which business is conducted: shifting from transactional systems to relational systems intended for the mutual benefit of the firms (Sabel, 1993).

This increasing interdependence is evidenced by trends in supply-chain integration, strategic sourcing management, and an organizational emphasis on purchasing and supply chain management (Carter and Narasimham, 1996; Hertz, 2001). These relationships are built on commitments between firms (Dwyer, Schurr and Oh, 1987; Morgan and Hunt, 1994). Furthermore, this kind of collaborative culture needs a basis in mutuality and openness, information exchange, communication and trust (Barratt, 2004). Burgess and Singh (2005, p. 337) maintain that "organisations (sic) need to have a profound level of understanding of their supply chains if they are to successfully find sources of competitive advantage within them."

Building on research concerned with the development of buyer supplier relationships, for example, Dwyer, Schurr and Oh (1987), Han (1991), and Wilson (1995), we developed and tested a comprehensive conceptual model of determinants influencing successful long-term business relationships (commitment) between industrial buyers and sellers.

CONCEPTUAL FRAMEWORK AND HYPOTHESES

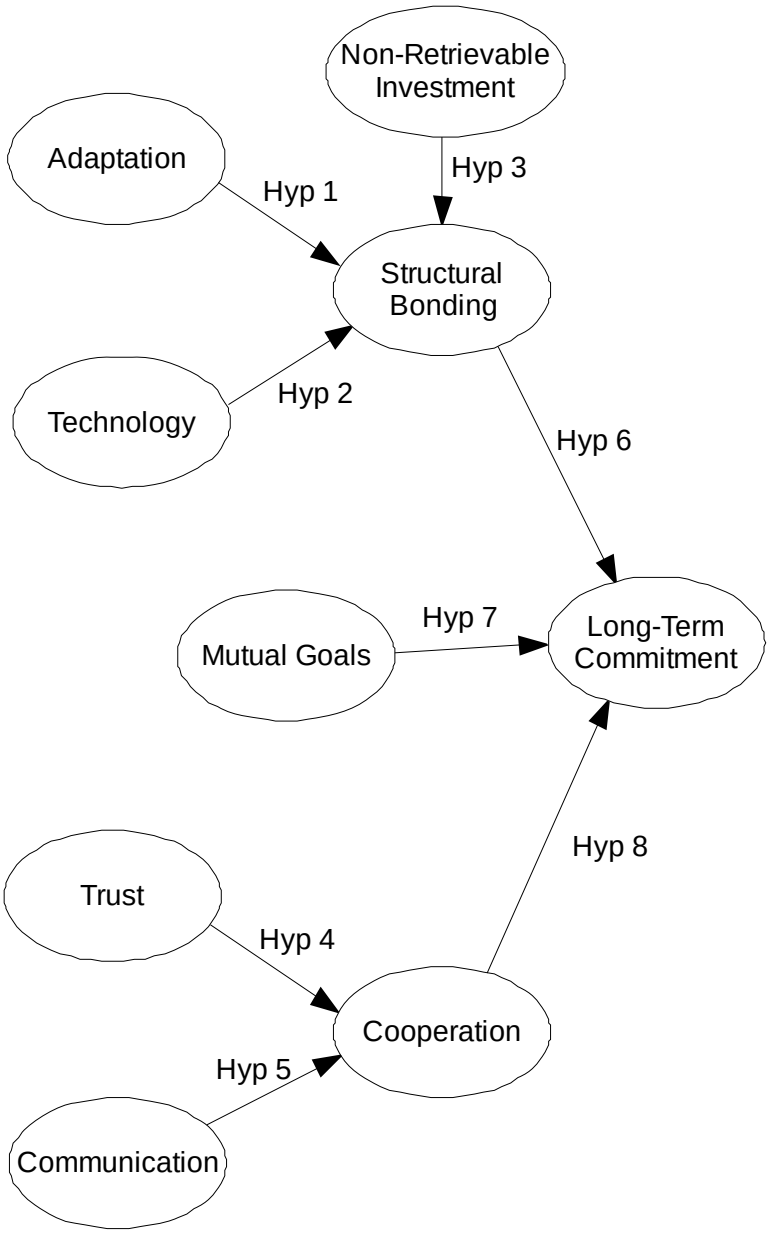
Dimensions of Organizational Processes

Both quantitative and qualitative dimensions characterize firm interactions (Van de Ven, 1976). The frequency of inter-organizational meetings and the number of groups involved exemplify quantitative aspects of a relationship (Frazier, Spekman and O'Neal, 1988). Qualitative elements include cooperation, the limited use of power in the resolution of conflicts (Frazier, Spekman and O'Neal, 1988), flexibility and the use of give-and-take (MacNeil, 1980), joint participation in decision making, planning and problem solving, and goal identification (Spekman, 1988). These kinds of interaction processes build trust, encourage increased sharing of mutual goals, increased levels of cooperation, and an increasing exchange of information. Supply chain partner interactions can also lead to the exchange of valuable resources to foster mutual strategic advantage (Houston and Gassenheimer, 1987).

Wilson and Mummalaneni (1988) proposed a model of structural bonds that builds from a single exchange of complementary needs to long-term relationships of buyers and sellers through the stages of interaction exchange, intermediate outcomes, satisfaction, and investments. With this foundation Han (1991) modeled structural bonds and social bonds as antecedents to long-term relationships. Antecedents to structural bonding include the availability of technology (Jackson, 1985), the comparison of available alternatives (Wilson and Mummalaneni, 1988), the adaptation of task-specific resources between the firms (Williamson, 1979, 1986), and the importance of the relationship (Heide and John, 1990; Spekman, 1988. Han (1991) also tested inter-firm adaptation and shared technology as antecedents to long-term commitment. Wilson (1995) proposed that the development of relationships which creates mutual value for the firm is based on commitment, cooperation, structural bonds, and mutual goals. Social bonds including trust and satisfaction have also been proposed as major determinants for creating long-term buyer-seller relationships (Schurr and Ozanne, 1985).

Based upon this body of research we developed a set of hypotheses to more comprehensively explore the determinants of long term buyer supplier commitment. Our resulting conceptual model is depicted in Figure 1. Successful long term commitment is hypothesized to be directly related to structural bonding between firms, mutual goals of the participants, and cooperation among them. Structural bonding is hypothesized to be related to adaptation, shared technology, and non-retrievable investments. Finally, cooperation is hypothesized to be related to trust and communications. We expand the basis for each of these hypotheses in the following sections.

FIGURE 1
HYPOTHESIZED MODEL OF LONG TERM BUYER SELLER RELATIONSHIPS



The Impact of Adaptation, Shared Technology, and Non-Retrievable Investment on Structural Bonding

Ties holding together relationships between suppliers and customer organizations are defined as structural bonding (Mummalaneni and Wilson, 1988). Han (1991) suggested that structural bonding is the glue that holds organizations together; the strength of this bond is built on the

economy of decision making (Turner, 1970) which, in turn, is closely related to the reduction of transaction costs (Williamson, 1975) and the creation of value (Wilson, 1995). Organizations become deeply involved in a business relationship because of the intertwining requirements of technology and the adaptation of the relationship to provide competitive costs and processes. Han (1991) found several significant antecedents to structural bonding: the adaptation of processes; shared technology; and non-retrievable investments by the buyer.

The interaction of industrial buyers and sellers forming a long-term relationship requires that the parties adapt to each other (Wilson, 1995). Hallen, Johanson and Seyed-Mohamed (1991, p. 30) noted "adaptation may also be necessary in an ongoing relationship as the exchanging parties are exposed to changing business conditions." Adaptation focuses on elements that bond buying and selling firms together, including changes to products, production processes, production schedules, delivery routines, and administrative routines. The investment in relationships is such that the two parties cannot use this investment elsewhere. These relationships, which tie the firms together, often require considerable investments of financial and human resources by one or both firms. Although essential for conducting specific transactions in support of the relationship, they are of such a nature that they cannot be easily transferred. However, they may lead to improvements in core competencies that allow a supplier to become even more competitive in relationships with other firms (Hallen, Johanson and Seyed-Mohamed, 1991). Thus, we posit Hypothesis 1: Adaptation has a positive impact on structural bonding.

Shared technology, as hypothesized and tested by Han (1991) and further developed by Volsky and Wilson (1993) and Wilson (1995), is based on investments in shared technology to strengthen the structural bonds between the firms. Technology refers to the unique characteristics of each supplier's production processes, equipment, delivery systems, and the information it provides. Wilson (1995, p. 339) defines shared technology as "the degree to which one partner values the technology contributed by the other partner to the relationship." While investments in shared technologies can strain relationships in the early stage because of uncertainty, it inevitably contributes to a stronger relationship (Volsky and Wilson, 1994). In our study, the shared technology construct focuses on technology leadership, the exchange of technological information, and inter-firm technology processes. As a result, we forward Hypothesis 2: Shared technology has a positive impact on structural bonding.

Following the concept of idiosyncratic, transaction-specific investments described by Williamson (1979, 1986), the investment in relationships is such that the two parties cannot use this investment elsewhere. Non-retrievable, non-transferable investments can take the form of specific tangible assets, business processes, shared technology development, and communication interfaces between the buyer and seller. Wilson (1995, p. 339) defined non-retrievable investments "as the relationship-specific commitments of resources that a partner invests in the relationship." Non-retrievable investments take the form of unique capital, training and relationship building events that will not be recovered if the inter-firm relationship is terminated. Here, the measurement of non-retrievable investment focuses on the development of teams, organizations, and training between the organizations, and our resulting hypothesis is Hypothesis 3: Non-retrievable investment has a positive impact on structural bonding.

The Impact of Trust and Communications on Cooperation

Cooperation is the buyer's and seller's ability to collaborate and work together toward their respective goals. Anderson and Narus (1984, p. 66) conceive cooperation as the opposite end of a continuum with conflict where "manifest conflict… can be defined as the frequency and

intensity of disagreements between the distributor and manufacturer." Cooperation suggests a relationship where the partners go beyond the defined boundaries of contracts to extend the exchange process; it is working with others for the mutual benefit of both. Our study embraces this description and includes the notions of collaboration and working jointly toward respective goals (Stern and Rowe, 1980). Measures for this construct are based on flexibility, working to make adjustments in the relationship, and ensuring joint success. We will be hypothesizing trust and effective communication as antecedents of cooperation.

Trust, for a number of good reasons, has been a popular topic in supply chain research for almost two decades. Trust reduces transaction costs in and between organizations. Inter-organizational trust is the means by which the relationship between the buying and selling firms promotes operational efficiency by fostering work on cooperative programs. "Trust is essential if long-term, non-hierarchical relationships are to be sustained (Shepard and Tuchinsky, 1996, p. 142)." Highly responsive, low transactions costs organizations require trust at all levels to facilitate the effectiveness and adaptation of inter-firm programs without requiring structured intervention. Trust is a fundamental, although complicated, building block of relationship models (Wilson and Mummalaneni, 1988; Han, 1991). Although defined a number of ways (Wilson, 1995), in essence, trust presumes that one partner will do what it says it will do. From Cummings and Bromiley (1996, p. 303), the definition of trust used here is "an individual's belief, or common belief among a group of individuals, that another group, (a) makes good-faith efforts to behave in accordance with any commitments both explicit or implicit, (b) is honest in whatever negotiations preceded such commitments, and (c) does not take excessive advantage of another even when the opportunity is available." The measurement of trust is complex because of its multi-dimensional nature. The measure we utilized, the Cummings and Bromiley Organizational Trust Inventory (1996), is operationalized based on a cognitive understanding of keeping commitments. This measure of trust focuses on the reliability of the supplier and on the belief that the supplier will negotiate honestly. Trust is a fundamental component in the understanding of expectations for cooperation and planning in a relational context. Hypothesis 4: Trust has a positive impact on cooperation.

Communication has been the subject of many studies of buyer-seller relationships by a number of researchers (Anderson and Narus, 1990; Morgan and Hunt, 1994; and Mohr and Spekman, 1994). Mohr and Spekman (1994) noted that in buyer-seller relationships a key behavioral characteristic is based on communication. Communication affects the formal and informal exchange of information and meaning between partners (Anderson and Narus, 1990). It facilitates market planning, research, development and manufacturing, and fosters higher levels of coordination and cooperation. Communication between the buyer and seller permits problems to be solved more easily and at lower levels, extends the duration of the exchange relationship, increases inter-organizational networking, creates positive expectations about the seller's future performance, enhances personal relationships, and initiates a cooperative mode of interaction. In our study, communication is based on the seeking of advice and counsel, encouraging suggestions, and assisting in planning activities. The resulting hypothesis is Hypothesis 5: Communication has a positive impact on cooperation.

The Impact of Structural Bonding, Mutual Goals, and Cooperation on Long Term Commitment

Relational commitments are characterized by an expectation that trading partners make a commitment to a lasting relationship and do not focus on individual transactions, as based on

market exchange theory (MacNeil, 1980) and expanded upon by Day and Wensley (1988). The basis of a long-term commitment is the result of the structural bonds between the organizations, a commitment of the firms to common objectives as defined by mutual goals, and the strength of cooperative working relationships between the buying and selling firms. The antecedents of structural bonding and cooperation have already been discussed, leaving only a discussion of the last antecedent of long term commitment: mutual goals.

Wilson defines mutual goals as "the degree to which partners share goals that can only be accomplished through joint action and the maintenance of the relationship (Wilson, 1995, p. 338)." Mutual goals encourage the common interest and the sharing of interests in a common output rather than individual efforts to the exclusion of the other party. Wilson suggested that mutual goals were a direct indication of long-term relationships. The measure for this construct, whose items were developed for this study, was built on objectives for process improvement, meeting cost objectives, and working on common problems.

Thus, our hypotheses for the antecedents of long term commitment are Hypothesis 6: Structural bonding has a positive impact on long term commitment; Hypothesis 7: Mutual goals have a positive impact on long term commitment; and Hypothesis 8: Cooperation has a positive impact on long term commitment.

METHODS

Structural equation modeling was used to simultaneously test the system of variables to determine if the proposed model is consistent with the data.

Sample Characteristics

The sampling frame was composed of buyers of components used in assembly or manufacturing processes. The sample was restricted to U.S. manufacturers and concentrated on manufacturing operations with significant variation in technologies, a highly variable purchasing environment, a wide variation in investments and active buyer-supplier relationships. Respondents were procurement or purchasing professionals with ample knowledge of long-term relationships. They were asked to respond to a particular relationship with one specific supplier of component parts: a relationship of substantial length and commitment with which they were personally involved or about which they were particularly knowledgeable.

The survey was fielded and 417 usable surveys were returned for a response rate of 18.3%, representing a stratified sample of the manufacturing industry (See Table 1 for the segments surveyed). Early respondents did not significantly differ from later respondents on variable mean scores, evidence that non-response bias may not be a problem. The survey responses included 96.6% from manufacturers and 3.3% from distributors. Respondents had, on average, 17.2 years of business experience, 13.5 years of experience with supplier relationships, and 6.5 years of experience with the particular relationship identified and described in their responses. Respondents also had a high level of responsibility for supplier relationships (mean = 4.4 on a five-point scale where 1 = no responsibility, and 5 = primary responsibility). Seventy-six percent are college graduates and 26.7% have completed some post graduate work. Forty-one percent occupy senior management positions (vice president or director) within the buying firm. A total of 42.6% of the respondents are employed in firms with more than 1000 employees, and 11% represented firms with less than 100 employees. Of the firms represented, 42.4% have revenues

less than 150 million dollars. More than 31.9% represented large firms with revenues greater than one billion dollars.

TABLE 1
STANDARD INDUSTRIAL CLASSIFICATION CODES SURVEYED

SIC	Industry
33	Primary Metal
34	Fabricated Metal Products
35	Industrial and Commercial Machinery and Computer Equipment, except Electrical
36	Electrical and Electronic Equipment and Components, Except Computer Equipment
37	Transportation Equipment
38	Measuring, Analyzing and Controlling Instruments, Photographic, Medical and Optical Goods

Measures and the Measurement Model

With the exception of a scale we specifically developed for measuring mutual goals, measures for the constructs were obtained from previously developed instruments found in the literature. The measurement scales were first evaluated with a small pretest (n = 47), and, with the exception of the structural bonding scale (Cronbach's alpha = .69), all of the Cronbach's alphas exceeded .85, with several scales exceeding .90. Three new items were added in an effort to improve the structural bonding measure. The complete set of measures and their sources can be found in Appendix 1.

Using the entire sample (responses with missing values were deleted instead of imputed bringing the available data sample to 387 responses) the Cronbach's alphas were examined and the individual scales were found to be quite satisfactory according to this traditional criteria. Of course Cronbach's alpha is sensitive to the number of items in a measure and, with only a few exceptions, most of the measures initially had ten to twelve items. Next we evaluated the items with exploratory factor analysis using a GLS factor analysis with varimax rotation (SPSS). Items with low factor loadings (less than .4) or with substantial cross loadings among two or more factors were considered for elimination. We also examined these items from a substantive standpoint, with an eye to preserving the scales' apparent nomological validity. Thirty three of the total 70 items were deleted in this stage. We found that scales which seemed to have nomological validity when they stood alone often had issues with unidimensionality when combined with items from other scales, thus calling into question their discriminant validity when used in concert with each other.

The remaining items were used to construct a measurement model that we then evaluated with confirmatory factor (using AMOS) before continuing on to a test of the structural model (Kline, 1998). We continued to find significant issues of unidimensionality. The hypothesized measurement model exhibited marginal fit indicators: chi-square = 1998.8, df = 909 (p = .000, chi-square/df = 2.20), CFI = .906, RMSEA = .057, AIC = 2250.8. Carmine and McIver (1981) recommend relative chi-square (chi-square/df) of 2:1 or 3:1 while Ulman (2001) suggests two or less reflects a good fit. Bollen (1989) suggests that RMSEA should be below 0.07 and CFI should be greater than 0.90. However, Hu and Bentler (1999) suggested RMSEA should be less

than 0.06 and Schumaker and Lomax (2004) suggest there is a good model fit if RMSEA is less than or equal to 0.05.

Upon examination of the modification indices (MI) it became apparent that unidimensionality issues were not entirely solved yet. Using the traditional purification process of examining both the magnitude and pattern of the modification indices, as well as the potential effect size, and assessing the substantive impact of our candidates for deletion from the standpoint of nomological validity, we systematically eliminated problematic items, moving toward a more parsimonious model with better undimensional characteristics amongst the scale items. Sometimes the modification indices suggested correlating error terms which can be an indication that the two items share similar content. Decisions to eliminate items from a measure were also based on a substantive review of the clarity, adequacy, and redundancy of the items available. Items were eliminated one at a time and a new measurement model was fitted each time. After eliminating nine more items we found an acceptable measurement model with a chi-square = 1022.1, df = 524, (p = .000, chi-square/df = 1.95), CFI = .945, RMSEA = .051, and AIC = 1234.1. AIC was used as a test to show improvement from model to model. The final scale items after this purification process are noted in Appendix 1.

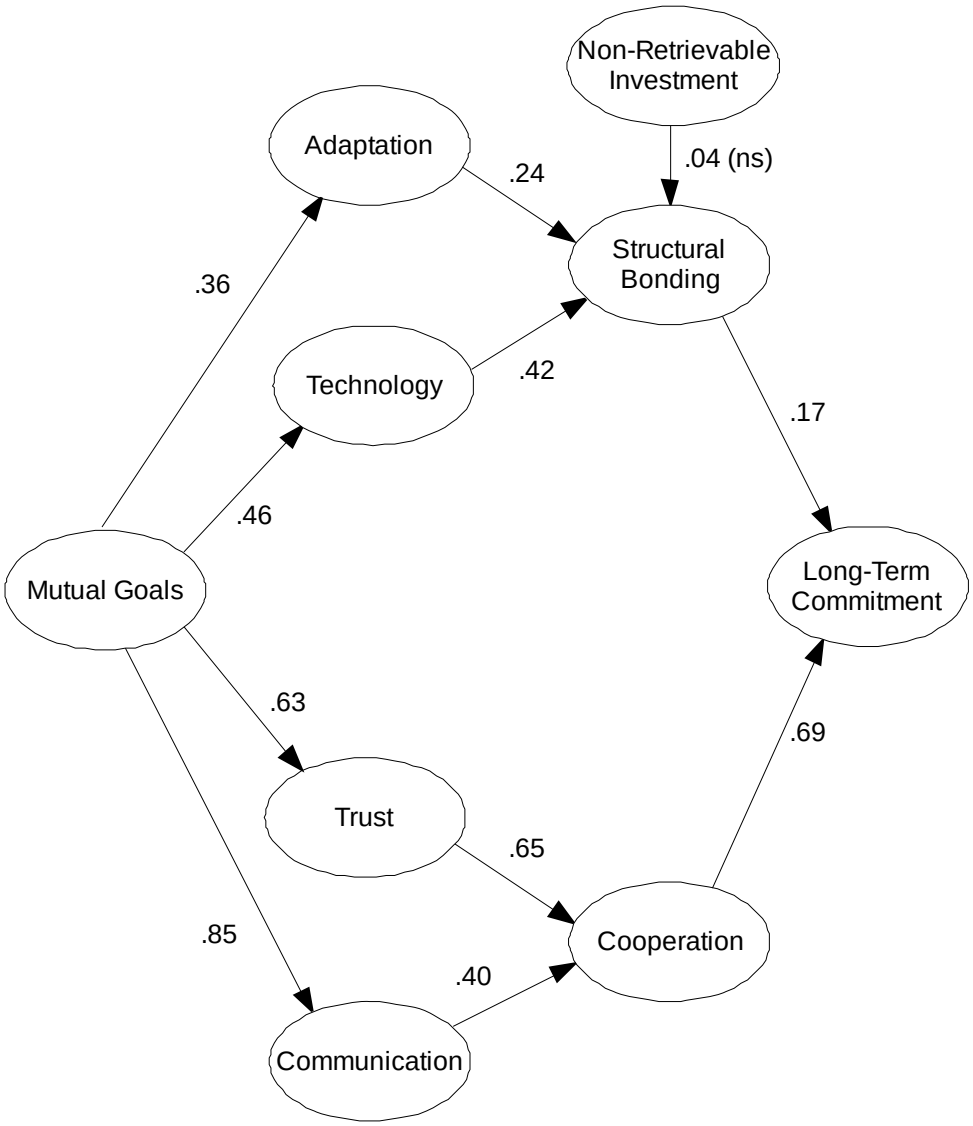
Following the completion of the measurement model analysis, analysis of the full hypothesized structural model was undertaken.

FINDINGS

Fit of the Structural Model

A structural equation model was used to test the hypotheses found in our theoretically driven conceptual model (Figure 1). The global fit statistics for the model indicated a poor fit: chi-square = 1696.7, df = 552, (p = .000, chi-square/df = 3.07), CFI = .875, RMSEA = .075 and AIC = 1852.7. Given this poor overall fit it is not appropriate to assess the individual hypotheses we developed from the literature. Instead we assessed ways that the model might be respecified, once again examining the modification indices in concert with the associated substantive implications with respect to theory and face validity. Large modification indices (greater than 120) were observed between items operationalizing the mutual goals construct and the cooperation construct as well as its antecedents trust and communication. Once again, following a one-change-at-a-time respecification process, we found a parsimonious alternative model with reasonable fit characteristics: chi-square = 1208.5, df = 549, (p = .000, chi-square/df = 2.20), CFI = .928, RMSEA = .057, and AIC = 1370.5. This model and the resulting standardized regression weights are found in Figure 2.

FIGURE 2
ALTERNATIVE MODEL OF LONG TERM BUYER SELLER RELATIONSHIPS



Several of the original hypotheses constructed from the literature were confirmed. These original hypotheses are also captured in Figure 2. The organizational antecedents of trust, communications, and cooperation were found to be strongly related to long term commitment (originally Hyp 4, 5 and 8, respectively). Structural bonds was found to be significantly related to long-term commitment (Hyp 6) however the strength of this relationship was small (.17) compared to the strength of the relationship between cooperation and long-term commitment (.69, Hyp 8). The antecedents to structural bonding (adaptation and technology, Hyp 1 and 2, respectively) were also found to be significant. Non-retrievable investment as another antecedent to structural bonding (.04, Hyp 3) was not found to be significant. The surprising outcome of the model respecification process was that mutual goals was found to be a significant precursor to all

of the significant antecedents of both cooperation and structural bonding, i.e., mutual goals was strongly related to adaptation, shared technology, trust and communication. Substantively, and, of course, in hind sight, this makes good common sense; having mutual goals in common is a driver of most of the other factors in the chain leading to a long-term relationship.

DISCUSSION AND CONCLUSIONS

This study furthers our understanding of the structural and organizational antecedents to long-term, buyer-seller commitment. Several key findings suggest directions managers might take to build more effective relationships.

A structural relationship built upon a foundation of technology and adaptation remains important to long term buyer-seller commitments. Long-term relationships between firms require continued efforts in adapting a supplier's product to the buyer's requirements. Particular attention to the buyer's technology requirements is also necessary. As inter-firm relationship strategies evolve, the integration between buying and selling firms will probably be tightened. Thus, it will be necessary to adapt business processes and administrative routines between the buying and supplying firms. These structural changes suggest tight inter-firm integration of business information systems and operational processes even as firms focus on meeting their own individual operational efficiency objectives.

A significant finding of this research is an apparent change in the importance of structural antecedents from Han's (1991) earlier study, i.e., there is an apparent shift in the importance of certain organizational antecedents as predictors of commitment. While technology and adaptation form a foundation for structural relationships, the more important organizational antecedents to long term commitment appear to be cooperation, communications, and trust.

Good communication is a key to supporting trust when building a cooperative relationship; it occurs in many forms and at multiple levels. Communications enhancing strategies between buying and selling firms might include special management councils, customer advisory boards, and enhanced personal relationships. Other examples include sharing strategic business plans as well as sharing transactional information in order to build the cooperation elements of communications and trust. Management policies and actions supporting open and comprehensive communications are essential to meeting the requirement of building trust in an inter-organizational context. Action should also be taken to ensure that cooperative work between the buyer and seller avoids specific pressures on one side of the relationship, such as cost reduction, which can reverse the cooperative process and diminish the trust that serves as the foundation for commitment in a long term relationship.

Mutual goals were found to be an important antecedent to all of the significant drivers of structural bonding and cooperation: adaptation, technology, trust and communications. Thus it appears that an important factor for the success of a relationship has to do with having common objectives. This foundation for a cooperative relationship is defined by Wilson (1995, p. 338) as the "degree to which partners share goals that can only be accomplished through joint action and the maintenance of the relationship." Measurable and agreed upon mutual goals can be identified to help build all aspects of the relationship. The involvement of management through communications meetings, inter-firm operations reviews, and shared information, provides a basis for monitoring the progress of both the buyer's and seller's mutual goals.

We identified trust between buying and selling firms as a key organizational indicator of long term commitment. Many types of trust have been identified in the literature but, in our context,

trust was defined as keeping one's word, negotiating honestly and meeting obligations. Meeting these requirements for the establishment of trust calls for high levels of behavioral consistency and integrity. Furthermore, inter-firm relationships should be based on the sharing of power and control, as well as on high levels of cooperation built on a foundation of communication and mutual goals.

A challenge for management in building long-term relationships is the development of policies and programs at multiple levels to foster trust and further cooperation through open communications and measurable mutual goals. This collaboration among supply chain members may be operational, tactical or strategic in its level of inter-organizational integration (Barratt 2004). Management involvement and monitoring of the progress of the relationship is essential. Without this foundation the trust necessary to build the organizational relationships supporting long-term buyer-seller interaction will be negatively impacted. Care should be taken in extrapolating these results to a specific industry. The sample is biased toward higher level managers, with extensive experience and higher levels of education.

Future research can be directed toward both the structural and organizational domains, perhaps finding additional antecedents to long-term relationships. For example, Kwon and Suh's (2005) study of trust and commitment examined partner's asset specificity as a precursor to trust and information sharing. Structural relationships might be explored by examining new technologies, such as the tools of e-commerce, e.g., electronic data interchange and advanced planning systems. These systems build a structural foundation for the management of transactional information flow across the business-to-business interface and are, by their very ubiquity, of increasing importance to long-term relationships. In the organizational domain, the development of trust as an antecedent to long-term relationships can be a focus for further research in fully integrated relationships such as joint development, joint ventures, partnerships, and alliances. The multi-dimensional nature of trust is both a challenging and an intriguing area for research in these more tightly integrated operating environments. What are the means for building trust in these integrated environments?

The study spanned several SIC codes and provides a foundation for understanding the structural and organizational antecedents to long term relationships. Narrowing research to a single SIC code or even a particular class of firm within an SIC code can permit further refinement. Further, within a particular class of firm, the type of purchase, e.g., a commodity or custom design, can be studied to identify the differences in the scope or existence of these antecedent factors.

This research addressed only the buyer's side of the buyer-seller dyad. Since the perspective of the participants in the exchange process can differ, additional research could be conducted from both the buyer and seller perspectives to isolate and explore differences in their respective perceptions. Relationships also occur at multiple levels in the buyer-seller dyad. Research targeting different organizational levels within a given inter firm relationship can address differing views of relationships and differing practices of management.

Another suggestion for future research is to investigate the antecedents to mutual goals. Understanding the partners, both buyers and sellers, strategy, structure, business processes and culture are important factors to consider in determining mutual goals.

Alliances, partnerships, and long-term buyer-seller relationships are increasingly the preferred way of doing business. These forms of business structures are characterized by relational norms that are seen by practitioners as superior to traditional, one time, transaction-oriented approaches. Our results suggest a shift to strengthened long term inter organizational relationships built on

foundations of trust, cooperation, enhanced communication and mutual goals. This research is a step toward increasing the knowledge pertaining to long-term industrial buyer seller relationships. Long-term relationships are critically important for effective business practices, and their development is transforming the way business is being conducted.

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APPENDIX 1

MEASURES AND SOURCES

Long Term Commitment

1. The parties expect this relationship to last a long time.[1, a]
2. The parties make plans not only for the terms of the individual purchase, but also for the continuance of the relationship.[1a]
3. We expect our relationship with supplier to last a long time.[2, a]
4. The relationship we have with supplier is essentially "evergreen."[2]
5. Renewal of the relationship with the supplier is virtually automatic.[2]
6. We would like this relationship to last a long time.[3, a]
7. How strongly do you feel about wanting this relationship to continue.[3]
8. We are strongly committed to maintaining a long-term relationship with this supplier.[3, a]
9. It would be difficult for our company to break off the relationship with this supplier.[3]

Sources: 1. Heide and John (1992). 2. Nordewier, et al. (1990). 3. IMP (from Han, 1991).
a: item remains in final measurement model.

Structural Bonding

1. In an economic sense, our company needs to have a close relationship with this supplier.[a]
2. Our company has to have a long-term business relationship with this supplier because they provide high quality products and high quality delivery systems.[a]
3. Our company needs a close business relationship with this firm regardless of individual interpersonal relationships.[a]
4. If we were to switch to a different supplier, it would be disruptive or have an adverse impact on our company.
5. Our company would need to make changes in the systems and procedures if we switched to a new supplier.
6. Our company has a significant level of business system integration with this supplier.
7. Our company should have a close working relationship with this supplier because it provides reliable delivery systems.
8. The working relationship with this company is dependent on the integration of systems and processes.

Source: Han (1991).
a: item remains in final measurement model.

Adaptation

1. Large investments have been made by our supplier in order to adapt to our requirements:[1]
2. In its final products (or materials). [1, a]
3. In its production process.[1, a]
4. In its production schedule.[1, a]
5. In its delivery system.[1, a]
6. In its administrative routine.
7. Our companies have adapted processes through electronic information exchange systems (EDI, E-Commerce, or Shared Advanced Planning Systems).[2]
8. Our companies have joint programs to link our business processes. [2]
9. Our companies have joint teams working to improve business processes. [2]
10. Our supplier works with us to adapt our joint business processes. [2]

Sources: 1. IMP Group (Ford 1980, Hakansson 1982, Hallen et al. 1991). 2. Authors
a: item remains in final measurement model.

Technology

1. This supplier gives us products of superior technology.[1, a]
2. The production and planning processes at our supplier are accomplished by using computers and computer aided techniques. [1]
3. The delivery scheduling and shipping system of our supplier are made by using computers and computer aided techniques. [1]
4. In general, this supplier offers a high level of technical information for our company. [1, a]
5.We consider this supplier to be one of the technological leaders in the industry. [1, a]
6. Our technology requirements influence our supplier's investment in research and development.[2]
7. Our supplier invests in new technologies such as EDI or E-Commerce that facilitate our relationship. [2]

Sources: 1. Han (1991). 2. Authors.
a: item remains in final measurement model.

Non-Retrievable Investments

1. Inter-firm, cross-functional teams are employed to build strong working relationships.
2. Members of cross-organizational teams consisting of members from our supplier and our firm receive team development training.[a]
3. Members of cross-organizational teams consisting of members from supplier and our firm receive training in program management. [a]
4. Members of cross-organizational teams consisting of members from our supplier and our firm receive communications training. [a]
5. Our firms invests in training that fosters the development of long-term, strategic relationships.
6. Our supplier invests in training that fosters the development of long-term, strategic relationships.

Source: Burt (1997).

a: item remains in final measurement model.

Mutual Goals

1. Our supplier and we share long-term objectives in the area of process improvement appropriate to this relationship.[a]
2. Our supplier and we share long-term objectives in the area of cost management. [a]
3. Our supplier and we share common goals on strategic projects. [a]
4. Our supplier and we share long-term strategic planning information. [a]
5. Our supplier and we jointly measure performance to mutual goals.

Source: Burt (1997).
a: item remains in final measurement model.

Cooperation

1. Flexibility in response to changes is a characteristic of this relationship.[1]
2. The parties expect to be able to make adjustments in the ongoing relationship to cope with changing circumstances. [1, a]
3. When some unexpected situation arises, the parties would rather work out a new deal than hold each other to the original terms. [1]
4. Supplier is flexible in response to requests we make.[2, a]
5. Supplier can readily adjust its inventories to meet unforeseen needs that might occur. [2]
6. Supplier handles change well. [2]
7. Supplier can provide emergency deliveries. [2]
8. Problems are joint responsibility regardless of fault.[3]
9. Both sides are concerned with the other's profitability. [3, a]
10. The parties don't take advantage of strong bargaining positions. [3]
11. Both sides are willing to make cooperative changes. [3, a]
12. Both parties must work together to be successful. [3]

Sources: 1. Heide and John (1992). 2. Noordewier, et al. (1990). 3. Cannon and Perreault (1999).
a: item remains in final measurement model.

Trust

1. We feel that this supplier will keep its word.[a]
2. (R) We feel that this supplier tries to get out of its commitments.
3. We think that this supplier meets its negotiated obligations to our requirements. [a]
4. In our opinion, this supplier is reliable. [a]
5. We feel that this supplier negotiates with us honestly. [a]
6. We feel that this supplier negotiates joint expectations fairly. [a]
7. We think the people at this supplier tell the truth in negotiations
8. We think this supplier does not mislead us. [a]
9. (R) We feel that this supplier tries to get the upper hand.
10. (R)We feel that this supplier tries to get the upper hand.
11. (R)We think people at this supplier succeed by stepping on other people.
12. (R)We think that this supplier takes advantage of our problems.

(R) Reverse scored
Source: Short Form Organizational Trust Inventory (Cummings and Bromiley 1996).

a: item remains in final measurement model.

Communication

1. This supplier seeks our advice and counsel.[a]
2. We participate in goal setting and forecasting with this supplier.[a]
3. We help this supplier with its planning activities.
4. This supplier encourages suggestions by us.[a]
5. We share proprietary information with this supplier.
6. We inform the supplier in advance of changing needs.
7. In this relationship it is expected that any information, which might help the other party, will be provided.
8. The parties are expected to keep each other informed about events or changes that may affect the other party.

Source: Mohr and Spekman (1994).

a: item remains in final measurement model.

The range for all items was 1 to 7 where 1 = strongly disagree and 7 = strongly agree.