MEDIATING EFFECTS OF INFORMATION QUALITY ON TRUST AND PERFORMANCE IN INTERORGANIZATIONAL RELATIONSHIPS

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ABSTRACT

As interorganizational relationships continue to increase in popularity, the examination of variables that affect performance within these relationships continues to be of interest. This study examines the relationship of trust to performance in interorganizational relationships and the mediating role that information quality plays. While the relationships between trust and performance and trust and information quality are supported in the literature, no study has examined information quality as a mediator in the trust-performance relationship.

INTRODUCTION

A popular mechanism utilized throughout much of the business world involves interorganizational relationships (Cyert & March, 1992; Nooteboom, 2000). Member firms of these networks work to achieve higher performance through these collective efforts (Astley & Van de Ven, 1983). Researchers have examined many variables within the supply chain to determine the effect these variables have on performance. Variables such as trust (Nooteboom, 2000), information (Peterson, Ragatz & Monczka, 2005), and even satisfaction (Benton & Maloni, 2005) have all been found to be statistically significant in their relationships with performance. While these variables do relate to performance, there is a need to examine how these variables interact with each other to affect performance.

Trust has been found to relate significantly to performance (Nooteboom, 2000) as has information quality (Huber & Daft, 1987). The purpose of this study is to examine the relationships between interfirm trust, information quality, and firm performance. Specifically, this study proposes that information quality will mediate the relationship between interfirm trust and firm performance. In this context, the quality of the information passed between the supplier and the buyer both enacts, and represents the quality of, the exchange relationship.

Interfirm Exchange

One distinct approach in examining interorganizational relationships (Schmidt & Kochan, 1977) is from the exchange perspective, informed by social exchange theory (Blau, 1964; Lin, 2001). Social exchange theory holds that investments in the relationship between two parties results in the parties’ high quality relationship, which, in turn, compels each party to respond to the other’s inputs in positive ways. In the organizational exchange perspective, two or more organizations
invest in relationships with each other in order to achieve organizational objectives not necessarily attainable by entities working alone (Levine & White, 1961).

The drive to utilize these interorganizational forms often occurs when resources are in short supply (Aiken & Hage, 1968), and the key driver within these relationships is coordination of resources (Astley & Van de Ven, 1983). The collective of member firms allows organization to achieve a competitive advantage. In the beginning of these relationships, the member firms often take small, incremental steps in their collaborative efforts until they reach a point of confidence with each other in both the relationship and the outcomes of the relationship (Friedman, 1991; Van de Ven, 1976).

Interestingly, as organizations continue to coordinate for success, a greater reliance on the relationship itself continues to lead to greater performance. Our premise in this effort is that greater coordination, including high information quality, is spurred by higher levels of trust within these relationships. As these organizations continue to enhance their information coordination, then, we hold that performance will also increase.

**PERFORMANCE**

As organizations work together, forming closer bonds (Ring & Van de Ven, 1994), the outcomes of their efforts can be increased. As social exchange theory suggests, they will develop a greater level of trust between parties, thus generating a greater degree of collaborative efforts without fear of opportunistic activities by the other party (Blau, 1964). In this research, we assert that information quality is a collaborative effort that is rooted in interfirm trust and that it results in enhanced performance.

In supply chain networks, interorganizational relationships that work well and focus on efficiency have seen increases in performance for the entire network. Within the supply chain, there are advances that lead to greater supply chain performance. Some of these include purchasing integration and practices (Narasimhan & Das, 2001; Dong, Carter, & Dresner, 2001), enterprise resource planning (ERP) tools (Kelle & Akbulut, 2005), quality and quality assurance (Lin, Chow, Madu, Kuei, & Yu, 2005), flexibility (Narasimhan & Das, 1999), and JIT (Dong et al., 2001). Some facets of performance that are increased include cost reductions, lead-time decreases, and lower defect rates. There are, however, still many determinants of performance that need to be examined empirically, and this research is focused on that goal.

**Trust and Performance**

One concept that has received considerable attention in interorganizational relationships and supply chain networks is trust. The definition of trust for this study is the expectation that the other party’s performance will be as anticipated and that the treatment by the other party will be fair and reasonable (McAllister, 1995; Johnston et al., 2004). Previous research has established that a relationship between trust and performance within organizations does exist (McAllister, 1995). This study attempts to replicate that relationship. This relationship is seen in Figure 1.

Hypothesis 1: There is a positive relationship between supplier trust and supplier performance in interorganizational relationships.
Relationship Between Trust, Information Quality And Performance

Information Quality and Performance

Information quality is vital to organizational success (Huber & Daft, 1987). The definition of information quality for this study is the degree to which the information the individual organization receives from the other organization is accurate, timely, adequate, complete, and credible (Daft & Lengal, 1986; Huber & Daft, 1987; Monczka et al., 1998). Effective communication through the availability of information is a vital component of collaboration. Guetzkow (1965) found that information must be available systematically for the effective completion of required tasks. Not only is information exchange necessary for performance, but Schuler (1979) finds support for increases in satisfaction when information is systematically available within an organization. In examining collaborative relationships, Devlin and Bleackley (1988) found that the exchange of quality information predicts the success of a partnership.

Interorganizational relationships are utilizing better information to facilitate the ability to plan more strategically and respond more successfully to the demands of the partner. In the supply chain, this ability to plan key variables, such as capacity of the supplier, through good information provided by the buyer, creates a better and more efficient chain that benefits both parties (Chapman & Carter, 1990; Raturi, Meredith, McCutcheon, & Camm, 1990). This quality information exchanged between the partners plays a key role in the relationship and the performance of the supplier.

Because quality information is indicative of better coordination between the actors within an interorganizational relationship and helps the supplier better plan for meeting the buyer’s needs, information quality plays an important role in enhancing performance within the relationship. Agrell et al. (2004) indicate that it is a key part of the supply chain, meaning that organizations that have better information quality will have better success.

Building on the premise that the relationship between communication and performance is influenced by supplier attitudes and behaviors, it is suggested that greater levels of information are related to greater levels of performance. In the social exchange literature, leader-member exchange (LMX; Graen & Scandura, 1987) represents the overall quality of the relationship between the leader and the member and leads to positive attitudinal and behavioral outcomes. Here, we propose that the quality of the interfirm information exchange reflects the quality of the relationship between the firms. Thus, and as a means of interfirm cooperation and collaboration, the exchange of information will produce enhanced performance for each of the member firms.
Hypothesis 2: There is a positive relationship between information quality and supplier performance in interorganizational relationships.

Trust and Information Quality

Trust is an important predictor of behavior within organizations because those organizations that have greater trusting relationships are able to cooperate for success efficiently and effectively (Johnston, McCutcheon, Stuart, & Kerwood, 2004). Benton and Maloni (2005) find that trust influences performance and satisfaction among member firms, in that firms that perceive greater trust are more concerned with the relationship itself and, therefore, place more emphasis on building and maintaining the relationship. Thus, trust is an important aspect of interorganizational networks.

It is suggested that trust within the supply chain relationship is related to greater levels of information quality. With regard to information quality, when there is more trust between the supplier and the buyer, the supplier will be more informed due to the lack of misleading or inadequate information, because the buyer will not feel the need to conceal or manipulate information. This reduction of uncertainty regarding the buyer’s actions or tendencies towards opportunistic behavior (Williamson, 1975) allows the supplier to service the requirements of the buyer more capably. Here, we assert that the quality of the relationship, as represented by the quality of the information exchange, is influenced by the level of trust between the firms.

Hypothesis 3: There is a positive relationship between supplier trust and information quality in interorganizational relationships.

Information Quality as Mediator

As indicated by the proposed direct relationships between trust and information quality and firm performance, respectively, and between information quality and firm performance, information quality is expected to be a mediator between trust and performance (see Figure 1). While trust is hypothesized in this study to be positively related to performance, as has been demonstrated in previous literature (McAllister, 1995), this relationship is expected to exist, at least partially, through the mechanism of information exchange quality. The reason for this expectation is that trust within a relationship may lead to greater levels of honest, open, and high quality communication and, thus, enhanced performance.

Hypothesis 4: Information quality mediates the relationship between interfirm trust and firm performance.

METHOD

Sample

Electronic survey data were collected from the approved vendors of a large Southwestern U.S. university. The individual targeted as the respondent for the survey is the primary informant for the vendor organization that supplies the university. A list of approved email addresses was provided by the university. Of those surveyed, 156 individuals completed the survey. 146 of the 156 surveys were usable after removing those cases with low response.
Measures

The respondents were asked three questions which were used as control items in this study. These included questions on size of the company, the number of years the individual has worked with this company and the number of years this vendor has worked with the University. Trust is measured using Morgan and Hunt’s (1994) six item scale that examines the confidence that the supplier has in the integrity of the buyer. Trust (previous α= .949) is examined using a seven point Likert scale with responses ranging from strongly disagree (1) to strongly agree (7) as are information quality and performance. Information quality covers five primary areas. These areas include information that is accurate, timely, adequate, complete and credible (Daft & Lengal, 1986; Huber & Daft, 1987; Monczka et al., 1998). Information quality is measured using Mohr and Spekman’s (1994) five questions on information quality (previous α=.910). Performance is measured using questions designed specifically for this study. These measures assess the perception of the organization’s performance in seven areas ranging from on time delivery and full completion of work orders to using approved products and procedures.

Analysis and Results

Correlations, means, standard deviations and reliabilities were examined for all scales used in this study. The means, standard deviations, correlations and reliabilities for trust, information quality and performance can be found in Table 1. All data were normally distributed and appeared to be free from any problems. In order to determine the appropriateness of the assessment scores in this study (Messick, 1995), the item scores were examined to evaluate the consistencies of the measurement variables and construct validity. Confirmatory factory analyses performed in LISREL examined each latent variable, indicating that each of the scales was unidimensional.

TABLE 1

Means, Standard Deviations, Chronbach’s Alphas And Correlations

<table>
<thead>
<tr>
<th>Construct</th>
<th>Means</th>
<th>S.D.</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trust</td>
<td>6.03</td>
<td>1.16</td>
<td>.983</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>5.84</td>
<td>1.06</td>
<td>.679**</td>
<td>.955</td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td>6.21</td>
<td>.81</td>
<td>.485**</td>
<td>.594**</td>
<td>.922</td>
</tr>
</tbody>
</table>

Note: **Correlations are significant at the 0.01 level (2-tailed).
Reliability coefficients are presented on the diagonal.

We specified a saturated model in LISREL 8.52 (Joreskog & Sorbom, 2002), and noted no significant paths that had not been hypothesized. Thus, the saturated model and our theoretical model were one and the same and, as such, displayed a perfect fit to the data. This model was compared with a model in which all direct paths were dropped (CFI = .85, RMSEA = .32, χ² = 22.92, df = 1) using a chi square difference test (critical value for 1 df = 3.84, p < .05), and the theoretical model was retained. The retention of the theoretical model indicates that any mediation in the model is partial, rather than full.
Hypothesis Evaluation. We tested the hypotheses regarding the relationships between the exogenous and endogenous variables in the theoretical model. The significance of each path was determined by the t statistic found in the unstandardized beta and gamma estimates, where a value of 1.96 or greater indicates a significant direct path. All relationships in Figure 1 indicate significant paths in the partially mediated model.

Hypothesis 1, that there is a positive relationship between supplier trust and supplier performance in interorganizational relationships, was supported. Hypothesis 2, that there is a positive relationship between information quality and supplier performance in interorganizational relationships, was supported, as was the hypothesis that there is a positive relationship between supplier trust and information quality in interorganizational relationships (H3). Next, we evaluated the mediational hypothesis. Hypothesis 4, that information quality mediates the relationship between interfirm trust and firm performance, was supported, and partial mediation was indicated.

DISCUSSION, LIMITATIONS AND CONCLUSION

The objective of this study was to investigate the relationship of information quality to perceived organizational trust and performance in the supply chain relationship. To accomplish this, a theoretical model was introduced to examine these relationships and the mediating relationship of information quality. The results of the analysis indicate that the control variables of organization size, years as a supplier and years as a manager are not statistically significant in relating to organizational performance. The results did indicate that trust and information quality both are significantly related to performance, and that trust is significantly related to information quality. In addition, the mediating relationship of information quality was found to be significant as a mediator of the trust performance relationship.

Of the hypotheses tested, the one of greatest interest in this study is the mediating relationship of information quality with trust and performance. Much of the research on supply chains focuses on processes such as JIT and quality, but there is beginning to be interest in relational variables such as trust in the supply chain. The results of this study indicate that trust does play an important role in the performance of organizations within the supply chain, but the effects of this trust are dependent upon the presence of information quality. What may be of interest to future researchers is how this trust does provide a mechanism for information quality to exist and how this information quality then may affect other such areas of performance such as innovation.

This study provides important implications for management and practice. One major contribution is that the relationship variable of trust is important in the supply chain for performance. Both the supplier and buyer managers should realize that there is benefit in building a trusting relationship between firms. In addition, the continued increase in quality information exchange should be of top priority. While trust may be good to help keep organizations working collectively and experiencing good performance, that performance is very much dependent upon the quality of information exchanged between firms. Suppliers constantly need information that is accurate, timely, credible, adequate and complete.

*References available upon request from William McDowell.