

Determinants of Relationship Quality in Puerto Rican Buyer-Supplier Relationships

Track: Supply Chain Management

Abstract

The objective of this paper is to develop a conceptual framework whose main role is to identify which variables influence the quality of buyer-supplier relationships in order to obtain greater efficiency in the supply chain. The initial sample consisted of 512 companies of the Puerto Rico Manufacturers Association. A total of 136 participants answered the questionnaire for a participation rate of 27%. Statistical analysis, including factor analysis, Pearson correlation and a multiple regression, validated the instrument and the conceptual framework. The results indicate that there are 10 dimensions that affect the quality of buyer-supplier relationship. Those dimensions are consistent with the argument that control, communication, flexibility, cooperation, collaboration, commitment, risk, information, trust, and strategy are positively related to the quality of these relationships.

Keywords: Supply Chain Relationship, relationship quality, business relationships, Puerto Rico, Latin America.

INTRODUCTION

Over the last decades, the increase in global competition and business challenges resulted in many manufacturing companies engaging in a wide variety of competitive strategies and management programs to improve product value, operation systems, and business performance. One of the crucial strategies of manufacturing firm's competitiveness is continuous supply chain improvement to satisfy permanent supply needs in the production process, thereby improving its performance. According to Wei, Liang, and Wang (2007), manufacturing companies should focus on enhancing supply chain management to optimize their outcomes. Therefore, it is necessary to improve the quality of buyer-supplier relationships to identify best practices to facilitate supply chain process alignment and integration (Fynes, Voss and de Burca, 2005; Park, Hartley, and Wilson, 2001). In addition, there should be strategic supply chain partners' coalitions to increase collaboration efforts in value creating activities such as research, product development, manufacturing, marketing, sales, and distribution (Maheswari, Kumar, and Kumar, 2006).

The quality of supply chain relationships may influence strategic and operational capabilities by providing organizations with significant ongoing benefits (Stuart, 1997). Also, strategic buyer-supplier relationships enable organizations to work more effectively with fewer important buyer-suppliers willing to share responsibility for product success (Li, Ragu-Nathan, Ragu-Nathan, and Rao, 2006). Hence, these supply chain relationships can provide benefits in terms of financial performance as indicated by Tsai (2007). Vereecke and Muylle (2006) stressed that strategic relationships between buyer-suppliers and manufacturers significantly impact supply chain performance and various aspects of competitive advantage.

However, past research findings are not consistent as to which variables affect buyer-supplier relationships. In this sense, Sosa, Svensson and Mysen (2012) suggest that the aim of the research should be in exploring other business and manufacturing contexts other than samples from the United States or Europe in previous studies. Therefore, using all dimensions considered in previous literature, the goal of this research is to develop a conceptual framework by analyzing buyer-supplier linkages in Puerto Rican manufacturing firms.

FRAME OF REFERENCE AND HYPOTHESES

Trust

Trust is considered to be an essential component of relationship quality (Crosby, Evans, and Cowles, 1990; Morgan and Hunt 1994). Many factors may contribute to the quality of a buyer-supplier relationship. For Crosby et al. (1990), relationship quality has two dimensions: trust and satisfaction. Trust is often cited as a critical ingredient for determining relationship success (Dwyer et al., 1987; Morgan and Hunt, 1994). Also, trust is believed to mitigate risk and increase cooperation in exchange relationships (Schurr and Ozanne, 1985; Swan and Nolan, 1985). Then, to test this contention, it is proposed that firms need to develop strong relationships with customers to achieve higher performance. This leads to the first hypothesis:

H₁ Buyers' trust in the supplier relates positively to the perceived importance of

relationship quality

Business Control

Internal supply chain integration requires a planning and control system that manages the inflow and outflow of goods in organizations (Stevens, 1989). In this sense, Ambler et al. (1999), business laws' inconsistencies and strong government control over limited resources also affect supply chain relationship management. Another focus could be organizational restructuring for increased effectiveness through evolving flexibility achieved from higher stability and controls (Cameron, 2004). Hald (2007) points out several reasons for difficulties in adopting system thinking in a firm. Its employees, planners and boundary spanning managers' external management and control are more often considered less important than management and control of internal activities and processes. These statements provide the basis for the second hypothesis:

H₂ Buyers' business control of the supplier relates positively to the perceived importance of relationship quality.

Risk

Some authors such as Ramsay (1996) warn that integrated supply chain relationships are not always justified, and Leavy (1994) cautions that firms may often overestimate integration benefits while ignoring potential shortcomings. Scott, Daugherty, and Dudley (1994) state that such risks include heavy reliance on a single partner, decreased competitiveness due to complacency, and over specialization within partnerships. Others, such as Olsson and Skjöldebrand (2008), emphasized that organizations need to ensure product safety, risk reduction, business continuance, and responsiveness to environmental threats. These require adequate risk sharing and traceability handling and development of supply chain networks. These different approaches raise the third hypothesis:

H₃ Buyers' risk with the supplier relates positively to the perceived importance of relationship quality.

Business Strategies

Entrepreneurial skills such as creativity, risk-taking, and problem-solving are considered to be important for strategic supply managers (Giunipero, Denslow, and Eltantawy, 2005; Handfield, Petersen, Cousins, and Lawson, 2009), but researchers have not explicitly examined if these skills actually influence relationships. The misalignment could result in low synergy in processes, usually due to difficulties in managers' communication of strategy to other levels within the company (Luftman, 2000; Papke-Shields and Malhotra, 2001). However, Lin, Chow, Madu, Kuei, and Yu (2005), stated that a lot of organizations include employees in quality management practices. These are significantly correlated with supplier participation strategy and influence tangible business results and customer satisfaction levels. Rather than simply sharing strategies, strategic supply managers influence their internal customers when developing requirements and selecting suppliers. Consequently, they manage suppliers to attain the best possible value for their organizations. Effectively influencing internal customers is a key strategic role and one that remains elusive to many supply managers (Tassabehji and Moorhouse, 2008).

H₄ Buyers' business strategy with the supplier relates positively to the perceived importance of relationship quality.

Business Communications

Anderson and Naurus (1990) state that communication entails more than sharing formal or informal information. Meanwhile, Morgan and Hunt (1994) concluded that communication requires timely information to solve problems and align perceptions with expectations. According to Naude and Buttle (2000) and Parsons (2002), communication is an essential complement for supply chain relationships. In addition, Chang (2007) found that good communication arises as part of engagement in the common objective of improving supply chain relationships' quality. Both parties in the relationship must maintain a long term working relationship and monitor communication initiatives' effectiveness. Supply managers acquire multiple perspectives from acting entrepreneurially. The dependency among supply chain firms (McFarland, Bloodgood, and Payan, 2008) requires that supply managers work to enhance communication, cohesion, and cooperation both within and across firms. This leads to the fifth hypothesis:

H₅ Buyers' business communication with the supplier relates positively to the perceived importance of relationship quality.

Collaboration

The key characteristic of logistics integration is that supply chain partner's influence each other's actions. Therefore, logistics integration has focused on how suppliers, transporters, and customers may be linked through planning and inventory collaboration to reduce inventories and minimize the impact of other cost drivers (Holweg et al., 2005; Lamming, Caldwell, Harrison, and Phillips, 2001). According to Nix, Zacharia, Lusch, Bridges, and Thomas (2004), it is necessary to understand the nature and scope of collaborations occurring in supply chains and the factors that determine high levels of collaboration intensity. Successful collaboration also depends on identifying business expectations and the key knowledge resources and organizational capabilities that drive them. Early in their research, they discovered that there is considerable confusion about the definition of collaboration and influence in the supply chain. In addition, Betts and Tadisina (2009) understand that environmental uncertainties are factors that influence the degree supply chain collaboration. These factors provide the basis for the sixth hypothesis:

H₆ Buyers' collaboration with the supplier relates positively to the perceived importance of relationship quality.

Commitment

Commitment may be defined as an enduring desire to maintain a valuable relationship (Moorman et al., 1992). Commitment shows the importance of partnerships and is an important variable for the measurement of quality in future relationships (Wilson, 1995). Cannon and Homburg (2001) suggested that suppliers may improve their performance by enhancing customers' performance and companies' commitment. According to Fink, Edelman, and Hatten (2007), there are different factors, including performance, environment uncertainty, and relational norms, that influence companies' commitments to suppliers. However, supplier behavior and commitment may influence the duration of buyer-supplier relationships, because this may give suppliers a better bargaining position (Lai, Cheng, and Yeung, 2005). Magistris and Gracia (2008) propose that the quality of relationships is a combination of constructs consisting of satisfaction, commitment, and trust which affect the willingness for closely cooperating with the buyer-supplier. To increase competitiveness, chain stakeholders have to implement quality communication systems with their buyers-suppliers and build higher trust, commitment, and satisfaction among them. Commitment can also be considered an important element of quality of relationships (Batt and Miller, 2004; Fisher et al., 2008). Based on these arguments, the following is consequently hypothesized:

H₇ Buyers' commitment to the supplier relates positively to the perceived importance of relationship quality.

Information Technology

Manufacturing companies are constantly introducing new knowledge and technologies to provide proper information, of a technical and managerial nature, resulting in internal misalignment between operating processes (Smaczny, 2001). The result of combining information technology with process flexibility is to achieve technical accuracy and development of different product designs (O'Regan and Ghobadian, 2005; Ward, McCreery, and Anand, 2007). Wu, Chou, Shih, and Wang (2011) pointed out that information technologies may be used to share order processing and material inventory information and sales reports, profit data, and capacity plans with partners in an accurate and fast manner. Consequently, performance will be enhanced. In addition, information sharing is more influential to outputs of supply chain performance. Nyaga, Whipple, and Lynch (2010) showed that collaborative activities, such as information sharing, joint relationship effort, and dedicated investments lead to trust and commitment. Other authors show that strategic relationships with suppliers can evolve if manufacturers establish partnerships, strategic alliances, and joint ventures that explicitly manifest sharing of resources, information technology, projects, research, and cost savings among suppliers and customers (Field and Meile, 2008; Fynes and Voss, 2002; Kouvelis, Chambers, and Wang, 2006). This leads to the eighth hypothesis:

H₈ Buyers' information technology with the supplier relates positively to the perceived importance of relationship quality.

Dependability

There are discrepancies between researchers about the influence of dependability over the quality of suppliers' relationship. Lyons and Mehta (1997) stated that firm perception of its partner's dependability positively influences partner's trust. This may be due to a firm believing that the partner firm realizes that potential benefits of acting in a trustworthy manner far exceed the benefits of acting in an opportunistic way. Meanwhile, Boniface, Gyau, Striger, and Umberger (2010) found that price flexibility and dependability do not influence either the relationship quality or the suppliers' perception of the quality of their relationships with the buyers. This result contrasts with other research findings such as Batt (2003) and Heide and John (1992) who state that dependability reduces the trust level. Benton and Maloni (2005) agreed that dependability has a significant potential risk of supply chain integration as it concerns loss of relationship

control. Specifically, dependability can lead to opportunism by partners and subsequently dissolve many of the relational elements that are necessary for the development of effective buyer-supplier relationships. Nonetheless, Fugate, Davis-Sramek, and Goldsby (2009) argue that manufacturers face uncertainty about their resource supplies, and they are responding strategically to reduce uncertainty and manage dependability. These arguments lead to the hypothesis:

H₉ Buyers' dependability upon the supplier relates positively to the perceived importance of relationship quality.

Cooperation

Good and cooperative relationships arise from mutual trust and commitment among partnership parties. Mutual trust is an important factor determining the success of long-term cooperation. On cooperative relationships, trust building (Buvik and Halskau, 2001) is identified as potential contingent conditions for activities such as joint decision making and resulting outcomes. A possible explanation is that cooperation between buyer and supplier is often related to a variety of aspects such as assets' sharing, common strategic vision on market development opportunities, and implementation of joint improvement programs (Romano, 2002). Whether a firm has resources and technologies desired by another firm seeking cooperation and whether the two cooperating members can develop mutual trust and commitment are very influential to cooperative performance (Lewis, 1990). Gold, Malhotra, and Segars (2001) argued that frequent information exchanges between cooperative members could help each to more appropriately respond to the other's needs and, ultimately, obtain better cooperative performance, enhancing efficiency and effectiveness. Lambe, Spekman, and Hunt (2000) state that a prolonged relationship may also lead to partners' satisfaction with cooperation. Moreover, as supported by Kanji and Wong (1999), a cooperative relationship may require cultural changes among the people in the supply chain. This is conceptualized in the following hypothesis:

H₁₀ Buyers' cooperation with the supplier relates positively to the perceived importance of relationship quality.

Organizational Culture

According to Gallear and Ghobadia (2004), organizational culture is somewhat intangible, and independent of precise cultural aspirations. In order to change or maintain the desired culture, an organization needs a set of facilitating channels. Yunus and Tadisina (2010) visualize the organizational culture, as one of the critical characteristics of an organization. In addition, it significantly influences the degree of integration between a focal firm and its supply chain partners. Flynn, Huo, and Zhao (2010) realized that supply chain integration is highly influenced by the organizational culture, and that it takes time for supply chain integration to affect firm performance.

Furthermore, Denison and Mishra (1995) show that organizational culture might influence organizational goals' efficiency and effectiveness. Consequently, firms with an external focus culture will undergo a more smooth integration process relative to those with an internal focus culture (Fawcett and Magnan, 2002). Nonetheless, Kotter and Heskett (1992) argued that culture is the result of the management process, thus reversing the cause and effect relationship. They too proposed that culture is composed of two elements: values and behavioral practices. Klein, Masi and Weidner (1995) concluded that leaders are integral to the formation of culture norms and values as perceived by employees. Many scholars consider culture as a key factor underpinning organizational success (Detert, Schroeder, and Mauriel, 2000); particularly in terms of developing the necessary commitment to any form of change (Huq and Martin, 2000).

Moreover, Detert et al. (2000) state that culture holds an organization together and is a major contributing factor to an organization's adaptability and survival within its external environment. Therefore, any tools that help to form organization culture or its change to a desired state are inherently important. Regardless, in order to change organizational culture, a set of channels is needed to facilitate change (Bardoel and Sohal, 1999; Harber, Burgess, and Barclay, 1993). Based on the different authors' standpoint, the following hypothesis is appropriate:

H₁₁ Buyers' organizational culture to the supplier relates positively to the perceived importance of relationship quality.

Responsiveness

Dekkers and Van Luttervelt, (2006) illustrate the move from simpler paradigms to more complicated forms of network-based organizations driven by lower cost, greater efficiency, and higher customer demand responsiveness. Other organizations have been prompted to establish alternative management strategies and to reconsider the design and manufacturing of new products in order to be responsive to customers' unique and rapidly changing needs (Gunasekaran, Lai, and Cheng, 2008). In this sense, Reichhart and Holweg (2007) agree that other organizations are contemplating strategies to increase their responsiveness to customer needs by offering high product variety with short lead-times. They

also refer to responsive as a distinct, independent concept in the operations literature. Lee (2002) posits that efficient and responsive supply chain strategies are associated with stable supply processes. An innovative product, on the other hand, must be responsive by strategically reducing lead times and postponing product customization to quickly address unpredictable customer demand. In addition, Goldsby, Griffis, and Roath (2006) suggested that both lean management and agility are a hybrid of the two supply chain strategies, combining efficient and responsive practices. These concepts are reflected in the following hypothesis:

H₁₂ Buyers' responsiveness with the supplier relates positively to the perceived importance of relationship quality.

Flexibility

According to Perner (2009), changes in the business environment cause increasing market place uncertainty. Furthermore, Fabbe-Costes and Jahre (2009) state that supply chain flexibility is an ability to deal with change (certain or uncertain), by judiciously providing and exploiting controllable options dynamically with little penalty in time, effort, cost or performance. In addition, Ketchen and Hult (2007) proposed that flexibility refers to supply chain's responsiveness to changing user needs. Flexibility refers to both the supply chain process itself and the product or service provided. Kumar, Fantazy, Kumar, and Boyle (2006) define supply chain flexibility as the ability of supply chain partners to restructure their operations, align their strategies, and share their responsibilities. These statements are the basis for the final hypothesis:

H₁₃ Buyers' flexibility with the supplier relates positively to the perceived importance of relationship quality.

METHODOLOGY

Research Context and Sample

This research was performed in Puerto Rico using a questionnaire survey, with fourteen variables (one dependent and 13 independent). Subjects responded to five-point Likert-type scales for all variables. These scales were anchored at (5) strongly agree and (1) strongly disagree. Each company's buyer-supplier was contacted by phone to determine if the respondent was available to answer the questionnaire and, if not, to identify another person who was. The questionnaire was sent by email to the appropriate individual at each company. The Puerto Rican sampling frame consisted of the 512 respondents of manufacturing companies, members of the Puerto Rico Manufacturer Association. Returned usable questionnaires totaled 136, generating a response rate of 26.6%.

RESULTS

Exploratory Factor Analysis

To examine the underlying pattern of the quality construct items in Puerto Rican business relationships, exploratory factor analysis (Norusis, 1993) was used (see Table 1). Criterion validity of the research instrument was based on the relationship between the thirteen variables and the quality relationship with suppliers. Principal component is used for factor extraction, and Varimax method, to rotate the initial factor solution. The factor solution accounts approximately for 82% of the total variance. The communalities for each of the items are within the range from 0.71 to 0.88. The measure of Cronbach's alpha for each of factor is within the range from 0.73 to 0.94 except for the outsourcing construct. According to Hair et al., (2006), factor loadings above 0.5 are interpreted as significant.

Summary of Results and Test of Hypotheses

A regression analysis was conducted to test the proposed hypotheses (Table 2).

Item	Factor											
	1	2	3	4	5	6	7	8	9	10	11	12
Control (a)	0.840	0.195	0.101	0.201	-0.003	0.140	0.026	0.194	-0.003	0.017	0.112	0.123
Control (b)	0.781	0.112	0.147	0.119	-0.014	0.184	0.067	0.132	0.192	0.068	0.176	0.202
Control (c)	0.825	0.122	0.129	0.037	-0.042	0.074	0.128	0.083	0.237	0.210	0.080	0.118
Communication (a)	0.232	0.765	0.164	0.239	-0.034	0.251	0.068	0.107	0.084	0.044	0.166	0.183
Communication (b)	0.148	0.816	0.125	0.173	-0.039	0.202	0.143	0.112	0.182	0.195	0.181	0.038
Communication (c)	0.121	0.798	0.132	0.160	-0.032	0.241	0.108	0.124	0.212	0.167	0.192	0.044
Flexibility (a)	0.182	0.205	0.784	0.057	0.099	0.074	-0.025	0.117	-0.042	0.082	0.122	0.127
Flexibility (b)	0.059	0.098	0.815	0.329	0.081	0.117	0.064	0.078	0.139	0.125	0.056	0.073
Flexibility (c)	0.155	0.054	0.764	0.253	0.152	0.218	0.237	0.119	0.149	0.087	-0.015	0.088
Cooperative (a)	0.158	0.295	0.125	0.758	-0.005	0.107	0.103	0.082	0.098	0.028	0.109	-0.028
Cooperative (b)	-0.012	0.081	0.179	0.816	0.010	0.174	0.135	0.209	0.148	0.044	0.050	0.126
Cooperative (c)	0.212	0.110	0.270	0.707	0.068	-0.075	0.091	0.156	0.098	0.056	0.128	0.010
Dependency (a)	-0.041	-0.006	0.057	0.081	0.818	-0.047	0.141	0.144	-0.082	0.114	-0.006	0.196
Dependency (b)	-0.001	-0.079	0.133	-0.082	0.872	0.114	0.010	0.084	0.110	-0.009	0.059	-0.178
Dependency (c)	-0.001	0.001	0.072	0.063	0.804	0.000	0.093	0.180	0.202	0.072	-0.013	0.031
Collaboration (a)	0.179	0.311	0.161	-0.011	-0.050	0.655	0.249	0.168	0.089	-0.072	-0.058	0.136
Collaboration (b)	0.252	0.206	0.141	0.201	0.156	0.693	0.097	0.102	0.056	0.190	0.160	0.163
Collaboration (c)	0.076	0.316	0.116	0.096	-0.022	0.720	0.346	-0.033	0.131	0.052	-0.006	0.146
Trust (a)	0.084	0.024	0.175	-0.003	0.050	0.337	0.683	0.101	0.294	-0.015	0.270	-0.129
Trust (b)	0.045	0.159	0.119	0.084	0.139	0.216	0.759	0.248	0.166	0.075	0.230	-0.009
Trust (c)	0.095	0.107	0.004	0.249	0.148	0.099	0.831	0.046	-0.017	0.096	-0.069	0.161
Commitment (a)	0.097	0.024	0.162	0.284	0.066	0.280	0.150	0.737	0.097	0.027	0.087	0.073

Commitment (b)	0.230	0.148	0.039	0.050	0.355	0.023	0.109	0.758	-0.018	0.081	-0.049	-0.020
Commitment (c)	0.099	0.130	0.125	0.162	0.152	-0.036	0.080	0.819	0.147	0.133	0.150	0.038
Risk (a)	0.067	0.149	0.08	0.192	0.133	-0.046	0.118	0.049	0.820	0.116	0.094	0.130
Risk (b)	0.306	0.155	0.079	0.105	0.116	0.272	0.011	0.116	0.666	0.145	0.186	0.224
Risk (c)	0.260	0.264	0.076	0.113	0.051	0.230	0.313	0.147	0.614	0.081	0.084	0.123
Information Technology (a)	-0.083	-0.009	0.004	0.079	0.326	-0.049	0.158	0.091	-0.018	0.729	0.010	0.225
Information Technology (b)	0.175	0.259	0.182	-0.095	0.014	0.205	0.023	0.08	0.125	0.735	0.156	-0.112
Information Technology (c)	0.188	0.112	0.092	0.128	-0.030	0.004	0.002	0.072	0.162	0.795	0.097	0.135
Culture (a)	0.218	0.308	-0.005	0.088	-0.026	-0.065	0.168	0.082	0.106	0.098	0.804	0.160
Culture (b)	0.151	0.184	0.167	0.233	0.067	0.155	0.097	0.105	0.184	0.175	0.737	0.157
Strategy (a)	0.351	0.181	0.161	0.064	0.036	0.244	0.080	-0.012	0.218	0.136	0.120	0.700
Strategy (b)	0.338	0.107	0.211	0.017	-0.018	0.165	0.008	0.016	0.277	0.225	0.331	0.603
Strategy (c)	0.265	0.071	0.213	0.127	0.106	0.360	0.083	0.273	0.326	0.108	0.269	0.542
Outsourcing (a)	0.134	-0.034	-0.102	-0.027	0.135	0.154	-0.008	-0.108	0.005	0.190	0.050	-0.098
Outsourcing (b)	0.014	0.180	0.367	0.168	0.037	-0.208	0.238	0.243	0.069	-0.087	-0.034	0.154
Total explained variance per factor	8.23	7.69	7.07	6.85	6.84	6.79	6.47	6.47	6.24	5.85	5.04	4.69
Cumulative explained total variance	8.23	15.92	22.98	29.83	36.67	43.46	49.93	56.41	62.65	68.5	73.54	78.23
Cronbach's Alpha	0.907	0.945	0.866	0.817	0.833	0.826	0.828	0.827	0.825	0.731	0.827	0.880

Table 1: Results of the exploratory factor analysis.

IMPLICATIONS AND CONCLUSIONS

This research provides empirical evidence that constructs used to define the quality relationship with suppliers do vary in importance. Supply chain quality relationship has a positive impact on supply chain performance. Suppliers can improve supply chain performance by developing and engaging in deep partnership in supply chain relationships (Nonino and Panizzolo, 2007; Zhang and Dilts, 2004). These findings extend the results of previous research in regards to supply chain quality relationship as a dependent variable.

To facilitate information sharing and collaboration, supply chain partners need to build mutual trust. The most fundamental factor that contributes to trust is economic satisfaction. In addition, it is necessary to support partners through managerial consulting and education and to maintain transaction transparency to build trust satisfaction (Fardipour et al., 2009). Mentzer et al. (2001) suggest that, under an uncertain and dynamic environment, mutual interdependency helps constrain and reduce conflict and dissatisfaction.

The relationships regarded as investments yield future potential revenues instead of costs. Effective relationships management demands a different mindset than in traditional economic theory. Along with these findings, there are investigations that support the argument that effective supply chain quality relationship based on a platform of interdependency support the network perspective (Zhang and Dilts, 2004) rather than the traditional (Wang et al., 2007) independent view of individual decision making based on economic theory. However, the management of close relationships based on cooperation, commitment, and trust brings a greater level of stress and strain to managers than arm's length business relationships.

Businesses operating in highly competitive intensive markets are likely to have a greater need for effective supply chain quality relationship based on interactive communications, cooperation, adaptation, and trust. Continuous development and management of relationships prevents institutionalization (Davenport, 1993). Institutionalization in this context reflects increased levels of complacency, loss of dynamism, and acceptance of things as they are rather than continuous improvement aspirations (Fynes et al., 2005). Strong quality supplier relationships are always desirable and show that highly innovative manufacturing companies are likely to have problems in managing deeper relationships (Wang and Regan, 2003).

The theoretical insights outline the quality of relationships associated with research constructs like culture, strategy, trust, satisfaction, flexibility, and commitment. Further research, both theoretical and empirical, will benefit from these insights. Traditionally, performance outcomes were measured solely in financial terms; the multiple stakeholder approach relies on financial, human and operational dimensions (Gehani, 1998; Lurquin, 1996; Trappey and Lai, 1996). Therefore, this research is allowing for contemporary development of theories related to the strategic quality relationships. From a managerial view, the insights gained will provide management with detailed knowledge and understanding concerning the quality of relationships with suppliers considering relevant research elements. It shows these elements in a manner that management can easily interpret and understand. A most revealing insight is that not only the importance of shared values, norms and behaviors but also their influence over performance improvements.

LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

All research studies have limitations and finite scopes. At first, the data was restricted to organizations that were members of the Puerto Rico Manufacturers Association. Secondly, some organizations have internal policies that limit their participation in this type of research. Understanding relationship quality achievement and more related objective measures of performance would probably be more insightful.

Further research is necessary into which factors typically occur together and which combination of factors may lead to different relationship situations. In addition, it should be determined whether there is an optimal sequence of factors occurring within the development of relationships.

Moreover, the conceptual model was not elaborately tested in a large-scale survey for different industries; this could be a topic of further research. Other constructs can arise to determine the elements of a quality relationship with the suppliers once a company identifies their potential partner or supplier. Two constructs, responsiveness and dependability, did not have significant influence and were not included in the model. Future research should be performed focusing on these variables. As such, this model does not necessarily have requirements such as large investments of resources, development of special infrastructure, creation of new entities, and dramatic realignment of business performance. Rather, the empirical support for this research model reaffirms the value of doing simple things and using existing infrastructure. In this way, the model was focused on the quality relationship integrity rather than encouragement of further investment in information systems.

The model presented in this research provides opportunities to build on its theoretical base. For example, alternative measures for the thirteen constructs may be developed by incorporating other suggestions from the

literature. Also, this model may be considered as a starting point for other models with increased coverage. Ideally, this model may be customized based on the needs of each organization to get a realistic idea of required efforts. Additional questions may be raised to provide answers related to the interaction of different variables with the supply chain. Other specific research could seek to clarify any dilemmas to obtain a better understanding of each concept.

In conclusion, this paper significantly contributes to provide a decision-making framework. Even though many organizations implement strategies based on intuition, executive judgment, and competition, they must implement plans for specific processes. Organizations may be focusing on important aspects, but others that may need to be strengthened are possibly ignored. In particular, the constructs, especially quality relationship with suppliers, were developed using a validated methodology.

REFERENCES

- Agus, A. (2011), "Supply chain management, supply chain flexibility and business performance", *Journal of Global Strategic Management*, Vol. 5, No. 1, pp. 134-145.
- Ambler, T., Chris S., and Wang, X. (1999), "The effect of channel relationships and guanxi on the performance of Inter-province export ventures in the people's Republic of China", *International Journal of Research in Marketing*, Vol. 16, No 1, pp. 75-87.
- Anderson, E., and Narus, J. A. (1990), "A model of distributor firm and manufacturer firm working partnerships", *Journal of Marketing*, Vol. 54, No. 1, pp. 42-58.
- Bardoel, E. A., and Sohal, A. S. (1999), "The role of the cultural audit in implementing quality improvement programs", *International Journal of Quality and Reliability Management*, Vol. 16, No. 3, pp. 263-277.
- Batt, P. J. (2003), "Examining the performance of the supply chain for the potatoes in the Red River Delta using pluralistic approach", *Supply Chain Management: An International Journal*, Vol. 8, No. 5, pp. 442-454.
- Batt, P. J., and Miller, J. (2004), "Exploring the nature of long-term buyer seller relationships in the Western Australia nursery industry", *Acta Horticulturae*, 655, pp.17-26.
- Batt, P. J., and Wilson, H. (2001), "Exploring the nature of long-term buyer-seller relationships in the Western Australian wine industry", *Australian New Zealand Wine Industry Journal*, Vol. 16, No. 6, pp. 87-96.
- Benton, W. C., and Maloni, M. (2005), "The influence of power driven buyer/seller relationships on supply chain satisfaction", *Journal of Operations Management*, Vol. 23, No. 1, 1-22.
- Betts, T., and Tadisina, S. K. (2009), "Supply chain agility, collaboration and performance: How do they relate?" paper presented at the POMS 20th Annual Conference, May 1-4. Orlando, Florida U.S.A., available at: <http://www.pomsmeetings.org/ConfPapers/011/011-0464.pdf>.
- Boniface, B., Gyau, A., Stringer, R., and Umberger, W. (2010), "Building producer loyalty in Malaysia's fresh milk supply chain", *Australasian Agribusiness Review*, Vol. 18, No. 5, pp. 1-19.
- Burnes, B., and New, S. (1997), "Collaboration in customer-supplier relationships: strategy, operations and the function of rhetoric", *International Journal of Purchasing and Materials Management*, Vol. 33, No. 4, pp. 10-17.
- Buvik, A., and Halskau, O. (2001). "Relationship duration and buyer influence in just-in time relationships", *European Journal of Purchasing and Supply Management*, Vol. 7, No. 2, pp. 111-119.
- Cameron, K. S. (2008), "A process for changing organizational culture", in Cummings, T.G (Ed.) *The Handbook of Organizational Development*, Sage Publications, Thousands Oaks, California, pp. 429-446.
- Cannon, J. P., and Homburg, C. (2001), "Buyer-supplier relationships and customer firm costs", *Journal of Marketing*, Vol. 65, No. 1, pp. 29-43.
- Chang, H. H. (2007), "Critical factors and benefits in the implementation of customer relationship management", *Total Quality Management*, Vol. 18, No. 5, pp. 483-508.
- Chen, I. J., Paulraj, A., and Lado, A. A. (2004), "Strategic purchasing, supply management and firm performance", *Journal of Operations Management*, Vol. 22, No.5, 505-523.
- Christopher, M. (1999), *Logistics and supply chain management: Strategies for reducing costs and improving service*, London: Pitman Publishing.
- Crosby, L. A., Evans, K. R., and Cowles, D. (1990), "Relationship Quality in Services Selling: An Interpersonal Influence Perspective", *Journal of Marketing*, Vol. 54, No. 3, pp. 68-81.
- Davenport, T. H. (1993), *Process innovation: Reengineering work through information technology*, Cambridge, MA: Harvard Business School Press.

- Dekkers, R., and Van Luttervelt, C. (2006), "Industrial networks: Capturing change ability?", *International Journal of Networking and Virtual Organizations*, Vol. 3, No. 1, pp. 1-24.
- Denison, D. R., and Mishra, A. K. (1995), "Toward a theory of organizational culture and effectiveness", *Organization Science*, Vol. 6, No.2, 204-223.
- Detert, J. R., Schroeder, R. G., and Mauriel, J. J. (2000), "A framework for linking culture and improvement initiatives in organizations", *Academy of Management*, Vol. 25, No. 4, 850-863.
- Dwyer, E. R., Schurr, P. H., and Oh, S. (1987), "Developing buyer-seller relationships", *Journal of Marketing*, Vol. 51, No. 2, pp. 11-27.
- Fabbe-Costes, N., and Jahre, M. (2009), "Integrated and flexible project supply chains and networks - Developing a research platform", paper presented at the 25th Industrial Marketing and Purchasing Group Conference (IMP-conference), September 3-5, Marseille, France, available in <http://www.impgroup.org/uploads/papers/7234.pdf>.
- Fardipour, P., Littman, G., and Burns D. (2009), "Planning and executing: Response-adaptive learn-phase clinical trials: the process", *Drug Information Journal*, Vol. 43, No. 3, pp. 713-723.
- Fawcett, S. E., and Magnan, G. M. (2002), "The rhetoric and reality of supply chain integration", *International Journal of Physical Distribution and Logistics Management*, Vol. 32, No. 5, pp. 339-361.
- Field, J. M., and Meile, L. C. (2008), "Supplier relations and supply chain performance in financial services processes", *International Journal of Operations and Production Management*, Vol. 28, No. 2, 185-206.
- Fink, R. C., Edelman, L. F., and Hatten, K. J. (2007), "Supplier performance improvements in relational exchanges", *Journal of Business and Industrial Marketing*, Vol. 2, No. 1, pp. 29-41.
- Fisher, C., Hartmann, M., Bavorova, M., Hockmann, H., Suvanto, H., Viitaharju, L., and Kobuszynska, M. (2008), "Economic relationships and B2B communication in selected European Agri-food chains-First empirical evidence", *International Food and Agribusiness Management Review*, Vol. 11, No. 2, pp. 73-99.
- Flynn, B. B., Huo, B., and Zhao, X. (2010), "The impact of supply chain integration on performance: A contingency and configuration approach", *Journal of Operations Management*, Vol. 28, No. 1, pp. 58-71.
- Frohlich, M. T., and Westbrook, R. (2002), "Demand chain management in manufacturing and services: Web-based integration, drivers, and performance", *Journal of Operations Management*, Vol. 20, No.6, pp. 729-745.
- Fugate, B. S., Davis-Sramek, B., and Goldsby, T. J. (2009), "Operational collaboration between shippers and carriers in the transportation industry", *The International Journal of Logistics Management*, Vol. 20, No. 3, pp. 425-447.
- Fynes, B., and Voss, C. (2002), "The moderating effect of buyer-supplier relationships on quality practices and performance", *International Journal of Operations and Production Management*, Vol. 22, No. 6, pp. 589-613.
- Fynes, B., Voss, C., and de Burca, S. (2005), "The impact of supply chain relationship dynamics on manufacturing performance", *International Journal of Operations and Production Management*, Vol. 25, No. 1, pp. 6-19.
- Gallear, D., and Ghobadian, A. (2004), "An empirical investigation of the channels that facilitate a total quality culture", *Total Quality Management*, Vol. 15, No. 8, pp. 1043-1067.
- Garbarino, E., and Johnson, M. S. (1999), "The different roles of satisfaction, trust and commitment in customer relationships", *Journal of Marketing*, Vol. 63, No. 2, pp. 70-87.
- Gehani, R. R. (1998), *Management of technology and operations*. New York: John Wiley and Sons.
- Geykens, I., Steenkamp, J., and Kumar, N. (1999), "A meta-analysis of satisfaction in marketing channel relationships", *Journal of Marketing Research*, Vol. 36, No. 2, 223-238.
- Giunipero, L. C., Denslow, D., and Eltantawy, R. (2005), "Purchasing/supply chain management flexibility: Moving to an entrepreneurial skill set", *Industrial Marketing Management*, Vol. 34, No. 6, pp. 602-613.
- Giunipero, L. C., Handfield, R. B., and Eltantawy, R. (2006), "Supply management's evolution: Key skill sets for the supply manager of the future", *International Journal of Operations and Production Management*, Vol. 26, No. 7, pp. 822-844.
- Gold, A. H., Malhortra, A., and Segars, H. A. (2001), "Knowledge management: An organizational capabilities perspective", *Journal of Management Information Systems*, Vol. 18, No. 1, pp.185-214.
- Goldsby, T. J., Griffis, S. E., and Roath, A. S. (2006), "Modeling lean, agile, and leagile supply chain strategies", *Journal of Business Logistics*, Vol. 27, No. 1, pp. 57-80.
- Gunasekaran, A., Lai, K-h., and Cheng, T. C. E. (2008), "Responsive supply chain: A competitive strategy in a networked economy", *Omega*, Vol. 36, No 4, pp. 549-564.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., and Tatham, R. L. (2006), *Multivariate data analysis* (6th ed.). Englewood Cliffs, NJ: Prentice Hall.

- Hald, K. S. (2007), *Inter-organizational performance measurement and management in action: An ethnography on the construction of management, identity and relationships* (PhD Series; 6.2007). Frederiksberg: Samfundslitteratur, pp. 1-282.
- Handfield, R. B., Petersen, K., Cousins, P., and B. Lawson (2009), "An organizational entrepreneurship model of supply management integration and performance outcomes", *International Journal of Operations and Production Management*, Vol. 29, No. 1/2, pp. 100-126.
- Harber, D., Burgess, K., and Barclay, D. (1993), "Total quality management as a cultural intervention: An empirical study", *The International Journal of Quality and Reliability Management*, Vol. 10, No. 6, pp. 28-46.
- Heidi, J. B., and John, G. (1992), "Do norms matter in marketing relationships?" *Journal of Marketing*, Vol. 56, No. 2, pp. 32- 44.
- Holweg, M., Disney, S., Holmstrom, J., and Smaros, J. (2005), "Supply chain collaboration: Making sense of the strategy continuum", *European Management Journal*, Vol. 23, No 2, 170-81.
- Huq, Z., and Martin, T. N. (2000), "Workforce cultural factors in TQM/CQI implementation in hospitals", *Health Care Management Review*, Vol. 25, No. 3, pp. 80-93.
- Kanji, G., and Wong, A. (1999), "Business excellence model for supply chain management", *Total Quality Management*, Vol. 10, No. 8, pp.1147-1168.
- Ketchen, D. J., and Hult, G. T. M. (2007), "Bridging organization theory and supply chain management: The case of best value supply chains", *Journal of Operations Management*, Vol. 25, No. 2, pp. 573-580.
- Klein, A. S., Masi, R. J., and Weidner, C. K. (1995), "Organization culture, distribution and amount of control, and perceptions of quality", *Group and Organization Management*, Vol. 20, No. 2, pp. 122-148.
- Kotter, J. P., and J. L. Heskett. (1992), *Corporate culture and performance*, New York: Free Press.
- Kouvelis, P., Chambers, C., and Wang, H. (2006), "Supply chain management research and production and operations management: Review, trends and opportunities", *Production and Operations Management*, Vol. 15, No. 3, pp. 449-469.
- Kumar, V., Fantazy, K. A., Kumar, U., and Boyle, T. A. (2006), "Implementation and management framework for supply chain flexibility", *Journal of Enterprise Information Management*, Vol. 19, No. 3, pp. 303-319.
- Lages, C., Lages, C. R., and Lages, L. F. (2005), "The RELQUAL scale: A measure of relationship quality in export market ventures", *Journal of Business Research*, Vol. 58, No. 8, pp. 1040-1048.
- Lai, K., Cheng, T. C. E., and Yeung, A. C. L. (2005), "Relationship stability and supplier commitment to quality", *International Journal of Production Economics*, Vol. 96, No. 3, pp. 397-410.
- Lambe, C. J., Spekman, R. E., and Hunt, S. D. (2000), "Interimistic relational exchange: Conceptualization and propositional development", *Journal of the Academy of Marketing Science*, Vol. 28, No. 2, pp. 212-225.
- Lamming, R. C., Caldwell, N. D., Harrison, D. A., and Phillips, W. (2001), "Transparency in supply relationships: Concept and practice", *Journal of Supply Chain Management*, Vol. 37, No. 4, pp. 4-10.
- Lamming, R. C., Caldwell, N. D., Phillips, W., and Harrison, D. (2005), "Sharing sensitive information in supply relationships: The flaws in one-way open-book negotiation and the need for transparency", *European Management Journal*, Vol. 23, No. 5, pp. 554-563.
- Leavy, B. (1994), "Two strategic perspectives on the buyer-supplier relationship", *Production and Inventory Management Journal*, Vol. 35, No. 2, pp. 47-51.
- Lee, H. L. (2002), "Aligning supply chain strategies with product uncertainties", *California Management*, Vol. 44, No. 3, pp. 105-115.
- Lewis, J. D. (1990), "Making strategic alliance work", *Research Technology Management*, Vol. 33, No. 6, pp. 12-15.
- Li, S., Ragu-Nathan, B., Ragu-Nathan, T. S., and Rao, S. S. (2006), "The impact of supply chain management practices on competitive advantage and organizational performance". *Omega International Journal of Management Science*, Vol. 34, No. 2, pp. 107-124.
- Lin, C., Chow, W. S., Madu, C. N., Kuei, C., and Yu, P. (2005), "A structural equation model of supply chain quality management and organizational performance", *International Journal of Production Economics*, Vol. 96, No. 3, pp. 355-365.
- Luftman, J. (2000), "Assessing Business-IT alignment maturity", *Communications of the Association of Information Systems*, Vol. 4, No. 14, 1-51.
- Lurquin, M. G. (1996), "Streamlining the supply chain in the pharmaceuticals industry", *Logistics Information Management*, Vol. 9, No. 6, pp. 6-10.
- Lyons, B., and Mehta, J. (1997), "Contracts, opportunism, and trust: Self-interest and social orientation", *Cambridge Journal of Economics*, Vol. 21, No. 2, pp. 239-257.

- Magistris T., and Gracia A. (2008), "Cooperation and economic relationship as determinants for competitiveness in the food sector: The Spanish wheat to bread chain", paper presented at the European Association of Agricultural Economists, August 26-29, 2008, Ghent, Belgium, available at: ageconsearch.umn.edu/bitstream/44066/2/314.pdf.
- Maheswari, B., Kumar, V., and Kumar, U. (2006), "Optimizing success in supply chain relationships", *Journal of Enterprise Information Management*, Vol. 9, No. 3, pp. 277-291.
- McFarland, R. G., Bloodgood, J. M., and Payan J. M. (2008), "Supply chain contagion", *Journal of Marketing*, Vol. 72, No. 2, pp. 63-79.
- Mentzer, J. T. (2001), "Managing the Supply Chain: Managerial and Research Implications", *In Supply Chain Management*, edited by John T. Mentzer, Thousand Oaks, CA: Sage Publications, 437-461.
- Moorman, C., Zaltman, G., and Deshpande, R. (1992), "Relationships between providers and users of market research: The dynamics of trust within and between organizations", *Journal of Marketing Research*, Vol. 29, No. 3, pp. 314-328.
- Morgan, R. M., and Hunt, S. D. (1994), "The commitment-trust theory of relationship marketing", *Journal of Marketing*, Vol. 58, No. 3, pp. 20-38.
- Morita, M., and Flynn, E. J. (1997), "The linkage among management systems, practices and behavior in successful manufacturing strategy", *International Journal of Operations and Production Management*, Vol. 17, No. 10, pp. 967-993.
- Mysen, T., and Svensson, G. (2010), "RELQUAL's impact on satisfaction in Norwegian business relationships", *Journal of Business and Industrial Marketing*, Vol. 25, No. 2, pp. 119-131.
- Naudé, P., and Buttle, F. (2000), "Assessing relationship quality", *Industrial Marketing Management*, Vol. 29, No. 4, pp. 351-361.
- Nix, N., Zacharia, Z. G., Lusch, R. F., Bridges, W. R., and Thomas, A. (2004), "Keys to effective supply chain collaboration: A special report from the collaborative practices", *Research Program Supply and Value Chain Center*, The M. J. Neeley School of Business, 4-19, available at: http://www.vics.org/docs/apps/group_public/Keys_to_Effective_Supply_Chain_Collaboration_Exec_Summary.pdf
- Nonino, F., and Panizzolo, R. (2007), "Integrated production/distribution planning in the supply chain: The Febal case study", *Supply Chain Management: An International Journal*, Vol. 12, No. 2, pp. 150-163.
- Norusis, M. J. (1993), *SPSS for Windows professional statistics release 6.0*, Chicago: SPSS, Inc.
- Nyaga, G., Whipple, J., and Lynch, D. (2010), "Examining supply chain relationships: Do buyer and supplier perspectives on collaborative relationships differ?" *Journal of Operations Management*, Vol. 28, No. 2, pp. 101-114.
- O'Regan, N., and Ghobadian, A. (2005), "Innovation in SMEs: The impact of strategic orientation and environmental perceptions", *International Journal of Productivity and Performance Management*, Vol. 54, No. 2, pp. 81-97.
- Olsson, A., and Skjöldebrand, C. (2008), "Risk management and quality assurance through the food supply chain – Case studies in the Swedish food industry", *The Open Food Science Journal*, Vol. 2, pp. 49-56.
- Papke-Shields, K. E., and Malhotra, M. K. (2001), "Assessing the impact of the manufacturing executive's role on business performance through strategic alignment", *Journal of Operations Management*, Vol. 19, No. 1, pp. 5-22.
- Park, S., Hartley, J. L., and Wilson, D. (2001), "Quality management practices and their relationship to buyer's supplier ratings: a study in the Korean automotive industry", *Journal of Operations Management*, Vol. 19, No. 6, pp. 695-712.
- Parsons, A. L. (2002). "What determines buyer-seller relationship quality? An investigation from the buyer's perspective", *Journal of Supply Chain Management*, Vol. 38, No. 2, pp. 4-12.
- Paulraj, A., Chen, I. J., and Flynn, J. (2006), "Levels of strategic purchasing: Impact on supply integration and performance", *Journal of Purchasing and Supply Management*, Vol. 12, No. 3, pp. 107-122.
- Perner, L. (2009), *International Marketing*. Department of Marketing, Marshall School of Business, University of Southern California, pp. 1-32.
- Ramsay, J. (1996), "The case against purchasing partnerships", *International Journal of Purchasing and Materials Management*, Vol. 32, No. 4, pp. 13-19.
- Rashed, C. A. A., Azeem, A., and Halim, Z. (2010), "Effect of information and knowledge sharing on supply chain performance: A survey based approach", *Journal of Operations and Supply Chain Management*, Vol. 3, No. 2, pp. 61-77.

- Reichhart, A., and Holweg, M. (2007), "Creating the customer-responsive supply chain: A reconciliation of concepts", *International Journal of Operations and Production Management*, Vol. 27, No. 11, pp. 1144-1172.
- Romano, P. (2002), Impact of supply chain sensitivity to quality certification on quality management practices and performances, *Total Quality Management*, Vol. 13, No. 7, pp. 981-1000.
- Saraph, J. V., and Sebastian, R. J. (1993), "Developing a quality culture", *Quality Progress*, Vol. 26, No. 9, pp. 73-78.
- Schulze, B., Wocken, C., and Spiller, A. (2006), "Relationship quality in agri-food chains: Supplier management in the German pork and dairy sector", *Journal on Chain and Network Science*, Vol. 6, No. 1, pp. 55-68.
- Schurr, P. H., and Ozanne, L. (1985), "Influences on exchange processes: Buyer's preconceptions of a seller's trustworthiness and bargaining toughness", *Journal of Consumer Research*, Vol. 11, No. 4, pp. 939-953.
- Scott, T., Daugherty, P. J., and Dudley, W. N. (1994), "The long-term strategic impact of purchasing partnerships", *International Journal of Purchasing and Materials Management*, Vol. 30, No. 4, pp.13-18.
- Selen, W., and Soliman, F. (2002), "Operations in today's demand chain management framework", *Journal of Operations Management*, Vol. 20, No. 6, pp. 667-673.
- Smith, J. B. (1998), Buyer-seller relationships: Similarity, relationship management and quality, *Psychology and Marketing*, Vol. 15, No. 1, pp. 3-21.
- Sosa, J. C., Mysen, T., and Svensson, G. (2012), "Constituents of buyers' satisfaction in Puerto Rican business relationships", *International Journal of Electronic Customer Relationship Marketing*, Vol. 6, No. 2, pp. 193-215.
- Stevens, G. C. (1989), "Integrating the supply chain", *International Journal of Physical Distribution and Materials Management*, Vol. 19, No. 8, pp. 3-8.
- Stuart, F. I. (1997), "Supply chain strategy: Organizational influence through supplier alliances", *British Journal of Management*, Vol. 8, No. 3, pp. 223-236.
- Swan, J. E., and Nolan, J. J. (1985), "Gaining customer trust: A conceptual guide for the salesperson", *Journal of Personal Selling and Sales Management*, Vol. 5, No. 2, pp. 39-48.
- Tassabehji, R., and Moorhouse, A. (2008), "The changing role of procurement: Developing professional effectiveness", *Journal of Purchasing and Supply Management*, Vol. 14, No. 1, pp. 55-68.
- Trappey, C. V., and Lai, M. K. (1996), "Retailing in Taiwan: Modernization and the emergence of new formats", *International Journal of Retail and Distribution Management*, Vol. 24, No. 8, pp. 31-37.
- Tsai, J. F. (2007), "An optimization approach for supply chain management models with quantity discount policy", *European Journal of Operational Research*, Vol. 177, No. 1, pp. 982-994.
- Vereecke, A., and Muylle, S. (2006), "Performance improvement through supply chain collaboration in Europe", *International Journal of Operations and Production Management*, Vol. 26, No. 11, pp. 1176-1198.
- Wang, C., and Regan, A. C. (2003), "Reducing risks in logistics outsourcing. eScholarship", *University of California Transportation Center*, UC Berkeley, 1-13. Retrieved from escholarship.org/uc/item/47v6f9fx.pdf
- Wang, Y., Potter, A., and Naim, M. (2007), "Electronic marketplaces for tailored logistics", *Industrial Management and Data Systems*, Vol. 107, No. 8, pp.1170-1187.
- Ward, P., McCreery, J. K., and Anand, G. (2007), "Business strategies and manufacturing decisions: An empirical examination of linkages", *International Journal of Operations and Production Management*, Vol. 27, No. 9, pp. 951-973.
- Wei, C-C., Liang, G-S., and Wang, M-J. J. (2007), "A comprehensive supply chain management project selection framework under fuzzy environment", *International Journal of Project Management*, Vol. 25, No. 1, pp. 627-636.
- Whittle, S., Smith, S., Tranfield, D., and Foster, M. (1992), "Implementing total quality", *International Journal of Technology Management*, Vol. 7, No. 4/5, pp. 235-243.
- Wilson, D. T. (1995), "An integrated model of buyer-seller relationships", *Journal of the Academy of Marketing Science*, Vol. 23, No. 4, pp. 335-345
- Wu, M. Y., Chou, H. P., Shih, Y. Y., and Wang, J. H. (2011), "Supply chain performance improvement through partner relationship management in the high tech industry", *International Journal of Management Science and Engineering Management*, Vol. 6, No. 3, pp. 210-218.
- Yunus, E., and Tadisina, S. K. (2010), "Organizational culture context, supply chain integration and performance", paper presented at the POMS 21st Annual Conference, May 7-10, Vancouver, Canada, available at <http://www.pomsmeetings.org/ConfProceedings/015/FullPapers/015-0278.pdf>

Zhang, Y., and Dilts, D. M. (2004), "System dynamics of supply chain network organization structure", *Information Systems and e-Business Management*, Vol. 2, No. 2/3, pp. 187-206.

Zsidisin, G. A., and Wagner, S. (2010). Supply chain risk - it's all in your head? Retrieved from <http://www.husdal.com/2010/12/09/supply-chain-risk-its-all-in-your-head>