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Cognitive barriers to collaborative innovation generation in supply chain relationships

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ABSTRACT

This research investigates the cognitive barriers to the generation of collaborative innovations among supply chain members. The results of our case study show how different perceptions of relationships between supply chain members can hinder the generation of collaborative innovations despite a shared managerial cognitive basis regarding the potential benefits of collaboration, Thus, we argue that the generation of collaborative innovations is largely dependent on the nature of multiple (not dyadic) supply chain relationships and managers' perceptions about the potential of these relationships. Our results provide important implications to supply chain relationships and their role in the generation of collaborative innovations.

1. Introduction

Firms cope with the need for change through the innovations they create. These can be new products, services, processes, technology, or even business models — in other words, any of the ways that they create and deliver value to their customers. The imperative for firms to change comes from the dynamic nature of our society and the businesses that inhabit it. Naturally this is also true for firms that are highly interdependent in a supply chain, and indeed the ability to generate innovations is essential for supply chain members seeking to respond to market challenges (Venkatesh & Yadav, 2011).

One way to engender these innovations is to collaborate with other supply chain members (Ganesan, George, Jap, Palmatier, & Barton, 2009; Venkatesh, Inman, Mantrala, Kelley, & Rizley, 2011; Mentzer, Min, & Zacharia, 2000). Collaborative innovation involves contributors who share the work of generating a design and also reveal the outputs from their individual and collective design efforts to each other or agreed upon partners (Baldwin & von Hippel, 2011). Being a complex, cross-organizational, multidisciplinary activity, collaborative innovations require interactions across multiple supply chain members (Davis & Eisenhardt, 2012; Ganesan et al., 2009). Scholars both in supply chain management (Bradford, Stringfellow, & Weitz, 2004; Soosay, Hyland, & Ferrer, 2008; Wathne & Heide, 2004) and industrial marketing (Corsaro & Snehota, 2011; Ford & Håkansson, 2006; Håkansson & Waluszewski, 2002) have addressed the collaborative innovations which take place in a business network. Such innovation networks can be based either on the interconnected business relationships (Håkansson & Waluszewski, 2002) or purpose-built nets (Calia, Guerrini, & Moura, 2007).

Despite the obvious benefits generated by collaboration for innovation, successful collaboration is not an easy task for firms and, in fact, well over half of inter-firm innovation efforts fail (Faems, van Looy, & Debackere, 2005). This is partly due to the fact that innovation networks consist of a set of heterogeneous actors with varying interests and motivations to engage (or not to engage) in collaboration (Corsaro & Snehota, 2011; Öberg & Shih, 2014). As collaborative innovations typically take place in networked interactions, one of the key challenges in the generation of collaborative innovation is to engage all actors into the innovation process, nurture inter-organizational relationships, and consolidate the various, possibly conflicting interests and perceptions of actors towards a common goal. Thus, it is essential to better understand how the perceptions and cognitions of the individual managers affect collaboration within networks (Henneberg, Naudé, & Mouzas, 2010).

One of the key attributes determining the nature and outcomes of collaborative innovations is the heterogeneity in actors' perceptions, a factor that has so far received only limited attention in the literature (Corsaro, Cantù, & Tunisini, 2012). Earlier research has emphasized the importance of a shared attitudinal commitment among network partners in order to create collaborative innovations (Roy, Sivakumar, & Wilkinson, 2004) and manage successfully supply chain relationships (Min, Kim, & Chen, 2008). More recently, Öberg (2016) has argued that interfirm collaboration require the development of a shared collaboration-level identity, but company-level identities may challenge such developments. Accordingly, Öberg and Shih (2014) show that converging logics of firms towards innovation enable the

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development and commercialization of innovation. Scholars in innovation networks focusing on the analysis of the network pictures, conceptualized as managers' subjective mental representations of their relevant business environment (Henneberg, Mouzas, & Naudé, 2006; Halinen, Salmi, & Havila, 1999), have shown how the differences in cognitions are linked to managers' networking strategies of firms (Corsaro, Ramos, Henneberg, & Naudé, 2011) and how managerial cognitions determine the development and management of business relationships (Holmen, Aune, & Petersen, 2013; Guercini, La Rocca, Runfola, & Snehota, 2014).

Less examined is how cognitive understanding of the nature of the relationships between supply chain members affects the generation of collaborative innovation. Moreover, much of the earlier research has focused on analyzing managers' sense-making processes of their own focal organization's activities. However, as supply chain members interact with each other, they recursively make sense of themselves in relation to others (Ellis & Ybema, 2010). Thus, in order to achieve a more detailed understanding of the cognitive basis of supply chain relationships, we need not only to study how a focal firm perceives its own role in supply chain innovation activities, but also how other supply chain members interpret its ability and willingness to collaborate in innovation activities.

In this research we adopt such a perspective and extend earlier literature by examining how the supply chain members' cognitive basis inhibits the generation of collaborative innovations. Since innovations typically take place among supply chain partners (Afuah, 2000; Faems et al., 2005; Roy et al., 2004) or business networks (Corsaro et al., 2012), our foci is on examining the cognitive basis of the relationships between these partners in order to understand the generation or lack of collaborative innovations in supply chains. We build on the notion that there is a cross-firm heterogeneity in managers' cognitive frameworks, which direct managers' attention and affect their interpretation (Corsaro et al., 2012; Fiol & Huff, 1992; Marcel, Barr, & Duhaime, 2010) when making decisions regarding collaborative innovation activities. The unit of analysis hence is the individual manager's perception of the collaborative innovation generation potential.

Based on a case study of collaborative innovation initiatives in the Finnish consumer packaging industry, we show that differences in managers cognitive basis — among supply chain members (i.e. cognitive interpretations regarding their supply chain relationships) can be conducive to a situation where supply chain members report viewing supply chain-wide, collaborative innovation as being vital and mutually beneficial to all parties, but in which such collaboration fails to materialize. Thus, we contend that shared managerial cognitive basis about the benefits of collaboration does not necessarily lead to collaborative innovations among supply chain members. Instead, the generation of collaborative innovations is largely dependent on the nature of multi-firm (not dyadic) relationships and managers' perceptions about these relationships.

Our research proceeds as follows. First, the current state of knowledge is presented in form of a literature review on supply chain innovation and cognitive perspectives. We then describe the qualitative case study methodology applied. After that, we outline the key findings of our empirical study, and discuss the relevance of our findings to the literature on collaborative innovations in supply chains.

2. Theoretical background

2.1. Collaborative innovation

Recently, inter-firm collaboration has been a central topic in supply chain management research (Brown, Dant, Ingene, & Kaufmann, 2005; Ganesan et al., 2009; Soosay et al., 2008; Thomas, Esper, & Stank, 2010). Firms seek various specific benefits from collaboration, such as increased knowledge creation capabilities, revenue enhancements, cost reductions, and increased operational flexibility to cope with high demand uncertainties (Malhotra, Gosain, & El Sawy, 2005; Min et al., 2005). Similarly, supply chain members engage in collaborative relationships (partnerships, strategic alliances and even joint ventures) to develop, gain access to, and implement innovations (Faems et al., 2005; Ganesan et al., 2009; Roy & Sivakumar, 2010; Roy et al., 2004) — either incremental or radical (Dewar & Dutton, 1986). Moreover, the effects of innovations on firms can be two-fold. Firms can improve their performance through the generation of novel innovations (whether acting individually or in collaboration with others), or they can be fundamentally affected by innovations engendered in their supply chain and wider business environment (e.g. technological inventions such as RFID (Ngai, Moon, Riggins, & Candace, 2008) or 2d-codes (Lindqvist et al., 2012)).

Scholars have investigated the implications of collaborative innovations on firm (or supply chain) performance. Faems et al. (2005) show that there is a positive relationship between inter-organizational collaboration and innovative performance, but the impact on innovative performance differs depending on the nature of the partner(s). Soosay et al. (2008) examine how collaborative relationships enhance continuous innovation in the supply chain. They found that the ability to work together with supply chain partners enables firms to both integrate and link operations for increased effectiveness and generate both incremental and radical innovations.

2.2. Generating collaborative innovations in supply chain relationships

Roy et al. (2004) develop a conceptual model for analyzing innovation generation in buyer-seller interaction. They suggest that the link between interactions and innovation generation is moderated by factors internal (e.g. commitment, trust) and external (e.g. stability of demand, tacitness of technology) to the relationship. Roy and Sivakumar (2010) point out that innovation generation is affected by the differing nature of upstream and downstream relationships. Ganesan et al. (2009) suggest that various characteristics of supply chain relationships (such as strength and diversity of relations ties, and asymmetric dependence) affect the generation of radical retail innovations.

Since innovations in supply chains most typically occur at the buyer-seller interface, researchers have addressed the importance of supplier involvement in the innovation process (Roy et al., 2004; Song & Thieme, 2009). Empirical results indicate that greater supplier involvement benefits innovation (Afuah, 2000) and the manufacturer's financial performance (Carr & Pearson, 1999). Yet, despite the notion that innovation takes increasingly place in supply chain networks, most of the research on supply chain collaboration examines exclusively dyadic relationships (e.g. Mentzer et al., 2000; Roy & Sivakumar, 2010; Thomas et al., 2010).

Recently, however, research adopting a holistic perspective on supply chain collaboration has emerged (Bradford et al., 2004; Soosay et al., 2008; Wathne & Heide, 2004). It has been acknowledged that network connections are important for innovation in supply chain contexts (Roy et al., 2004) and that firms may be dependent on the innovation ability of their network counterparts as the implementation of one firm's innovation may require other firms to innovate at the same time (Adner, 2006). More importantly, Koza and Dant (2007) note that supply chain members make subjective interpretations about their own and others' role in innovation activities, which is based on previous interactions and experiences, thus providing a framework for subsequent innovation collaboration.

2.3. Cognitive basis of collaborative innovations in supply chain relationships

Research on managerial cognitions and organizational identities has gained wide attention both in strategic management literature and business-to-business marketing literature. Within strategic management literature, managerial cognitions and organizational identities

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