

# A Review of Theoretical Frameworks for Supply Chain Integration

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**Abstract.** In a world of fierce competition and business driven by speed to market, good quality and low costs, this environment requires firms to have a source of competitive advantage that is inimitable and non-substitutable. For a supply chain integration (SCI) strategy to achieve sustainable competitive advantage it must be non-substitutable, inimitable, path-dependent and developed over time. Also, an integrated supply chain framework is needed to tie the whole network together in order to reduce perennial supply chain challenges such as functional silos, poor transparency of knowledge and information and the inadequate formation of appropriate customer and supplier relationships. Therefore, this paper aims to evaluate the competitive impact of a SCI strategy on firm performance using the theory of Resource-based View (RBV) and relational view.

## 1. Introduction

The integrative philosophy of supply chain integration (SCI) involves internal, supplier and customer integration. The internal integration aims to eliminate traditional functional silos and integrate the functional departments of a company into a single entity (Flynn et al., 2010) in order to meet the requirements of customers at the lowest system-wide cost (Boon-itt and Wong, 2011). Brown (1983) suggested that inter-functional integration is based on the theory of interdependence, whereby the relations between two working units are described as individual or collection activities and behaviour of individuals or of a group (Topolsek et al., 2009). The internal integration can be optimal when the complementary cross-functional teams of a firm, including procurement, production, logistics, marketing, sales and distribution, act as a whole to coordinate the information flow, share resources and work as a team to achieve a mutual organisational goal. The internal integration can be operative or functional integration (Barki and Pinsonneault, 2005).

SCI should not just focus on a single entity and it should look at various sub-systems, activities, relationships and operations (Chandra and Kumar, 2000). SCI requires all the nodes in the network, whether inside or outside the firm, to communicate, exchange and share detailed and current information. The relational view is useful in understanding supply chain relationships with critical suppliers and customers. The arc of integration (outward facing) has helped organisations to achieve a higher level of business performance in terms of customer responsiveness, cost and time, as shown by a global study across industries (Frohlich and Westbrook, 2001).

This paper aims to evaluate the competitive impact of a SCI strategy on firm performance using the theory of Resource-based View (RBV) and relational view. The fundamental goal of the RBV is to explain why some firms outperform their counterparts, focusing on the notion that rare, values and inimitable resources lead to better business performance and higher profitability (Barney, 1991). This

involves the acquiring of resources from internal and external parties, developing resources and divesting resources that are no longer useful for the strategy used by the firm (Hitt, 2011). Applied to SCI, the RBV supports the importance of managerial actions in managing the internal resources provided by different functional departments, and external resources provided by suppliers and customers to enhance firm performance. The resources must be deployed in ways that matched the strategies implemented by the firm in order to positively influence business performance.

In addition, the relationship between manufacturing firm and supply chain partners can be critical for the transfer of knowledge and other types of resources. Therefore, relational view represents another theoretical frame for the study of relationships between manufacturing firm and supply chain partners. This view focuses on the relational link between diverse functions and supply chain partners for better decision making and higher levels of coordination and collaboration (Sprague and Watson, 1979). In fact, RBV theory and structural network theory can be used to understand the acquisition of tacit and explicit knowledge from local suppliers through relational and contract mechanisms. The following sections review RBV and relational view in depth.

## 2. Resource-based View

The static view of the RBV posits that a firm's resource base is the antecedent to competitive advantage (Barney, 1991). Essentially, the RBV is based on the assumptions that firms have heterogeneous resources (Alchian and Demsetz, 1972; Coates and McDermott, 2002; Alvarez, 2005; Royer, 2005; DeSarbo et al., 2007) and the resources remain imperfectly mobile over time (Barney, 1991). Additionally, sustainable competitive advantage results when these four attributes of firm's resources are satisfied: valuable, rareness, non-substitutability and inimitability (Dierickx and Cool, 1989; Barney, 1991). First, the resources must be valuable to allow the firm to exploit opportunities or neutralise threats in its external environment. Second, the resources must be rare that are hard for rival firms to acquire. Third, the resources must be imperfectly imitable that other firms cannot easily develop. The firm resources that are imperfectly to imitate are created because of one reason or a combination of three reasons: (a) the ability of the firm to obtain resources is dependent upon unique historical conditions; (b) the relationship between the firm's resources and its competitive advantage is causally ambiguous; or (c) the firm's resources creating the competitive advantage is knowledge-based or socially complex. Finally, the resources are non-substitutable and do not have strategic equivalents. This means there must be no strategically equivalent valuable resources that are themselves either not rare or imitable (Barney, 1991; Hitt et al., 2010). The relationship between key attributes of firm resources and sustained competitive advantage is shown in Figure 1.

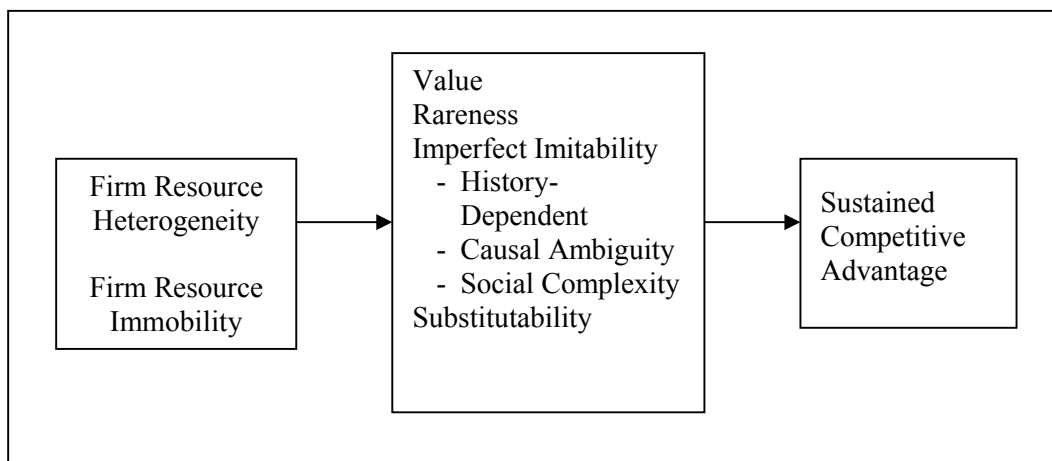


Figure 1 The relationship between firm resources and sustained competitive advantage  
Source: Barney (1991, p. 112)

The firm resources can be categorised into physical capital resources, human capital resources and organisational capital resources. Physical capital resources consist of assets, technology equipment, a firm's plant, its geographic location and its access to raw materials. Human capital resources include the capabilities of managers and employees in terms of experience, judgement, intelligence, training and relationships. Also, organisational capital resources encompass a firm's formal and informal planning, coordinating systems and controlling and formal reporting structure, as well as its informal inter-organisational and intra-organisational relationships (Barney, 1991). Typically, some strategies often use a particular mix of physical capital, human capital and organisational capital resources to implement.

Consistent with the previous arguments, the empirical studies show that SCI has a positive and statistically significant effect on the firm performance in the manufacturing industry (Frohlich and Westbrook, 2001; Rosenzweig et al., 2003; Droge et al., 2004; Zailani and Rajagopal, 2005; Li et al., 2006; Swink et al., 2007; Flynn et al., 2010; Khang et al., 2010; Zolait et al., 2010; Chong et al., 2011; Salhieh, 2011; Sundram et al., 2011; Valmohammadi, 2013). Although the essence of the RBV is that firm consists of a bundled of valuable and rare resources to achieve a competitive advantage, however, it is insufficient to drive the competitive advantage. In fact, RBV has expanded to focus on how firms use value-oriented strategy to mobilise and utilise resources to maximise their competitive potential (Barney, 1991). In particular, managerial action to orchestrate resources is the key determinant to competitive advantage. The management capability and decision making of the firms are the dominant players in developing and configuring the resources in a way that enhance their sustained competitive advantage (Hitt, 2011).

The RBV can be used as a basis for the development of supply chain strategy taxonomy (McKone-Sweet and Lee, 2009). SCI requires a collaborative effort between a manufacturer and its suppliers and customers (Flynn et al., 2010). If a firm is completely vertically integrated, most of the prominent materials supplies are provided by its internal units. In fact, firms also acquire external resources from external parties such as suppliers and customers. Dyer and Singh (1998) highlighted that valuable resources are often provided by supply chain partners and argued that structuring the inter-organisational resources is more critical to achieve outstanding performance than a firm's own constrained resource base. Specifically, suppliers play an integral role in supplying essential resources to the focal firm as well as in the firm's implementation strategies. Accordingly, the external resources must be effectively managed and integrated with the internal resources of the firm in order to achieve superior performance (Hitt, 2011). The heterogeneous partner-specific resources therefore constitute the potential for a competitive advantage. Moreover, the sustainability of the competitive advantage can be achieved when the resources are immobile and difficult to imitate or appropriate (Morris et al., 2005). The RBV suggests that holding valuable, rare, inimitable and non-substitutable resources is important, however, it is more important for a firm to leverage and bundle its internal and external resources in order to create its competitive advantage.

### **3. Relational View**

While the RBV focuses on the importance of managerial actions in managing resources flow in a supply chain in order to enhance firm performance, relational view theory can be used to understand a relationship between two or more supply chain partners. The relational view theory was first articulated by Dyer and Singh (1998) to suggest that idiosyncratic inter-organisational linkages can result in sustained competitive advantage. Four sources of relational rents are identified in the relational view: relation-specific asset investments, substantial knowledge sharing, complementary resources/capabilities and effective governance (Miguel and Brito, 2011). The relational rent is defined as "a supernormal profit jointly generated in an exchange relationship that cannot be generated by either firm in isolation and can only be created through the joint idiosyncratic contributions of the specific alliance partners" (Dyer and Singh, 1998, p. 662). The greater the alliance partners' investment is in relation-specific asset, inter-firm knowledge-sharing routines, complementary resources/capabilities and effective governance, the greater the potential will be for relational rents.

Williamson (1985) suggested that firms must have relation-specific assets that alliance partners will value and are fit for use. There are three types of relationship-specific investments: site specificity, physical asset specificity and human asset specificity. First, the firms may invest in site

specificity by locating close to the alliance partners in order to reduce inventory and transportation costs. Second, investment in physical asset specificity such as customised machinery or equipment or tools allows the firm to improve its product quality and distinguish its products from others. Third, human asset specificity is the accumulation of knowledge and expertise that is specific to one alliance partner. Over time, the alliance partners work together and build up specialised information, language and know-how in order to communicate effectively and efficiently, which in turn leads to increased product quality and speed to market.

Dyer and Singh (1998) found that alliance partners can generate rents through substantial inter-organisational knowledge-sharing routines. The routines of knowledge-sharing are regular processes that create, transfer or recombine specialised knowledge between alliance partners. Also, firms can create relational rents through leveraging the benefits of complementary resource endowments of an alliance partner. The alliance partners pool their respective resources to eliminate deficiencies in each other's individual portfolios of resources, and create distinctive resource endowments that would have been difficult for either firm to achieve alone. Finally, the creation of relational rents also depends on the ability of alliance partners to align transactions with governance structures in a way that minimises transaction costs and maximises value-creation initiatives.

In general, the relational view provides insight into how a firm develops value-creating linkages with other firms to achieve high profit returns. Applied to SCI, the relational view suggests that collaborative relationships between manufacturing firm and its suppliers and customers can generate relational rents through relation-specific assets, knowledge-sharing routines, complementary resource endowments and "effective governance". These four activities create an idiosyncratic relationship that is difficult for competitors to imitate. Moreover, when the relational rents generated through effective inter-firm collaboration are causal ambiguity and time compression diseconomies (Barney, 1991). Therefore, the collaborative relationships could create differential advantage and confer supernormal rents to well-executed supply chain strategies.

The "relational capability" of supplier, manufacturer and customer, is a potential source of inter-firm competitive advantage and should be seen as the "winning" strategy (Gattorna, 2009). Hitt et al. (2006) found that relational capital in relationships between suppliers and buyers is positively related to firm performance. In this study, the researcher integrates the notions from the RBV and relational view theory to understand the relationships in strategic alliances when the both theories claim that the firm's resources creating the competitive advantage is socially complex interactions. Of course, the collaborative supply chain relationships are invariably based on trust, loyalty, a positive sum game, fairness in negotiations, goal and intent revelation, and commitment (Chandra and Kumar, 2000).

#### **4. Conclusion**

The theoretical perspectives of the RBV suggest that SCI is a non-substitutable, inimitable, path-dependent capability that a firm develops over time to achieve sustainable competitive advantage. Similarly, relational-specific capabilities can play a significant role in achieving sustained competitive advantage. As the theory of relational view becomes more fully developed, it will need to be based on the interaction between the internal functions of a firm, with valuable firm-specific resources and capabilities in place. The relational capabilities gained through supply chain members, such as suppliers, manufacturers and customers, will enable a unique combination of cross-organisational complementary resources; these can be a potential source of inter-firm competitive advantage. Lastly, this review found that for strategic SCI to be successful, practitioners must not focus on one particular inhibitor, but rather consider customer integration, supplier integration and internal functions in combination. In this regard, interdependence can be seen as an important part of the SCI.

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