TRUST AND SUPPLIER- BUYER RELATIONSHIPS: A MULTIREGIONAL ANALYSIS

Ely Laureano Paiva, FGV-São Paulo
ely.paiva@fgv.br, +551137993656

Luciana Marques Vieira, UNISINOS
lmvieira@unisinos.br

Andrew B. Finger, Universidade Federal de Alagoas
abfinger@terra.com.br

Rafael Teixeira, UNISINOS
rafaelt@unisinos.br

ABSTRACT

This paper investigates if the regional differences are able to influence trust based relationship with suppliers. It presents the results of a survey of 338 processing plants located in Western and Asian countries using a structural equation modeling. Findings suggest that supplier involvement in quality is “taken for granted”, but it is not related to trust or partnership. Regional differences also may affect the development of partnership in the supply chain. The two main aspects are the levels of trust and timeliness in Asian companies. These aspects bring implications for managers dealing with international supply chains.

Key words: trust, supply chain partnership, supply chain management, survey

1. INTRODUCTION

Supply chain is a phenomenon which always occurs when companies establish relationships, independently of the level of management existent. This statement distinguishes the supply chain from supply chain management (SCM), meaning that the latter is the systemic and strategic coordination of tasks among different companies that are part of a supply chain, aiming to improve each company’s performance as well as the overall supply chain (Mentzer et al, DeWitt, Keebler, Min, Nix, Smith, & Zacharia, 2001). Lately, SCs are becoming global, connecting companies from different institutional contexts all the time (MacDuffie, 2011). A strategic orientation in supply chain management is a key aspect to compete (Yeung, 2008) and trust has pointed out as an asset for long term partnerships (Cannon, Doney, Mullen, & Petersen, 2010). However, there are still few studies comparing the level of trust existent on supply chain partnerships established in different countries (Dyer & Chu, 2011). This paper address to the following questions: What are the aspects that influence trust based relationships? Are there differences on trust based relationships with suppliers in Western and Asian countries?

This paper brings empirical data to this discussion through the results of a survey. Two groups of countries are analyzed using a structural equation modeling (SEM): Western countries (some European countries, the USA and Brazil) and Asian countries (Japan, South Korea and
China). Results have implications for managers who deal with multicultural contexts and international supply chains. The next section discusses the theoretical framework discusses trust and supply chain partnership. Then, we describe the method applied in this research. It follows providing a background of the sample. Finally, we discuss the main findings and outline the final considerations of this study.

2. LITERATURE REVIEW

This study analyzes the relationships among firms seeking the identification of the driving forces that motivate them to collaborate (Dyer & Chu, 2000). Harland (1996) defines supply chain management as the management of inter-business chains. Same way, Charvet et al. (2008) considers that a relevant stream of the current literature on SCM focus on causal links between supply chain members (at least, a dyadic perspective). Trust would appear as an input or output of the supply chain management. The following discussion provides support for the research.

2.1 Trust

The study of trust initiated in economics and sociology, which have approached the institutional environment and inter-firm arrangements from different perspectives. Both areas of knowledge have some common interests that influence the way that supply chain management has been studied. However, the acknowledgment of trust is a contradiction between sociology and economics. Institutional economics assumes opportunistic behavior as the norm. On the contrary, sociology pays special attention to the emergence and diffusion of trust in relationships (personal and institutional).

A number of scholars using a sociology basis have suggested that a variety of macro-level structures, including networks and governance, enhance the emergence and diffusion of trust. Trust involves at least two agents: the trustor (organization, product, institution) and the trustee (Zucker, 1986; Lane and Bachmann, 1998; Nooteboom, 2002). We considered in this paper is that trust as “the extent to which one believes that others will not act to exploit one’s vulnerabilities” (Morrow, Hansen & Pearson, 2004). Thus, both agents are simultaneously trustor and trustee.

2.2 Trust and supply chain relations

Trust definition is antropomorphic because only individuals within organization have this ability (Morrow et al., 2004). Batt (2000) asks, for example, who is able to develop trust, the salesperson or the sales organization? Organizations and individuals may pursue their self-interest by forming relationships with others to economize on transaction costs (Sako, 1992; Lindgreen, 2003; Batt, 2000; Morrow et al., 2004). Examples are the sharing of information on bad payers, reducing the need to inspect quality or the need to organize payment at the time of delivery. Besides reducing transaction costs, the reduction of uncertainty and information asymmetry is an important consequence of a trusting relationship (Dyer & Chu, 2003). There has been some criticism regarding the use of transaction cost as it focuses on dyadic relationships and cannot really identify interdependence across chains. It also fails to analyze the institutional complexity, change and power existent in business relationships (Dubois, Hulthén, & Pedersen, 2004; Cox, Lonsdale, Sanderson & Watson, 2004).
Trust is a key factor to the development of partnerships among the different agents of a supply chain and distinguishes trust between inter-personal and inter-firm (Johnston, McCutcheon, Stuart & Kerwood, 2004). The creation of trust in inter-firm relationships can be considered related to the cultural context of the country (Sako, 1992; Dyer & Chu, 2003; Zaheer & Zaheer, 2006). In this sense, Dyer & Chu (2000), in their awarded study, found significant levels of supplier trust in the US, Japan and Korea. These differences are related to the institutional environment. These authors suggest that supplier trust depends on frequency and long term interactions (which they called process based trust). However, they also admit that the studied automakers buyers incur in additional costs while developing this kind of relationship.

2.3 Supplier involvement

Firstly, it is crucial to define involvement. We consider involvement as “the act of sharing in the activities of a group” (Webster’s, 2008). Therefore, according to our definition partnership is a more advanced state in a relationship between buyer and suppliers than involvement. Involvement is a condition for partnership but it is possible that involvement is present in some situations of relationship but trust and partnership are not. The literature on new product development has provided evidence suggesting that involvement of suppliers may positively contribute to improve buyer ability to develop new products (Brown & Eisenhardt, 1995; Montoya-Weiss & Calantone, 1994; Ragatz, Handfield & Petersen, 2002; Song & Benedetto, 2008). These contributions of suppliers to buyer’s ability to develop new products are somewhat related to trustworthiness relationship existent between buyer and supplier. The works of Dyer (Dyer & Chu, 2003; 2000) and Zaheer, McEvily & Perrone (1998) have contributed to provide an understanding of how trust-based relationship can reduce the opportunistic behavior of suppliers and improve their contribution to new product development. High levels of trust reduce the need for buyer and supplier to spend long time and effort during meetings to negotiate and write complex contracts to safeguard their investments in the relationship. By reducing the time and effort to negotiate and monitor the relationship, buyer and supplier can focus on one activity that mostly contribute for new product development: information exchange between parties. Information exchange can help the buyer to obtain information about innovation occurring at the supplier side. In this case, new components and product parts can contribute for incremental and even radical development of products.

3. HYPOTHESES

3.1 Supplier involvement and trust

Supplier involvement in quality tends to influence the trust existent between buyer and supplier because it demonstrates the supplier commitment to quality of its outputs. In this case, better supplier outputs mean better buyer inputs into the production system, influencing buyer performance (Chopra & Mendl, 2010). Trust may also reduce the need for buyer to monitor supplier deliveries and quality of inputs as well as reduce the need to enforce penalties in the case of lower quality inputs (Dyer & Chu, 2003). In this case, supplier involvement in quality may become a first step for commitment in a relationship and contribute for an improving cycle of trust: increasing quality may lead to reduction in transaction costs, which in turn improves trust, reinforcing the relationship and rewarding the supplier involvement in quality. In a trust-based relationship, suppliers can also provide
information feedback about materials, pricing, and process capabilities for improvement of product quality, as recently demonstrated by empirical studies (Koufteros, Cheng & Lai, 2007; Quesada, Rachamadugu, Gonzalez & Martinez, 2008; Narasimhan & Jayaram 1998). Finally, supplier involvement in quality may be a form of aligning interests with the buyer and contribute for a trustworthy relationship (Ireland & Webb, 2006).

**H1. Supplier involvement in company’s processes influences positively trust.**

### 3.2 Trust and Supply Chain Partnership

Supply chain partnership (SCP) says that companies involved in frequent and long-term transactions are often offered incentives to not engage in opportunistic behavior, encouraging them over time to create trust (Croom, 2001; Zsidisin & Ellram, 2001). According to Pyke and Johnson (2003), companies have been using different approaches to manager their supplier, and one of them is the establishment of alliances and partnerships. Same way, the increasing pressure for costs reduction and development of products lead companies to focuses on supply chain partners (Sheth & Sharma, 2006). Trust can assume two different roles in a partnership: an input or an output. In the first role, the previous existence of trust can be transferred for a business partnership. This may happen at the initial development stage of a business relationship (Heffernan, 2004). The second role involves a more rational and calculative kind of trust between two business partners. In both cases, the aim is to get close to a vertically integrated supply chain.

The uncertainty surrounding a business transaction can assume different levels. On one hand, for the buyer, it can be an uncertainty of quality, a reliable supply, timeliness or quantity. On the other hand, it can be the seller searching for a buyer. And for both agents, price can be uncertain (Hobbs & Young, 2000). It is worth pointing out that uncertainty, one of the transaction costs features, can be reduced by trust and supply chain partnership. In our study, we consider supply timeliness related to uncertainty. We define timeliness as “the quality of arriving on time”. (Webster’s, 2008)

**H2. Supplier partnership influences positively trust.**

**H3. Supply timeliness influences positively trust.**

### 3.3 Regional aspects and trust

Regional and cultural differences can influence supply chain partnership and the kind of role that trust assumes. Harland (1996) compared supply chains based in two European countries, the United Kingdom and Spain and she found that Spanish relationships were more supportive and trust oriented, but they did not perform better than the British one according to their customers perception.

Supply chain partnership happens in distinguished ways. Vereecke and Muylle (2006) identified two kind of SC collaboration: information sharing (exchange of information of forecasting, planning and delivery) and structural collaboration (such as Kan-ban system and co-location of plants). They test empirically SC collaboration to performance improvement in engineering and assembling industries in 16 countries in the period of 2000-2002 and concluded that collaboration with both customers and suppliers result in maximum performance improvement.
Johnston, Mccutcheon, Stuart & Kerwood (2004) developed a model to understand the major determinants of the buyer’s satisfaction are the supplier’s performance. They also showed that an increased cooperative behavior lead to higher performance and satisfaction. It also highlights the importance of building trust between buyers and suppliers. Their findings come from a broad range of buyer organizations from both public and private sector (cross-sectional) and confirm that cooperative behavior is associated with higher level of trust.

Mentzer, Myers and Stank (2007) indicate that the next generation of competitive advantage may come from an effective relationship with supply chain partners, as soon as firms realize that collaborative business relationships improve their ability to respond to the new business environment. This happens by allowing them to focus on their core business and to reduce costs in business process.

These collaborations and partnerships in the supply chain are defined as the means by which companies within the supply chain work together mutual objectives, sharing of ideas, information, knowledge, risks, rewards, solutions to common problems (Cohen & Roussel, 2004; Benton, 2007; Bowersox, Closs & Cooper, 2002).

Table 1 proposes distinguished forms of supply chain configuration according to the level of integration existent throughout the supply chain.

Table 1
Forms of supply chain configuration

<table>
<thead>
<tr>
<th>Supply Chain Configuration</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spot market</td>
<td>Companies do not collaborate over the production system, which is considered standard. Risks to the buyer are low due to the ability of the supplier to meet the requirements.</td>
</tr>
<tr>
<td>Partnership</td>
<td>Co-operation between more or less “equals” - firms with the same level of power, size and/or technology. High and generalized competence favors networks and reciprocal inter-dependence. It may also include contracts.</td>
</tr>
<tr>
<td>Quasi-integration</td>
<td>Usually, characterised by the existence of contracts. High degree of control of buyer over supplier; buyer defines the product. The buyer would incur losses from the supplier’s performance failures, and there are some doubts about the competence of the supplier. Where high supplier competence is not generalized, buyers invest in specific suppliers and seek to tie them to their chain.</td>
</tr>
<tr>
<td>Vertical Integration</td>
<td>The risks of poor performance by independent suppliers increase if the buyer uses quality as a brand attribute. These factors favour direct control over the production process.</td>
</tr>
</tbody>
</table>

Source: Adapted from Humphrey and Schmitz, 2002

The characterization of supply chain types is suggested in this table. For Humphrey and Schmitz (2002), co-operation between companies of the same size and comparable power is called a partnership. Alternatively, when the relationship is characterized by a stronger or larger company dictating the norms and standards to a group of small and medium sized companies (also known as a hub and spoke network), it is called quasi-integration. The latter also exemplifies the power asymmetry that may exist in a buyer supplier relationship.
For Lambert (2006) the term partnership it is still the most descriptive term for closely integrated and mutually beneficial relationships that enhance supply chain performance. But the relationships within the supply chain will occur in many different styles of relationships and change those suppliers among the different styles depending on their performance over time. The increasing internationalization of supply chains, with the presence of international players are quickly changing transaction features. These relationships tend to be hierarchical but are changing to become more based trustworthiness because of the increase need to quickly respond to changing competitive criteria (Griffith & Myers, 2004).

H4. The relationship between supply and trust is influenced by regional aspects.

4. METHOD

The data collection uses a survey methodology based on the database of the project High Performance Manufacturing (Schroeder & Flynn, 2001). The sample has 338 plants from three different industries: electronics, machinery and automotive suppliers. Plants are located in Austria (21), China (51), Finland (30), Germany (41), Italy (27), Japan (35), Spain (28), South Korea (31), Sweden (24), United States (29) and Brazil (21). The scales used a Likert scale with seven levels from (1) Totally Disagree to (7) Totally Agree.

We used confirmatory factor analysis (CFA) to verify validity and reliability. The CFA model included the constructs related to Supplier Involvement in New Product Development, Supplier Involvement in Quality, Supplier Partnership, Trust and Supply Timeliness. All the indices related to the goodness-of-fit are in the satisfactory levels (Table II). Also all the loadings are above .60, confirming convergent validity (Appendix A).

Table 2
General statistics for goodness-of-fit

<table>
<thead>
<tr>
<th>Stand Alone Indices</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>245.18</td>
</tr>
<tr>
<td>Degrees of Freedom (df)</td>
<td>94</td>
</tr>
<tr>
<td>Probability Level</td>
<td>.00</td>
</tr>
<tr>
<td>Goodness of Fit (GFI)</td>
<td>.915</td>
</tr>
<tr>
<td>Adjusted Goodness of Fit (AGFI)</td>
<td>.877</td>
</tr>
<tr>
<td>Standardized RMR</td>
<td>.043</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.069</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Incremental Indices</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Normed Fit Index (NFI)</td>
<td>.888</td>
</tr>
<tr>
<td>Incremental Fit Index (IFI)</td>
<td>.928</td>
</tr>
<tr>
<td>Comparative Fit Index (CFI)</td>
<td>.927</td>
</tr>
</tbody>
</table>

In order to analyze discriminant validity we used the $X^2$ difference (Koufteros, 1999). The constructs presented statistically significant differences, when the correlation between them was fixed at 1. See Table 3.

We tested if aspects related to Supply Chain Management aspects may affect trust. We used a regression analysis technique. We also tested if these aspects are related to regional issues related to each of the two regions.
Two groups of countries were analyzed using a structural equation modeling (SEM): Western (Europe, USA and Brazil) and Asian countries (Japan, South Korea and China). 221 plants are located in Western countries and 117 in Asia.

5. RESULTS

The regression analysis had Trust as the dependable variable and Supplier Involvement in New Product Development, Supplier Involvement in Quality, Supplier Partnership, and Supply Timeliness as independent variables. In order to test the hypothesis 4 we used a dummy variable for Western (equal to 0) and Asian (equal to 1) countries. The results show a good R² (.358) for a social sciences study indicating that the model has a satisfactory explanation power for the Trust variance.

Table 3
Discriminant validity analysis

<table>
<thead>
<tr>
<th>Construct Scale Pairs</th>
<th>Unconstrained</th>
<th>Constrained</th>
<th>χ² Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Involvement NDP</td>
<td>Supplier Involvement in Quality</td>
<td>19.5</td>
<td>122</td>
</tr>
<tr>
<td>Supplier Involvement NDP</td>
<td>Supplier Partnership</td>
<td>31.5</td>
<td>200.3</td>
</tr>
<tr>
<td>Supplier Involvement NDP</td>
<td>Trust-based Relationship</td>
<td>21.6</td>
<td>117.6</td>
</tr>
<tr>
<td>Supplier Involvement in Quality</td>
<td>Supplier Partnership</td>
<td>70.4</td>
<td>883.7</td>
</tr>
<tr>
<td>Supplier Partnership</td>
<td>Trust-based Relationship</td>
<td>6.9</td>
<td>421.6</td>
</tr>
<tr>
<td>Supply Timeliness</td>
<td>Supplier Involvement NDP</td>
<td>32.8</td>
<td>178.8</td>
</tr>
<tr>
<td>Supplier Involvement in Quality</td>
<td>Supplier Involvement in Quality</td>
<td>3.2</td>
<td>175.4</td>
</tr>
<tr>
<td>Supply Partnership</td>
<td>Supplier Involvement in Quality</td>
<td>2.9</td>
<td>198.4</td>
</tr>
<tr>
<td>Supply Timeliness</td>
<td>Trust-based Relationship</td>
<td>26.2</td>
<td>152.4</td>
</tr>
</tbody>
</table>

There is not enough evidence to confirm our first hypothesis. Supplier Involvement in NPD as well in Quality did not present a statistically significant result for Trust-based relationship. This means that supplier involvement with buyer’s processes is not related to a trust relationship between buyer and supplier. This result may be explained by power asymmetry in the supply chain. We may conjecture that a supplier may be pressured by a buyer with high bargain power to participate in processes related to NPD and quality improvement. This is also supported by Humphrey and Schmitz (2002) when a relationship involves different companies’ size or the supplier involvement is stated in a contract. Even that is possible to achieve satisfactory results for both – supplier and buyer. Nevertheless, this type of activities is not enough for the existence of a trust based relationship. Eventually, this involvement and frequency of transactions may evolve to a more trust based relationship (as a cycle), but our findings does not measure this dynamicity. In this case, other aspects related to, for example, low level of uncertainty is more important than only the involvement in this type of activities. Another explanation may be the fact that these processes are formally established in contract between a buyer and its suppliers. For example, a buyer may have a formal program for supplier participation in new product development or quality. Such formal program may be based on a contract that protects both parties during the involvement of suppliers in buyer’s processes. In this case, contracts may serve as basis for the relationship rather than trust serve as basis.
On the other hand, Hypothesis 2 was confirmed. Supplier Partnership is positively related to trust as expected. This result is supported by the literature (Croom, 2001; Zsidijn & Ellram, 2001). Aspects such as sharing problems with our suppliers, searching for more effective solutions with suppliers, belief that cooperating with our suppliers is beneficial and openness of communications with suppliers seem that are clearly in the basis of a trust based relationship. Then, trust is an output of a supply chain partnership, being characterized by rationality aiming for a win-win situation (Morrow et al., 2004).

Hypothesis 3 also was confirmed. The results show that working with short lead times is easier for buyers to interact with suppliers. Thus, suppliers are able to respond quickly to possible changes in the demand, and certainly uncertainty is lower than when the opposite occurs. Supply Timeliness, is positively related to Trust. This is also aligned to the transaction cost theory that says that uncertainty on timeliness affects negatively trust and consequently long term relationships. At the same time, short lead time is one of the key aspects in the lean production system that is culturally linked to Asian countries.

Table 4
Regression analysis results

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.255</td>
<td>.589</td>
<td>2.128</td>
<td>.034</td>
</tr>
<tr>
<td>Supplier Involv. NDP</td>
<td>.023</td>
<td>.025</td>
<td>.043</td>
<td>.900</td>
</tr>
<tr>
<td>Supplier Involv. Quality</td>
<td>.100</td>
<td>.073</td>
<td>.100</td>
<td>1.362</td>
</tr>
<tr>
<td>Supplier Partnership</td>
<td>.289</td>
<td>.086</td>
<td>.360</td>
<td>7.223</td>
</tr>
<tr>
<td>Supply Timeliness</td>
<td>.336</td>
<td>.046</td>
<td>.360</td>
<td>7.223</td>
</tr>
<tr>
<td>Region (dummy)</td>
<td>.159</td>
<td>.059</td>
<td>.127</td>
<td>2.681</td>
</tr>
</tbody>
</table>

Dependent variable Trust-based relationship
R² = .358

Finally, we may state that regional context may influence the kind of relationship among suppliers and buyers according to the results found. Table IV shows that for Asian companies the influence of Supplier Partnership and Supply Timeliness has higher levels when compared to the Western companies in the sample. This result is partially supported by evidence found in previous studies about differences in Eastern and Western countries. Our results extend these previous findings by providing evidence that suggests that trust-based relationship in supply chain is related to the regional context where the buyer and supplier are located. These results are aligned to the institutional trust characteristic of Asian countries (Sako, 1992). Our sample also expands the discussion on cross cultural studies and trust based relationships initiated by Dyer and Chu (2000; 2003; 2011). In this sense, Western and Asian companies develop supply chain partnerships in different ways in order to manage their suppliers.

6. CONCLUSIONS

The first finding related to this study is related to the difference between involvement and partnership. As the first hypothesis was not confirmed we may conjecture that companies may participate in improvement or new product development processes with their customers but this is not a previous condition for the existence of trust or partnership between them supplier and buyer. A possible explanation for that is a buyer with high levels of power in a first moment may force their suppliers to participate in such processes but a partnership or trust-
based relationship requires other aspects such as long term view or low levels of uncertainty. As speculated before, buyers can also use contract mechanisms to have suppliers involved in new product development and quality programs.

The mere information flow cannot be considered a condition for trust as it can be just a transfer of technical standards. Besides, the size of the companies involved in the supply chain relationship, the country of origin (developed or developing country), the asset specificity involved in the business transaction and the use of contracts are among factors that can influence the supplier involvement. The second and third hypotheses were confirmed as expected. Literature on supply chain has shown that partnership and low uncertainty are related to trust. Both aspects are able to diminish opportunistic behavior within the transaction costs approach. This is considered a rational understanding of trust, where the two agents (buyer and supplier) perceive the relationship advantageous for both sides. Our study corroborates with this perspective by showing evidence suggesting that partnership and timeliness are related to trust-based relationship.

The regional aspects are presented in the aspects analyzed. Thus, the fourth hypothesis was confirmed. We may state that these two aspects (partnership and timeliness) are more present in companies located in Asian countries than in companies located in Western countries. Probably the lean “philosophy” is a powerful explanation in the case of Japanese companies. Also, supply chains configuration such as the Japanese Keiretsus or the Korean Chaebols may create trust between the partners (Narasimhan & Kim, 2002). For the Chinese companies, Guanxi that ranges contract regarding favors, obligations and preferential treatment is a possible cause of trust-based relationships (Lee & Dawes, 2005). Western companies may take use of contracts and other safeguards to develop supply chain relationships but they do not evolve to trust based relationships.

This study contributes to strategic purchasing managers from Western and Asian countries. Although literature on SCM points out partnership and quasi-integration strategies as the most successful to achieve better performance, our study suggests that there are distinguished aspects to consider depending where the processing plant is located. These will certainly influence the supply chain management.

As limitations of this study we may cite characteristic of firms in our sample, which is based in only three industries and impedes generalization for firm in other industries. As another limitation of this study we may cite the two groups of countries also involve distinguished cultural and institutional aspects. The increasingly internationalization of supply chain may also affect the current business practices. Another limitation in our sample is the focus on manufacturing firms, leaving services firms out the study. Other limitation is the level of analysis that focuses on trust-based relationship between organizations but do not take into account the trust-based relationship between managers and employees of these organizations, since it is these managers and employees who really act in terms of trusting in one another.

As suggestions for future studies, we encourage scholars to investigated trust-based relationship between buyer and suppliers in other industries, so we can get enough evidence to have more robust conclusions about this issue. We also encourage scholars to develop studies about trust in service supply chain, which has special characteristics that may lead to new insights about this topic. For example, how trust can help suppliers to be engaged in new service development activities of buyers? We also suggest scholars to conducted studies with a multilevel analysis perspective, considering managers and employees nested within
organizations. This approach may render additional insights about the effects of organizations on the trust developed between buyers’ and suppliers’ managers. For example, are there some organizations (e.g. buyers) with characteristics that lead manager and employees to trust more or less on their counterparts from other organizations (e.g. suppliers)? As other suggestions for future studies it can also be measured the frequency of business transaction and the asset specificity and how they influence on the different levels of trust. As well, we suggest the measure of the levels of trust on supply chain performance. Longitudinal studies can also contribute to verify if there is standardization occurring on business transaction according to the industry.

APPENDIX

Table I - Standardized Regression Weights

<table>
<thead>
<tr>
<th>Items</th>
<th>Scale</th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>nssin01</td>
<td>Supplier Involv. NDP</td>
<td>.812</td>
</tr>
<tr>
<td>nssin03</td>
<td>Supplier Involv. NDP</td>
<td>.643</td>
</tr>
<tr>
<td>nssin02</td>
<td>Supplier Involv. NDP</td>
<td>.774</td>
</tr>
<tr>
<td>nssin05</td>
<td>Supplier Involv. NDP</td>
<td>.643</td>
</tr>
<tr>
<td>qsspn02</td>
<td>Supplier Involv. Quality</td>
<td>.646</td>
</tr>
<tr>
<td>qsspn05</td>
<td>Supplier Involv. Quality</td>
<td>.637</td>
</tr>
<tr>
<td>qsspn06</td>
<td>Supplier Involv. Quality</td>
<td>.809</td>
</tr>
<tr>
<td>qssun01</td>
<td>Supplier Partnership</td>
<td>.723</td>
</tr>
<tr>
<td>qssun03</td>
<td>Supplier Partnership</td>
<td>.746</td>
</tr>
<tr>
<td>qssun06</td>
<td>Supplier Partnership</td>
<td>.769</td>
</tr>
<tr>
<td>qssun07</td>
<td>Supplier Partnership</td>
<td>.690</td>
</tr>
<tr>
<td>pstrn01</td>
<td>Trust-based Relationship</td>
<td>.754</td>
</tr>
<tr>
<td>pstrn02</td>
<td>Trust-based Relationship</td>
<td>.550</td>
</tr>
<tr>
<td>pstrn04</td>
<td>Trust-based Relationship</td>
<td>.705</td>
</tr>
<tr>
<td>psltn04</td>
<td>Supplier Lead Time</td>
<td>.652</td>
</tr>
<tr>
<td>psltn01</td>
<td>Supplier Lead Time</td>
<td>.740</td>
</tr>
</tbody>
</table>

Questions:
nssin01 - Suppliers were involved early in the design efforts, in this project.
nssin02 - We partnered with suppliers for the design of this product.
nssin03 - Suppliers were frequently consulted about the design of this product.
nssin05 - Suppliers were an integral part of the design effort.
qsspn02 - Our suppliers are actively involved in our new product development processes.
qsspn05 - We maintain close communication with suppliers about quality considerations and design changes.
qsspn06 - We actively engage suppliers in our efforts to improve quality.
qssun01 - We maintain cooperative relationships with our suppliers.
qssun03 - We help our suppliers to improve their quality.
qssun06 - We maintain communication with our suppliers about quality considerations and design changes.
qssun07 - Our key suppliers provide input into our product development projects.
pstrn01 - We are comfortable sharing problems with our suppliers.
pstrn02 - In dealing with our suppliers, we are willing to change assumptions, in order to find more effective solutions.
pstrn04 - We emphasize openness of communications in collaborating with our suppliers.
pslt0n1 - We seek short lead times in the design of our supply chains.
pslt0n4 - Our company strives to shorten supplier lead time, in order to avoid inventory and stockouts.

References


