

## **Theory Review: Factors Affecting the Level of Trust and Commitment in the Supply Chains of High-tech Companies**

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### **Abstract**

#### **Purpose**

This paper reviews the literature that came about as a result of the commitment-trust theory developed by *Morgan and Hunt (1994)*. Several authors used various contextual variables/ antecedents to develop new models/ conceptual frameworks to this theory. This paper analyses the literature, includes a new antecedent that was previously neglected, and develops a more comprehensive conceptual framework that better fits the commitment-trust theory by *Morgan and Hunt (1994)*.

#### **Design/ Methodology/ Approach**

This study is based on a theory-theory-research approach – hypothesizing, surveying, and testing the level of impact of antecedents on trust and commitment in supply chain relationships.

#### **Findings**

This review paper develops a new theory that shows the potential relationship between shared values, asset specificity, communication, national culture, opportunistic behavior, contracts, and success with trust and commitment in supply chain relationships. Further research is recommended to validate this theory.

#### **Originality/Value**

The study includes the ‘national culture’ variable, which is absent in existing literature, and shows the impact it could have on trust, communication, and by extension, commitment in the supply chain of high-tech companies.

**Keywords:** Commitment-trust theory, trust and commitment in supply chain, supply chain relationships, high-tech companies, antecedents, contextual variables, hypotheses, conceptual framework.

#### **Introduction:**

This study is based on a theory-theory-research/ practice approach, building on the works of *Kwon & Suh (2004)*, *Wu et al. (2012)* and *Handfield & Bechtel (2002)*. All three papers were

based on the commitment-trust theory developed by *Morgan and Hunt (1994)* – hypothesizing, surveying, and testing the relationships and level of impact of contextual variables/ antecedents, on trust and commitment in supply chain relationships. Many studies have emphasized the perks of trust and commitment across supply chains. *Morgan and Hunt (1994)* argued that “when both commitment and trust - not just one or the other, are present, they produce outcomes that promote efficiency, productivity and effectiveness”. This knowledge has made numerous supply chains across various industries to engage in co-operative relationships with their partners. This paper focuses on trust and commitment in the supply chain of high-tech companies. *Wu et al. (2012)* defined high tech companies as “capital and technology intensive firms that place a strong emphasis on professional knowledge, research and development, and employee training and operate in an environment with short product life cycles and intense market competitions”. Because of the intense competition and complex nature of high-tech industries, business-to-business relationships tend to be very volatile. It is, therefore, very important to understand the intricacies of building and maintaining long-term co-operative relationships between firms and their suppliers in such complex markets.

### **Literature Review:**

There is a general consensus among supply chain authors that there exists a significant and positive relationship between ‘trust’ and ‘commitment’. *de Ruyter et al. (2001)* specifically affirmed this for the high-tech industry. Since *Morgan & Hunt (1994)* pioneered the commitment-trust model, several academics have researched on the model, changing the variables and antecedents to develop new theories.

*Kwon & Suh (2004)* developed a conceptual model that showed the relationship between various constructs and trust, and then trust and commitment. The constructs comprise of transaction cost variables namely asset specificity, behavioral uncertainty, and information sharing; and social exchange variables comprising of perceived satisfaction, partner’s reputation, and perceived conflict. Two forms of asset specificity were considered – the respondent firm’s specific asset investment and the partners’ specific asset investment. The results show that all the constructs have a positive relationship with trust, except for behavioral uncertainty, perceived conflict, and the respondent firm’s asset specificity. However, the two constructs that profoundly affect the level of trust are the partner’s reputation (positively) and the respondent’s unpredictable behavior (negatively).

*Wu et al. (2012)* adopted the practice-research-theory approach. Based on *Morgan & Hunt’s (1994)* “relationship commitment and trust theory”, they conducted a survey study on the supply chain partnerships in Taiwan’s high-tech industries. The crux of my idea for a new theory came from this paper (this will, however, be discussed in the next section). The antecedent variables for *Wu et al.’s (2012)* research are - relationship benefits, termination costs, shared values, communication, and opportunistic behavior. The mediating variables are trust and commitment while the outcome variables are - propensity to leave, functional conflict, co-operation, acquiescence, and uncertainty. They proposed a conceptual framework hypothesizing relationships between three antecedent variables and trust, three antecedent variables and

commitment, three outcome variables and commitment, three outcome variables and trust as well as between the two mediating variables - trust and commitment. A total of thirteen hypotheses were proposed. The analysis results show that there isn't a significant positive relationship between "shared values" and "relationship commitment", neither was there a significant negative relationship between "trust" and "opportunistic behaviour" as hypothesized. All other assumptions were supported by the results.

Another interesting and relevant paper was that by *Handfield & Bechtel (2002)*. The paper narrated the history of how vertical integration was used in the early 20<sup>th</sup> century to deal with supply uncertainty. It was not until after the second world war, that the Japanese pioneered the first form of 'long-term' inter-organizational relationships through an integration scheme known as '*keiretsu*'. The reduced cycle-times achieved by this initiative, coupled with shocks to the global economy – like globalization, the advent of World Wide Web, e-commerce and the increasing need for customer responsiveness, prompted their American counterparts to follow suit, by researching alternative means of relational governance.

Though the desired outcome studied in their model was not "commitment", but "supply chain responsiveness", they included an important factor – "contracts", which is mostly absent in other studies. I adopted and utilized this very important factor in my own theory development (which will be shown in the next section). The authors defined 'responsiveness' as "the supplier's ability to quickly respond to the buying party's needs". The study included a small set of variables, prioritizing and selecting only those that will have a great impact on supply chain responsiveness. They are buyer dependence, site specific assets, human specific assets, contracts, and trust. The model suggests that specific asset investment by the supplier, the extent to which the buying firm employs contracts and buyer dependence or power asymmetry level, all contribute to the level of trust the buyer has on the supplier. It also posits that 'human asset specificity', 'dependence on supplier' and 'level of trust' have a link with supplier responsiveness. The model was tested using data that was gathered through questionnaires addressed to 97 North American manufacturing companies.

*Handfield & Bechtel (2002)* tested their hypotheses using a structural equations model. A total of nine hypotheses were made regarding the relationships between the adopted variables. The results show that signed contracts do not really increase the buyer's perceived level of trust (note that the case study used is not that of high-tech companies), buyer-dependence on supplier does not negatively impact trust, investing in human specific assets will not increase buyer's trust in their suppliers, and investing more in human specific assets will not increase supplier responsiveness. Albeit these four, the remaining five hypotheses were supported by the results. The tables below show the hypotheses made in the models of *Kwon & Suh (2004)*, *Wu et al. (2012)* and *Handfield & Bechtel (2002)* and the validity of their hypothesis after evaluation:

Table 1: Hypotheses by Kwon & Suh (2004)

S/N	HYPOTHESIS	OUTCOME
1.	The respondent firm's specific asset investments (RAS) will be negatively associated with the level of trust in the supply chain partner.	Supported
2.	The supply chain partners' specific asset investments (PAS) will increase the level of trust in the partners.	Supported
3.	Behavioral uncertainty perceived in relationships with supply chain partners will decrease the level of trust in other partners.	Supported
4.	Information sharing will lower the degree of behavioral uncertainty and indirectly will improve the level of trust among supply chain partners.	Supported
5a.	The level of perceived satisfaction with his/her counterpart in the supply chain will directly improve the level of trust with his/her trading partners.	Supported
5b.	There is a positive relationship between a partner's reputation in the market and the level of trust in partners.	Supported
5c.	Perceived conflict with his/her trading partners attenuates the level of trust among trading partners.	Supported
6.	There is a positive relationship between the level of trust and the degree of commitment.	Supported

Table 2: Hypotheses by Wu et al. (2012)

S/N	HYPOTHESIS	OUTCOME
1.	There is a significant positive relationship between "relationship termination costs" and "relationship commitment"	Supported
2.	There is a significant positive relationship between "relationship benefits" and "relationship commitment".	Supported
3.	There is a significant positive relationship between "shared values" and "relationship commitment".	Not supported
4.	There is a significant positive relationship between "shared values" and "trust".	Supported
5.	There is a significant positive relationship between "communication" and "trust".	Supported
6.	There is a significant negative relationship between "opportunistic behaviour" and "trust".	Not supported
7.	There is a significant positive relationship between "trust" and "relationship commitment".	Supported
8.	There is a significant positive relationship between "relationship commitment" and "acquiescence".	Supported
9.	There is a significant negative relationship between "relationship commitment" and "propensity to leave".	Supported
10.	There is a significant positive relationship between "relationship commitment" and "co-operation".	Supported
11.	There is a significant positive relationship between "trust" and "co-operation".	Supported
12.	There is a significant positive relationship between "trust" and "functional conflict".	Supported
13.	There is a significant negative relationship between "trust" and "uncertainty".	Supported

Table 3: Hypotheses by Handfield & Bechtel (2002)

S/N	HYPOTHESIS	OUTCOME
1.	Suppliers investing in greater perceived site-specific assets are more likely to invest in greater levels of perceived human-specific assets.	Supported
2.	The presence of detailed signed contracts will increase the buyer's perceived level of trust in the supplier.	Not supported
3.	Increased levels of perceived buyer-dependence on the supplier has a negative impact on buyer trust.	Not supported
4.	When perceived buyer-dependence is high, the use of formal contracts by buyers will increase.	Supported
5.	Suppliers investing in greater levels of site-specific assets will increase the buyer's trust in them.	Supported
6.	Suppliers investing in greater levels of human-specific assets will increase the buyer's trust in them.	Not supported
7.	Increased perceived buyer-dependence is associated with lower levels of supplier responsiveness.	Supported
8.	Suppliers investing in high levels of human-specific assets are associated with higher levels of supplier responsiveness.	Not supported
9.	Higher levels of buyer trust are associated with higher levels of supplier responsiveness.	Supported

**Theory Development:**

After a careful study of the literature on trust and commitment in supply chains, and taking into consideration the characteristics of high-tech companies, such as short product life cycle, high precision and sensitive equipment, complicated production process and high knowledge intensity (*Chu, 2010*), the following variables were considered: shared values, asset specificity, national culture, success, opportunistic behaviour, contracts, communication, trust, and commitment.

Shared values signify mutual beliefs between firms and their suppliers, such as morality, privacy, and security (*Mukherjee & Nath, 2003*). *Morgan & Hunt (1994)* also posited that shared values impact trust and commitment simultaneously. In another instance, they mentioned that exchange parties become more committed in their partnership when they have shared values. *Dwyer et al. (1987)* also pointed out that shared values encourage enhancement of trust and commitment. Accordingly, the following hypotheses are proposed:

*H1:* There is a significant positive relationship between ‘shared values’, and ‘trust’.

*H2:* There is a significant positive relationship between ‘shared values’, and ‘commitment’.

Improved levels of specific asset investment serve to unify the interests of exchange partners, thereby promoting joint action and continuity between parties across the supply chain (*Nishiguchi, 1994*). Furthermore, buying firms are more likely to engage in long-term corporate

relationships with suppliers who show a willingness to invest in specific assets for future transactions (*Monczka et al., 2002*). These asset specificities could be physical, dedicated, human or site assets. Accordingly, the following hypothesis is tested:

*H3*: There is a significant positive relationship between ‘supplier specific asset investment’ and ‘buyer trust’.

National differences tend to have the biggest impact on cultural orientation. Culture can be defined as a system of values and norms shared by a group of people. *Kluckhohn (1962)* described culture as learned behaviour shared by people as a result of belonging to a particular group. *Hofstede (1991)* defined culture as “collective programming of the mind”. A survey done by *Liu (2019)* shows that the most culture sensitive element in supply chain management is trust. Culture has also been demonstrated to affect buyer behaviour across markets in industrial settings (*Selenes et al., 1997*). Therefore, the following hypothesis will be tested:

*H4*: Hi-tech companies operating within (national) cultures that value relationships will succeed more in developing trust-based relationships with their suppliers, than those who operate within cultures that do not give much value to relationships.

*Nes et al., (2007)* hypothesised that “The cultural distance between exporting and importing nations negatively affects the communication between the exporter and its local foreign middleman”. They posited that the greater the diversity between the cultures of trading partners, the harder communication will be. They also cited *Hall (1959)*, who mentioned that national cultures interpret spoken and unspoken languages differently, hence non-fluency in a language may lead to misunderstandings. Thus, the following hypothesis is proposed:

*H5*: The diversity of the national culture of trading partners within a supply chain negatively affects the communication between them.

There has been little, if any, discussions in literature regarding the co-relation between a firm’s success (in terms of profits) and the level of trust it places on its suppliers. Failure naturally breeds dissatisfaction, and this may lead to a blame game between buying firms and their suppliers. This is more probable in volatile sectors like the hi-tech industry, where failure of a single project could lead to bankruptcy. Hence, the following hypothesis will be tested:

*H6*: Firms that are doing well financially are more likely to maintain a relationship based on trust with their suppliers as opposed to those that have suffered a huge loss.

Opportunistic behaviour is the act of satisfying self-interest at the detriment of the other party’s interest. A deceptive act by a party in a transaction may cause distrust, leading to negotiation problems and possible increase in supervision cost. *Parker et al. (1996)* mentioned that trust could be undermined when there is scepticism or speculation between partners. *Lancastres&Lages (2006)* empirically tested the relationship between opportunistic behaviour and trust; and found that the former has a negative and direct impact on the latter. Hence, the following hypothesis is proposed:

*H7:* There exists a significantly negative relationship between ‘opportunistic behaviour’ and ‘trust’.

A contract is a legally binding and enforceable instrument used to govern the rights and duties of two or more parties to an agreement. *Handfield & Bechtel, (2002)* posited that the existence of formal contracts in long-term interorganisational relationships may help assure the buyer that trust in the supplier is justified and vice versa. *Ring & Van de Ven (1994)* conducted a similar study, when they developed an evolutionary model which showed that formal contracts lead to higher levels of trust. This implies that when trust is limited, such contracts are established to enhance legal obligations. Accordingly, the following hypothesis is proposed:

*H8:* The signing of formal legal agreements will increase the buyer’s level of trust in the supplier.

Most manufacturers and distributors acknowledge that past communication positively impacts trust (*Anderson & Narus, 1990*). *MacMillan et al. 2005* buttressed this argument with an empirical study they conducted on non-profit organisations, which clearly showed that communication behaviour positively influenced trust. Based on these literatures, the following hypothesis is proposed:

*H9:* There is a significant positive relationship between “communication” and “trust”

A conceptual framework based on the aforementioned hypotheses is designed, and shown in the figure below:

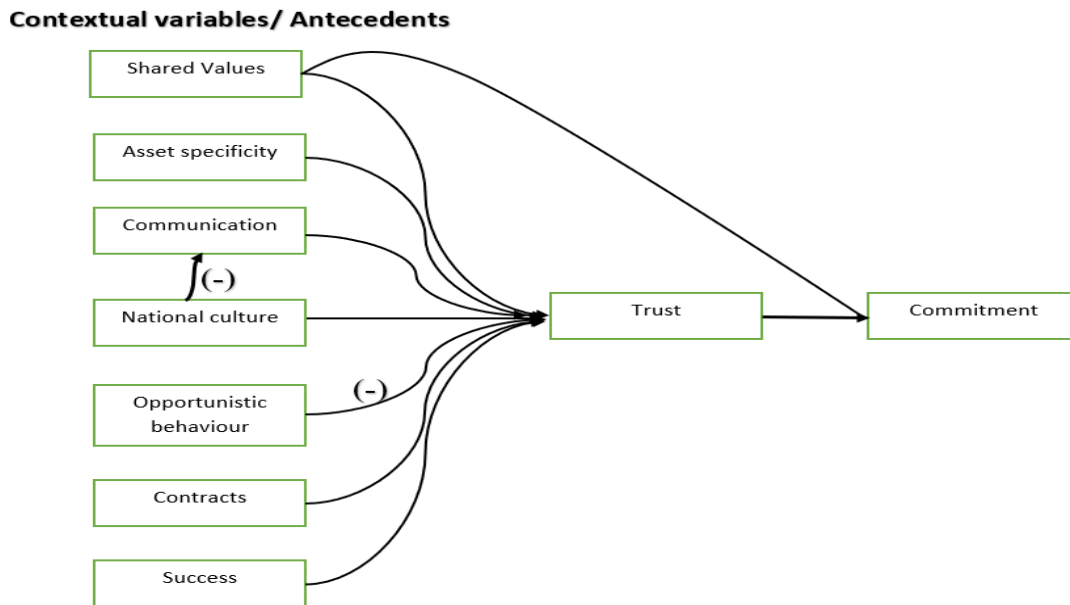


Figure: Conceptual Framework

**Conclusion:**

Building on the works of the aforementioned authors, this paper has successfully proposed a new theory (as captured in the conceptual framework above) for trust and commitment in the supply chain of high-tech companies. The inclusion of the ‘national culture’ variable is peculiar to this paper and will make the research quite interesting in terms of sampling.

It is recommended for the survey, that questionnaires be sent out to a large sample of employees (across different demographics/ cultures) working in the high-tech industry. They should be involved in purchase, marketing, R&D, outsourcing, manufacturing, and quality control. Furthermore, the hypotheses should be tested for validity using a specified structural equations model – the outcome of which will validate the theory or give room for further research.

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