

# **Supply Chain Responsiveness: A Relational Capability Perspective**

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## **Abstract:**

**Developing supply chain responsiveness in a global context mandates presence of several relational attributes. Based on RBV, dynamic capability and commitment-trust theory, the study conceptually explores trust, commitment, communication, co-operation, adaptation and interdependence as relational resources in developing supply chain responsiveness and suggests several suitable outcomes.**

**Keywords:** supply chain responsiveness, relational attributes, relational capability

## **Introduction:**

Supply chains nowadays operate with increased complexity. The increased complexity of supply chains is due to their global reach, reduced product life cycles and ever increasing customer requirements. With global reach of supply chains, breadth of supply and delivery options expands increasing the associated risk and vulnerability as well because aspects such as transportation risks, cultural risks or exchange rate risks gain importance (Berry, 2004). As firms opt for outsourcing, additional dependencies are created adding to the increasing complexity (Juttner et al., 2003). For a supply chain to be globally competitive, it has to meet other challenges too viz. increasing demands to reduce costs, increase quality and ensuring supply continuity (Goebel et al., 2003). The main aim of supply chain operations is to maximize customer service profitably. There is a continuous challenge to ensure the availability of the right product or service when customer demands, while reducing costs (Sheffi, 2005). Every supply chain operation has an inherent risk associated with it. The increased complexity has made supply chain operations more vulnerable to disruptions. A no of such disruptions have made businesses aware that such unexpected events can have significant operational and financial impact. Such events can be highly diverse e.g. a fire at a manufacturing plant, transportation strike leading to delay in arrival of goods, loss of critical supplier etc. Therefore, firms must align their resources and capabilities so as to respond and recover from such disruptions when they occur. Accordingly, for effective recovery and risk mitigation, firms must make attempts to increase their supply chain responsiveness.

As supply chains are firms connected in exchange relationships; therefore to develop supply chain responsiveness, firms must develop better relationships with partners in a network. Accordingly, the study posits that to develop better supply chain responsiveness, the importance of relational attributes like trust, commitment, co-operation etc. must be underscored. To address this gap in the literature, our study proposes a conceptual model of supply chain responsiveness using several theoretical lenses.

## **Theoretical Background:**

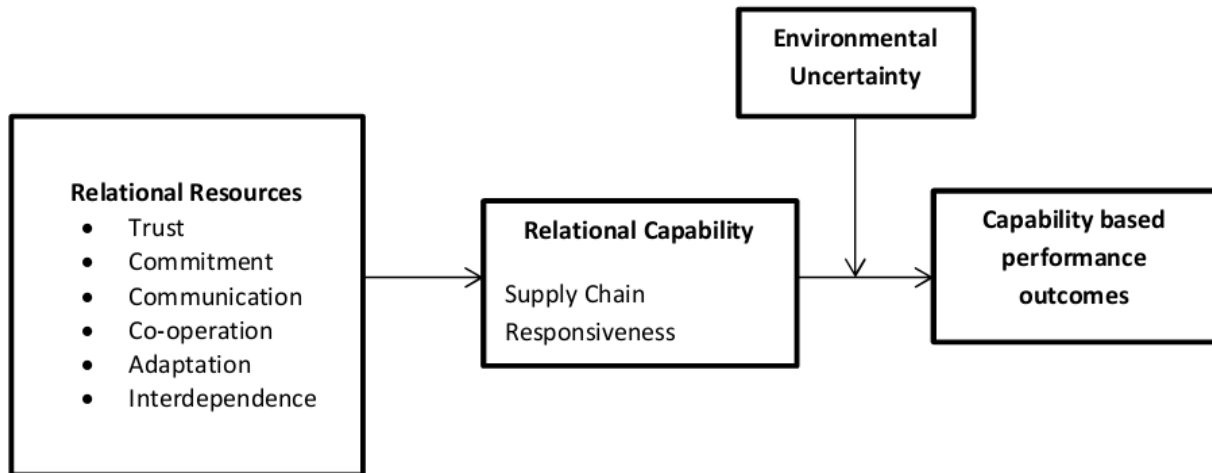
### *Supply Chain Responsiveness: A Relational Capability Perspective*

Supply chain responsiveness has been dealt simultaneously with risk management. This is mainly due to the fact that responsiveness is required as a first step towards developing adaptive capabilities for mitigating environmental uncertainties. Consequently the literature on supply chain responsiveness is largely fragmented. Supply chain responsiveness is defined as the extent to which channel members respond cooperatively to environmental changes (Wu et al., 2006). It enables a firm to utilize its competencies and capabilities to ward off negative effects of the changing environment and therefore respond better to such shifts (Teece et al., 1997). Recent market requires firms to develop and elicit collaborative response from their supply chain.

The current study uses a combination of resource based view (RBV), transaction cost economies (TCE) theory, commitment trust theory and dynamic capabilities theory to formulate the conceptual model. The RBV argues that a firm can attain sustained competitive advantage through suitably deploying its resources and capabilities that are often rare, valuable, not substitutable, and difficult to imitate (Barney, 1991). Further these resources and capabilities are

viewed as bundles of tangible and intangible assets that comprises for e.g. a firm's management skills, its organizational processes and routines, and the information and knowledge it controls (Barney et al., 2001). Firms have differential performance due to firm resource heterogeneity (Wernerfelt, 1984). While resources are viewed as a collection of factors owned and or controlled by a firm; capabilities are viewed as a capacity to deploy these resources (Amit and Schoemaker, 1993). According to TCE perspective, a firm must decide whether it should produce a certain component part or procure from outside (Coase, 1937) and hence deals with costs incurred in an economic exchange or transaction. The TCE literature urges a firm to search for opportunities for minimizing the costs of transactions (Williamson, 1981). It also argues that exchange relationships can help a long way in reducing costs associated with such transactions (Williamson, 1975). The commitment-trust theory of relationship marketing urges the presence of several relational attributes like trust, commitment, shared values, uncertainty, co-operation, communication etc. in a relationship for the success and reaping the benefits of the same (Morgan and Hunt, 1994). Later, there have been numerous applications and extensions of this theory. Acknowledging the importance of efficient relationships in supply chain, studies have adopted various attributes from this theory for use in different contexts. The RBV was advanced through the development of Dynamic Capabilities theory by Teece, Pisano and Shuen (1997). The theory examines how firms integrate, build and reconfigure their internal and external firm specific competencies to match their turbulent environment (Teece *et al.*, 1997). The theory aims to understand how firms use their dynamic capabilities to create and sustain a competitive advantage by reacting positively to environmental uncertainties (Teece, 2007).

In dynamic environments fraught with increasing uncertainties, it is beneficial for firms to form effective relationships to develop certain capabilities to ward off the undesired consequences. Therefore a supply chain must respond optimally to ward off the negative effects of its associated environment. Responsiveness can be defined as the "ability to react purposefully and within an appropriate time-scale to customer demand or changes in the marketplace, to bring about or maintain competitive advantage" (Holweg, 2005, p. 605). We posit supply chain responsiveness as a relational capability that has the potential to react positively to disruptions and reap profits for the focal firm. Relational capability refers to a firm's willingness and ability to partner (Dyer and Singh, 1998). Capability literatures have witnessed either implicit or explicit mention of a relational element in the definition of dynamic capabilities and marketing capabilities (McGrath and Toole, 2008). Later researchers have not arrived at a common consensus as to a uniformly agreed definition of relational capability. Such a capability increases the value of a firm's resources as it evolves and leads to new and better capabilities. Uncertain situations facilitates nurturing of such a capability due to greater interactions between firms and sharing of knowledge and resources (Powell, 1998). Extending RBV to the current context, we argue that supply chain responsiveness is a relational capability formed by the culmination of relational resources like trust, commitment, communication, co-operation, adaptation and interdependence. Further, such a relational capability will help to adapt to environmental uncertainties through the development of other capabilities. Fig. 1 gives the proposed framework.



*Fig. 1 Proposed Framework*

## **Antecedents to Supply Chain Responsiveness**

### *Trust*

Trust is one of the most cited relational resource and dimension of supply chain relationships (Fynes *et al.*, 2004, 2005b). Different approaches have been used to investigate the construct. The widely cited definition of trust found in supply chain literature is “the firm’s belief that another company will perform actions that will result in positive actions for the firm, as well as not take unexpected actions for the firm, that would result in negative outcomes for the firm” (Anderson and Narus, 1990, p. 45). In exchange relationships, the presence of trust will facilitate better transparency and information sharing which is required for better responsiveness in supply chains. Accordingly, the study hypothesizes:

*H1: A greater level of trust between supply chain partners is positively associated with supply chain responsiveness.*

### *Commitment*

The willingness of trading partners to apply effort due to the relationship is referred to as commitment (Porter *et al.*, 1974). Quite frequently it indicates a firm’s attempt to build a relationship that can be sustained in times of problems and contingencies (Gundlach *et al.*, 1995). High levels of commitment develops the platform in which both parties to exchange can realize joint goals without any opportunistic behavior. Therefore, the culmination of commitment from all partners in a supply chain is necessary for developing any kind of capability, particularly during uncertainties. Accordingly, the study formulates the next hypothesis:

*H2: A greater level of commitment between supply chain partners is positively associated with supply chain responsiveness.*

### *Communication*

Many of the problems in supply chain can be attributed to absence of communication between appropriate members. Communication is defined as “the formal as well as informal sharing of meaningful and timely information between firms” (Anderson and Narus, 1990, p. 44). Hence effective communication is an essential determinant of successful collaboration among supply chain partners. Thus, to respond positively to disruptions, the importance of quality communication, information sharing and participation cannot be undermined. Accordingly, the next hypotheses can be formulated as:

*H3: A greater level of communication between supply chain members is positively associated with supply chain responsiveness.*

### *Co-operation*

Co-operation refers to situations where firms work together to achieve mutual goals (Anderson and Narus, 1990). Co-operation also implies co-ordination which is central for building effective relationships as highlighted in relationship marketing studies (Morgan and Hunt, 1994). Although conflicting actions and co-operative behaviors can co-exist, researchers (Frazier and Rody, 1991) suggests that presence of co-operation does not mandate the absence of conflict. Parties in an exchange can continue to co-operate in spite of having conflicts over serious issues; may be due to high cost of relationship termination. Thus co-operation among supply chain partners is crucial for the development of supply chain responsiveness. Accordingly, the next hypothesis stands as:

*H4: A greater level of co-operation among supply chain partners is positively associated with supply chain responsiveness.*

### *Adaptation*

Asset specificity is a crucial dimension of any transaction as buyer –supplier after making an investment will involve and operate in a bilateral exchange for a considerable time (Williamson, 1981). This is adaptation that indicates the extent to which buyer and seller make sufficient investments in a relationship (Ford and Hakansson, 2006). Fynes *et al.* (2004) found adaptation to be a crucial component of supply chain relationship quality. Therefore, higher the adaptive capability between supply chain members, greater is the effectiveness of supply chain responsiveness. Accordingly, the next hypothesis is formulated as:

*H5: A greater level of adaptation between supply chain members is positively associated with supply chain responsiveness.*

### *Interdependence*

Firms in supply chain need to maintain exchange relationships for achieving desired goals. This is referred to as dependence (Frazier, 1983). Exchange relationship sometimes makes both the parties to depend on each other. Therefore, “interdependence exists whenever one actor does not

entirely control all of the conditions necessary for the achievement of an action or for obtaining the outcome desired from the action”(Pfeffer and Salancik, 1978, p. 40). Thus, supply chain partners can realize the gains by interdependence and this becomes beneficial in crisis too. Greater interdependence will enable firms to respond better to environmental threats. Accordingly, the study hypothesizes that:

*H6: A greater level of interdependence between supply chain members is positively associated with supply chain responsiveness.*

### ***Outcomes of Supply Chain Responsiveness***

#### ***Supply Chain Resilience***

One of the earlier definitions of supply chain resilience (Christopher and Peck, 2004) describes it as: “*the ability of a system to return to its original state or move to a new, more desirable state after being disturbed*”. Due to recent disruptions, this ability to recover and restore normal operations (i.e. supply chain resilience) has gained significant importance as an essential supply chain capability (Ponomarov and Holcomb, 2009). But to develop such a capability, supply chains must be responsive to environmental threats. Accordingly, the study hypothesizes:

*H7: A greater level of supply chain responsiveness is positively associated with supply chain resilience.*

#### ***Supply Chain Security***

The disastrous events of September 11, 2001 (9/11) have alarmed many firms regarding the security of their business operations. The consequences are of more significance to supply chains recently due to their global spread, integrated and complex nature and involve many firms. Supply chain security has been defined as (Closs and McGarrell, 2004): “*The application of policies, procedures, and technology to protect supply chain assets (product, facilities, equipment, information, and personnel) from theft, damage, or terrorism and to prevent the introduction or unauthorized contraband, people or weapons of mass destruction into the supply chain*” But developing security efforts in supply chain requires the same to be responsive as a first step. Accordingly, the study hypothesizes:

*H8: A greater level of supply chain responsiveness is positively associated with supply chain security.*

#### ***Supply Chain Innovation***

Afuah (1998) defined innovation as: “*a process of turning opportunity into new ideas and putting these into widely used practice. Innovation facilitates create new technical skills and knowledge that can help develop new products and/or services for customers*”. Accordingly, supply chain innovation refers to tools that can improve firm processes directed for efficient supply chain management through seamless integration with suppliers, manufacturers, distributors and customers (Lin, 2008). Several other benefits like cost and lead-time reduction,

generation of new operational strategies and flexibility development are also offered by SC innovation . All this becomes easy when the supply chain responds to relevant efforts directed for innovation. Accordingly, the study posits that:

*H9: A greater level of supply chain responsiveness is positively associated with supply chain innovation.*

### *Supply Chain Continuity*

This is the recent term for ensuring continuity of supply chain operations after a disruption and mainly adapts meaning from business continuity planning in supply chains (Zsidisin et al., 2005) and business continuity. Business continuity is the activity performed by an organization to ensure that critical business functions will be available to customers, suppliers, regulators, and other entities that must have access to those functions (Coombs, 2012). But a responsive supply chain can ensure accessibility to these relevant function soon after a disaster as the ability to respond is the first criteria to maintain continuity. Accordingly, the study posits that:

*H10: A greater level of supply chain responsiveness is positively associated with supply chain continuity.*

### **Moderating Role of Environmental Uncertainty**

Environmental uncertainty refers to the degree to which firm's external environment in terms of its competitors actions, technology, and consumer tastes and preferences, is characterized by an absence of pattern, unpredictability, and unexpected change (Fynes *et al.*, 2004). The success of a firm's strategies depends on the environment in which their partners operate (Holweg , 2005). Although contradicting viewpoints have been presented in allied literature regarding the role of environmental uncertainty on supply chain partnerships, however we argue that the presence of strong relationships will not only help in procuring essential inputs; but will enable both partners to an exchange to perform better under normal circumstances and recover effectively when encountered with environment uncertainties.

Studies have portrayed that stronger supply chain relationships are important predictors of supply chain performance in times of environmental uncertainties (Fynes *et al.*, 2004; Fynes *et al.*, 2005a). Consequently, supply chain responsiveness based on relational resources of trust, commitment and several others will be able to develop capabilities that will enable the supply chain to perform better during environmental uncertainties. Consequently it is acknowledged that environmental uncertainty will positively moderate the relationship between supply chain responsiveness and other capabilities. This gives the corresponding hypotheses:

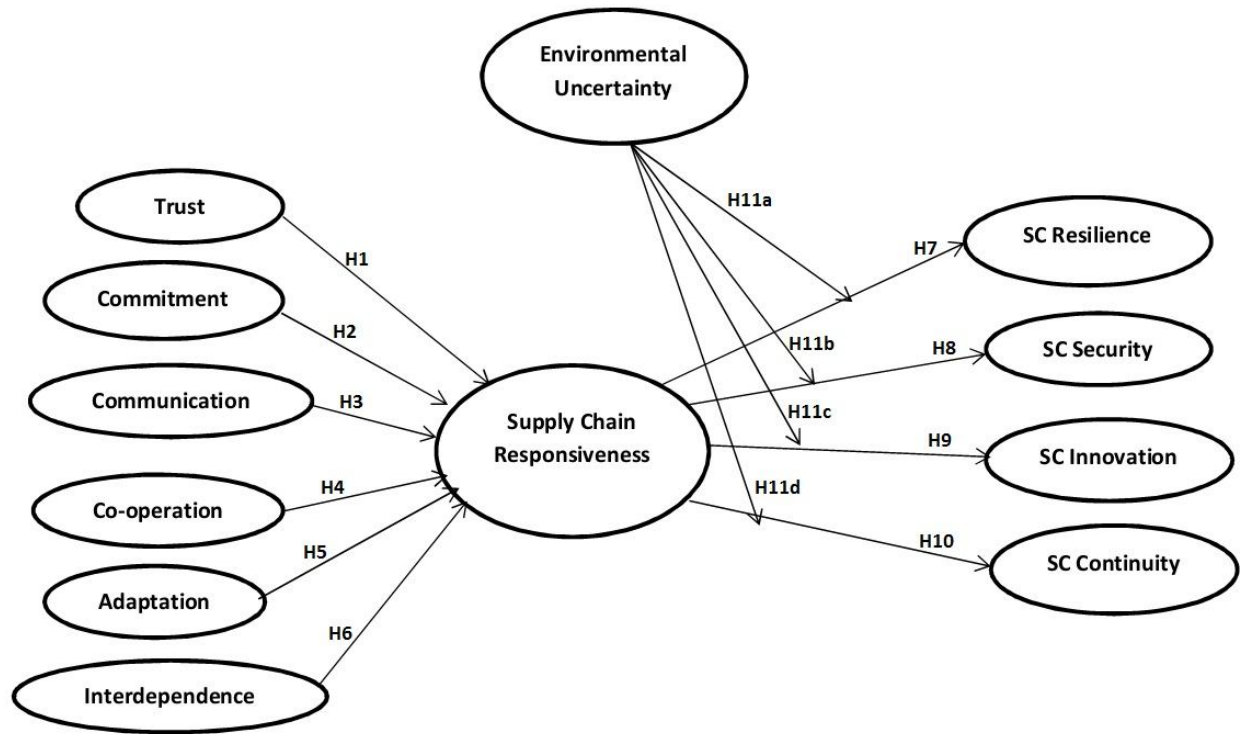
*H 11a: The greater the environmental uncertainty, the greater is the positive association between supply chain responsiveness and supply chain resilience.*

*H 11b: The greater the environmental uncertainty, the greater is the positive association between supply chain responsiveness and supply chain security.*

*H 11c: The greater the environmental uncertainty, the greater is the positive association between supply chain responsiveness and supply chain innovation.*

*H 11d: The greater the environmental uncertainty, the greater is the positive association between supply chain responsiveness and supply chain continuity.*

The theoretical model below summarizes the hypotheses developed.



*Fig.2 Theoretical Model*

## Conclusion:

The study is the first to investigate supply chain capabilities from a relational capability perspective. Although the conceptual model needs empirical validation for further generalization, still it forms the ground for investigating several other capabilities like agility, flexibility, resilience, security, innovation and continuity in supply chains. Secondly, the inter-relationship between the relational resources also needs to be explored further. For e.g. many studies have portrayed trust as an antecedent to commitment (e.g. Morgan and Hunt, 1994). Similar other inter-relations along with inclusion of other possible relational attributes in the model will further develop the proposed model.

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