

# **How Transaction Cost Variables and Social Exchange Variables Affect Trust In Supply Chain Relationship (Draft)**

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## **ABSTRACT**

This article is based on the assumption that trust, as a critical factor, promotes the commitment between partners in the supply chain and improves the chances of return on supply chain success. In contrast, a lack of trust between them often increases transaction costs and implies inefficiency. The results of this research, based on a series of comprehensive studies conducted among supply chain practitioners shows how transaction cost variables (replaceability, asset specificity, behavioral uncertainty) and social exchange variables (perceived satisfaction, partner reputation, perceived conflict) affect trust-commitment variables in partnership based supply chain relationships. The authors conducted surveys in 5 countries (France, Hungary, Tunisia, USA and Korea) and applied statistical methods as well as a structural equation model to find out the results. Among the findings, the research indicates that a firm's trust in their supply chain partner is highly associated with both sides' specific asset investments and behavioral uncertainty.

**Keywords:** Trust, Performance, Partnerships, Supply Chain, Transaction Cost, Social exchange.

## **I. Introduction**

The efficiency and effectiveness of our society and organization are depends on the presence of trust. As companies are growing in size, they are focusing on management with core business, and eliminating inefficient or secondary businesses. Horizontal hierarchies are accelerating to make alliances with suppliers that have capabilities to more easily innovate their product and service. In this regard, functionally specialized organizations share commitment and norms based on trust. Finding a strategic supplier based on trust is critical to business success, and its key metric is not only cost savings, but also increased shareholder value. In order to build a sustainable partnership, according to Vlachos and Bourlakis (2006), it is important to distribute duties, profits and performances evenly to all participating parties. For a better performance of supply chain, it is necessary to build trust within the supply chain and integrate supply networks for collaborations.

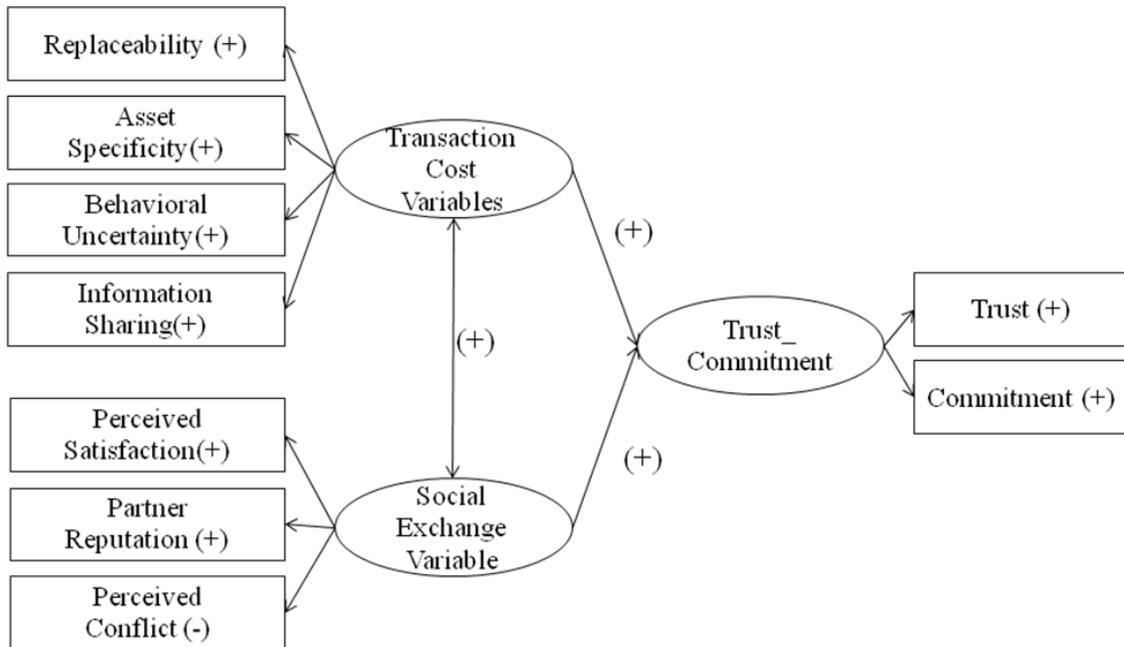
Supply chain integration is considered as a strategic tool, which attempts to minimize the operating costs and thereby enhancing values for the customers and shareholders by linking all participating players throughout the systems from suppliers to suppliers to the customers' customer (Kwon and Suh, 2005). Information sharing, specific asset investment, and partner's reputation significantly affects trust in partner positively. Behavioral uncertainty and perceived conflict influence trust negatively (Kwon and Suh, 2004; Kwon and Suh, 2005; Hong and Kwon, 2009;---). The relationship between suppliers and customers tends to incur conflicts and have the latter demand lower prices from the former. It would be very difficult to maintain sustainable growth in global competition with such local optimization (or sequential optimization). The transaction cost theory is trying to minimize total cost between economic agents. Partnership between economic agents does not represent the optimal general form of coordination for value-creating networks.

The partnership has to base on trustful relationship to minimize . In this regard, this study was conducted to analyze the factors that influence trust within a supply chain for the long-term and the constructive sustainability of partnerships. For this purpose, it was examined how trust builds sustainable supply chains beyond long-term collaboration and partnership and how various factors of trust interrelate to one another. This study consists of research model and hypotheses (chapter 2), method and measures (chapter 3), the findings (chapter 4), the discussion and conclusion (chapter 5).

## **II. Research Model and Hypothesis**

In this research, the relationship transactional cost variables, social exchange variables and trust-commitment are shown Figure 1. The origin conceptual model (Figure 1) based on literature review. Figure 1 presents a theoretical roadmap under supply chain operations that operationalises the link between the level of trust and social exchange variables / transactional cost variables. Transactional cost variable consists of replaceability, asset specificity, behavioral uncertainty, and information sharing. The variables focus very clearly on the importance of relationship-specific between suppliers and customers. Social exchange variable are perceived factors including satisfaction, reputation, and conflict. This research goes further than previous research with external environment (Morgan and Hunt, 1994; Kwon and Suh, 2006;...).

Several previous researches confirm that asset behavioral uncertainty, information sharing, perceived satisfaction, partner reputation in the market and perceived conflict directly (-) and significantly affect trust partnership positively or negatively. Literature seems to suggest that the level of trust among and between the business partners indeed tends to lower the transaction cost (Dyer and Chu, 2003). If the amount of transaction cost is reduced due to information sharing (reduce search cost) and the level of trust (reduce ex post cost), it is a reasonable assumption to argue that the total supply chain cost will also be reduced.



**Figure 1 Conceptual Model**

**Information Sharing:** Information sharing has been singled out as the most important factor for a successful supply chain alliance (Handfield, 2002; Kwon and Suh, 2005). Information sharing and sharing the rewards and risks are considered as two major supply chain principles that move supply chain optimization process. It has been suggested recently that supply chain partners not only share information on simple operational and tactical financial data, but also they exchange even critical strategic information such as forecasting, strategic goals, new product designs., etc to maximize the potentials from the supply chain alliance (Henderson, 2002). If partners share vital information, transaction becomes easier, efficient and effective. Accordingly, it is a reasonable to hypothesize that information sharing improves opportunity to build trust which in turn reduces transaction cost.

**Type of Asset Investment:** Asset specificity refers to investments in physical or human assets that are dedicated to a particular business partner and whose redeployment entails considerable switching costs (Erramilli and Rao 1993; Heide 1994). Williamson (1985) defines asset specificity as “durable investments that are undertaken in support of particular transactions, and the opportunity cost of (such) investment is much lower in best alternative uses” (p. 55). This definition depicts a variety of relationship-specific investments, including both specialized

physical and human capital, along with intangibles such as R&D and firm-specific knowledge (Shelanski and Klein 1995).

When all the partners mutually commit specific asset investment, the interdependence between them is subsequently boosted, resulting in a more solid and interdependent relationship. Williamson (2008) was more specific of this argument; “because transaction-specific assets can be redeployed to alternative uses and users only at a loss of productive value, continuity preserving governance for such transactions is important.” (p. 8). On the other hand, the asymmetrical specific asset investment among partners was found to be positively related to conflict among the partners (Suh, Xie and Kwon, 2005). Therefore, the direction of relationship between asset investment and the level of trust depends on whether partners engage in symmetrical (positive relationship) or asymmetrical asset investment (inverse relationship).

**Partner’s Behavioral Uncertainty:** Behavioral uncertainty is defined as “the inability to predict partner behavior or changes in the external environment (Joshi and Stump, 1999, p.293). Behavioral uncertainty arises from the difficulties associated with monitoring the performance of transaction partners (Williamson, 1981). Therefore, behavioral uncertainty causes whether contractual compliance is in place, and subsequently increases the transaction costs.

Based on the social exchange theory in the relationship building process (Morgan and Hunt, 1994), this study stipulates that the following three additional constructs are assumed to have influence in assessing the level of trust among supply chain partners. Perceived Satisfaction (SAT) is assumed that the level of trust will be enhanced if there is an understanding that partnerships produce mutually satisfactory outcomes that they can share (Batt 2003). If a supply chain partner enjoys a high and credible reputation in a market, it would be construed that the partner is trustworthy in making relationships (Partner’s Reputation, PR). If a partner is perceived as having conflict in dealing with the business, it is possible that the trust building process may suffer from such perceived appearance (Perceived Personal Conflict, PPC).

**Trust and commitment:** Morgan and Hunt (1994) argue that competitive enterprises should secure competitive partners, and that trust and commitment to each other as most important factors in order to do so. They pointed out that trust and commitment help people maintain long-term relationships and have faith in their partners even on potentially highly risky activities. The trust and commitment can be established through (1) sharing resources, opportunity and benefits, (2) maintaining the organization's value and sharing it with partners, (3) sharing important information about market, outcome and expectation, and (4) not harming others. Kwon and Suh (2004) addressed trust and commitment separately. The trust is the critical component to improve the outcome of distribution network between partners. With lack of trust between them, there will be more cost for communication such as confirmation of goods and negotiating for trades, resulting inefficient interaction. Kwon and Suh (2006) show a positive relationship between the level of trust and the degree of commitment. So this study combines two variables to one latent variable as "Trust\_commitment."

This research used the social exchange theory and the trade cost theory suggested by Morgan and Hunt (1994) and Joshi and Stump (1999) to investigate the factors influencing the degree of trust. In the study, communication to clarify uncertain behavior is the biggest factor affecting the cost analysis. According to Coase (1994), the costs of coordination within a firm and

the level of transaction costs that it faces are affected by its ability to purchase inputs from other firms, and their ability to supply these inputs depends in part on their costs of coordination and the level of transaction costs that they face, which are similarly affected by what these are in still other firms. What we are dealing with is a complex interrelated structure.

**Other Attributes:** There are many other attributes and factors that may be linked to variation of the level of trust which in turn may change the transaction cost.

Accordingly, we propose the following hypotheses:

H1: There is a positive relationship between transaction cost variables (asset specificity (+), behavioral uncertainty (+) and information sharing (+)) and the level of trust-commitment in partners.

H2: There is a positive relationship between social exchange variables (perceived satisfaction (+), partner reputation (+) and perceived conflict (-)) and the level of trust-commitment in partners.

H3: There is a positive relationship between the Transaction Cost Variables (TCV) and the Social Exchange Variable (SEV).

H4: There is a positive relationship between replaceability and the level of trust.

H5: There is a positive relationship between replaceability and the level of commitment.

H6: There is a positive relationship between transaction cost variable and the level of trust.

### III. Method and measures

854 returns were received out of approximately ----- distributed, resulting in a ---% return rate. Of the 854 returns, 62 returns were deleted due to incomplete information. 792 usable returns were received for analysis including 50 from France, 315 Hungary, 75 Korea, 196 Tunisia, and 156 United States.

**Table 1 Descriptive statistics of sampled supply chain relationships**

	Unit	Sample size	Min	Max	Mean	Std. Dev.	CV (%)
Year of partnership	Year	753	0	99	7.3	6.4	87.4
Annual "man-day"	Day	746	0	3,000	138.2	219.5	158.8
Renewal	%	445	0	100	31.2	39.6	126.9
Stock ownership	%	219	0	100	35.6	30.8	86.5
Annual Sales	US\$ Mil.	359	9.2	300,000	3,238.7	16,883.2	521.3
Length of practiced SCM	Year	436	0	50	6.4	6.7	105.5

Table 1 provides selected descriptive statistics of the sampled supply chain partnerships. The descriptive statistics of the return indicate a wide range of variation as coefficient of variation (CV). The CVs are mostly over 100 % except year of business and stock ownership. There are many extreme and missing values for descriptive statistics because the survey is done by five

different countries and continents. Table 2 shows descriptive statistics excluding extreme value. The average "year of partnership" is about 7.2 years and 95% confidence interval of data is within 6.5 and 8.9 years. The average "man-days" each partner spends face-to-face is about 213.8 "man-days" per year and 95% confidence interval of data is within 189.9 and 235.3 "man-days" per year. Only 10.4% of their business has been renewed with 95% confidence interval of data is within 9.1 and 19.4%. It appears that not many supply chain partners renew their contract compare to the case of USA (74.2 with standard deviation 39.5; Suh and Kwon, 2006). The partner ownerships are around 20% and 95% confidence interval of data is within 16.7 and 27.8%. Annual sales of firm show about 677 million dollars and 95% confidence interval of data is within 585 and 1,127 million dollars. Finally, length of practiced supply chain management is 3.8 years and 95% confidence interval of data is within 3.4 and 6.1 years. From table 1 and 2, mean and 5% trimmed mean are so different because of sporadic dispersion of data. It signifies many industries and counties are in different stages of supply chain implementations and challenges are ahead.

**Table 2 Descriptive statistics of sampled supply chain relationships excluded extreme value**

	Unit	Sample size	Mean	5% Trimmed mean	95% confidence interval	
					Min.	Max.
Year of partnership	Year	753	7.3	7.2	6.5	8.9
Annual "man-day"	Day	746	138.2	213.8	189.9	235.3
Renewal	%	445	31.2	10.4	9.1	19.4
Stock ownership	%	219	35.6	19.9	16.7	27.8
Annual Sales	US\$ Million	359	3,238.7	676.8	584.9	1,126.9
Length of practiced SCM	Year	436	6.4	3.8	3.4	6.1

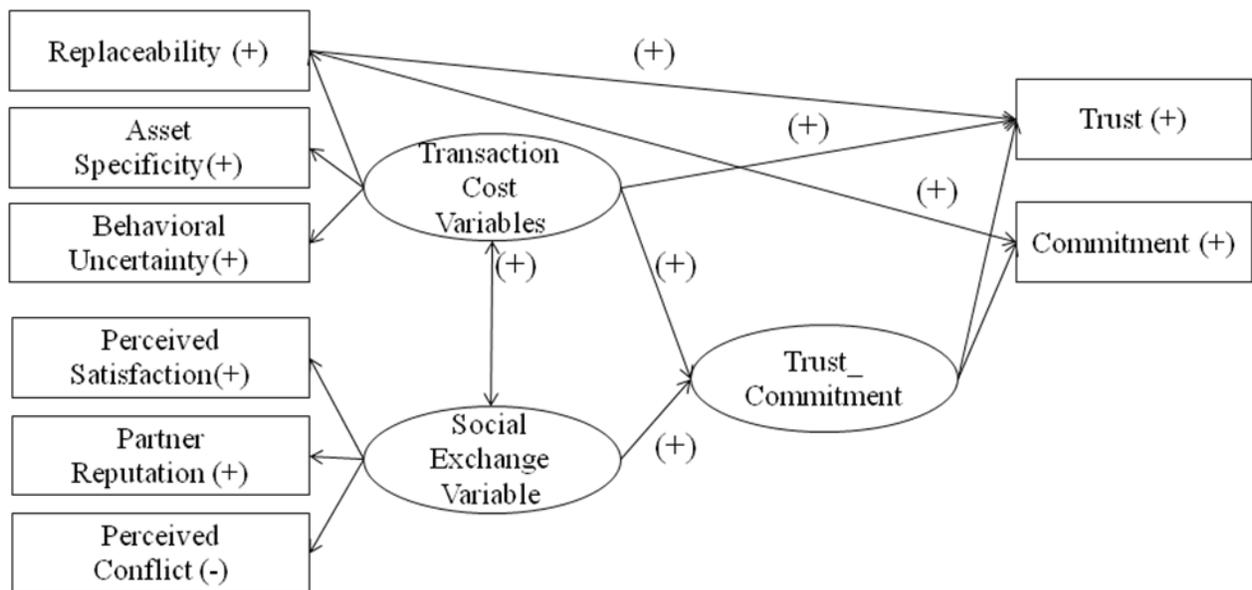
#### IV. Findings

The reliability estimates of each measure variables are as Table 3. If the reliability is more than 0.60, we consider that the reliability is high enough. We try to analyze second reliability with one item deleted for four constructs (Rep, Will, SAT, PR) less than 0.60 among eleven except BU and IS contain only two items. From two times analyses, we exclude IS and Will and include BU with significance level of ANOVA even the reliability is slightly less than 0.60.

The causal structure of the proposed research model is tested using the technique of structural equation modeling (SEM). The structural model, which includes hypotheses and the paths between the item and its latent construct, is examined on the cleansed measurement model. The model is within acceptable threshold,  $\chi^2 = 12.446$ ?  $\chi^2$  to degrees of freedom ration 2.074 and significance level 0.053. So, the model (Figure 2) is statistically significance to analysis using structural equation model. The Root Mean-square error of approximation (RMSEA) is within acceptable (0.037). The Normed Fit Index (NFI) as a relative fit measures is also within acceptable(0.995).

**Table 3 Composit construct reliability (Cronbach's alpha)**

Construct	Reliability when all items are included		Reliability when some of the items are deleted	
	Reliability	Sig. ANOVA	Reliability	Sig. ANOVA
Partners' asset specificity (PAS)	0.754	0.000	-	-
Respondents' asset specificity (RAS)	0.780	0.000	-	-
Replaceability (Rep)	0.512	0.000	0.631	0.000
Trust	0.850	0.000	-	-
Commitment (Comm)	0.807	0.000	-	-
Willingness to continuous with partner (Will)	0.278	0.000	0.328 (d)	0.000
Perceived satisfaction (SAT)	-0.186	0.000	0.729	0.000
Behavioral uncertainty (BU)	0.551	0.185	-	-
Information sharing (IS)	0.212	0.000	deleted	-
Perceived conflict (PRC)	0.643	0.000	-	-
Partner reputation (PR)	-0.047	0.000	0.696	0.000



**Figure 2 Conceptual model after reliability analysis**

H1 is supported. TCV have a significant and positive impact on the level of trust (p=0.000). Asset specificity, behavioral uncertainty and information sharing have a significant as a group variable of TCV with positive impact. Among the variables, behavioral uncertainty highly impact on transaction cost followed by asset specificity.

H2 is supported. SEV have a significant and positive impact on the level of trust (p=0.000). Perceived satisfaction, partner reputation and perceived conflict have a significant as a group variable of SEV with positive or negative impact. The perceived conflict affect negatively.

H3 is not supported. The relationship between TCV and SEV have not a significant (p=0.096).

H4 and H5 are supported. The replaceability have a significant and positive impact on the level of trust (p=0.032) and on the commitment in the market (p=0.016).

H6 is supported. TCV have a significant and positive impact on the level of trust (p=0.000).

Hypotheses				Standardized Estimate	S.E.	C.R.	P
H1	Trust_Comm	< ---	TCV	1.230	0.298	3.808	0.000**
H11	Rep	< ---	TCV	0.223	0.080	4.962	0.000**
H12	AS	< ---	TCV	0.642	0.510	4.962	0.000**
H13	BU	< ---	TCV	0.730	0.087	14.608	0.000**
H2	Trust_Comm	< ---	SEV	1.528	0.193	5.196	0.000**
H21	SAT	< ---	SEV	0.805	0.040	24.399	0.000**
H22	PR	< ---	SEV	0.808	0.042	24.399	0.000**
H23	PPC	< ---	SEV	-0.414	0.050	-11.339	0.000**
H3	TCV	< --- >	SEV	-0.081	0.048	-1.665	0.096
H4	Trust	< ---	Rep	0.068	0.025	2.151	0.032*
H5	COMM	< ---	Rep	0.081	0.032	2.420	0.016*
H6	Trust	< ---	TCV	0.199	0.047	5.910	0.000**
	Trust	< ---	Trust_Comm	0.663	0.043	18.861	0.000**
	COMM	< ---	Trust_Comm	0.665	0.065	18.861	0.000**

\*\* p<0.001, \* p<0.05

## VI. Discussions and conclusions

According to Morgan and Hunt (1994), commitment and trust are key variables that mediate successful relationship marketing. Kwon and Suh (2006) show positive and significant relationship between commitment and trust in supply chain. This study appears to confirm the relationship, and furthermore, using two variables constructs structural model to know relationship among transaction cost variables, social exchange variables and trust-commitment. The findings of this paper appear to demonstrate some unique managerial and theoretical insights into the management of supply chain relationships. Mutual advantageousness is a precondition for sustainability, which, in turn, is a condition for the long-term survival of partnership-based coordination forms in the real world (Rese, 2006).

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