



## Relationship-based product innovations: Evidence from the global supply chain



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### ABSTRACT

Global supply chains offer a range of expertise to suppliers interested in generating innovative new products through capitalizing on the closeness of their working relationships with other firms. However, current knowledge on whether and how relational capital between firms can be leveraged for innovation is equivocal, conceptualizing little of the underlying processes responsible for mobilizing relational capital, as well as yielding mostly contradictory empirical results. This study proposes and tests the intermediate mechanisms of proactive customer orientation and joint learning capability as two distinctive capabilities that may account for how relational capital drives relationship-based innovation. Our conceptual model posits that the relational capital–innovation link is neither simple nor direct. An empirical test on 204 Taiwanese suppliers demonstrates the complexity of the innovation generation process. Two pathways from relational capital to innovation are revealed: joint learning capability fully mediates the link, whereas the role of proactive customer orientation is moderated by aspects of the suppliers' ties to their international customers; our theory is thereby largely confirmed. Finally, implications for the theory and practice of innovation in global supply chain relationships are drawn.

Developing leading-edge innovations through collaboration with supply chain partners from other parts of the world is often feasible for firms. Global supply chains expose suppliers to a diverse customer base in which close relationships can facilitate suppliers' acquisition and creation of knowledge, enhancing the discovery and development of innovative products (Soosay, Hyland, & Ferrer, 2008). For instance, the most successful Apple products incorporate multiple innovations from Apple's global supply chain partners, including Samsung and LG in South Korea and TPK in China; in turn, those partners gain market knowledge and innovative ideas from Apple (Dedrick, Kraemer, & Linden, 2010). To compete effectively, more firms are relying on relationships with their global supply chain partners (Doz & Wilson, 2012); strong supply chain relationships possess the relational capital necessary for suppliers to deeply engage with customers in order to discover unexpressed customer needs and jointly create innovative knowledge (Dedrick et al., 2010).

In particular, suppliers from emerging markets (EMs) can benefit greatly by offering innovative products, yet their focus on low-value assembly and contract manufacturing critically limits their knowledge base, restricting their ability to develop innovative products (Bello et al., 2016). In addition, suppliers from EMs such as China and Taiwan are usually in an asymmetric bargaining power position with their

international customers (Jean, Sinkovics, & Cavusgil, 2010). These multinational customers hesitate to share their core knowledge with EM suppliers, and seek to avoid potential risks of knowledge leakage. Moreover, geographic and cultural distance render social interaction more difficult in global supply chain relationships than in inter-organizational relationships in domestic settings (Blocker, Flint, Myers, & Slater, 2011). Thus, EM suppliers face particular challenges in leveraging their relational capital and relationships with international customers to develop radical innovations.

Current theories argue that organizations with strong relational networks and tight communities bounded by shared norms, trust, and reciprocity are more willing to collaborate and attempt risky ideas, which can enhance innovation (Inkpen & Tsang, 2005; Nahapiet & Ghoshal, 1998). However, the available empirical evidence is equivocal: some studies have found that relational capital has positive effects on relationship-based innovation because relational capital enhances knowledge sharing and learning in collaborative relationships (Tsai, 2001); others report no or negative effects, suggesting that strong relational capital may result in organizations becoming complacent and insulated from outside influences, thereby stifling innovation. For example, Fang (2008) shows that sharing information with close customers in EMs can lead to

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undesirable new product outcomes because close ties can narrow and homogenize market information. Noordhoff, Kyriakopoulos, Moorman, Pauwels, and Dellaert (2011) argue that embedded ties may stifle innovation because of opportunism and knowledge redundancy.

Such contradictory findings suggest the relational capital–innovation link is neither simple nor direct; rather, if novel concepts and breakthrough ideas are to emerge from a supply chain, complex processes and mechanisms embedded in strong relationships likely come into play. However, only a few, limited studies have examined the processes and context through which relational capital generates relationship-based innovation in the context of global supply chains (e.g. Sivakumar, Roy, Zhu, & Hanvanich, 2010). The purpose of this study is to develop a better understanding of the mechanisms and the conditions under which relational capital can efficiently and effectively influence EM firms' innovative outcomes. Drawing on the resource-based view (RBV) (Glavas, Mathews, & Bianchi, 2016) and capabilities building literature (Barney, 1991), this study extends relational capital–innovation research by investigating the mediating roles of proactive customer orientation and joint learning capability as distinctive capabilities that can transform the potential benefits of relational capital into desirable innovation outcomes within global supply chain relationships (Lu, Zhou, Bruton, & Li, 2010; Teece, Pisano, & Shuen, 1997).

Because the context of global supply chains varies across markets, this study also assesses a possible moderating effect of supplier characteristics related to innovation capability in terms of design responsibility and the degree of supplier dependence. Supplier design responsibility refers to whether suppliers take responsibility for a design, rather than just the assembly of products supplied to international customers (Teece et al., 1997). Supplier design responsibility indicates suppliers possess technical capacity and are involved in creative design tasks. Previous research indicates that supplier design responsibility may enhance innovation generation in exchange relationships (Petersen, Handfield, & Ragatz, 2005). In turn, supplier dependence refers to whether the power–dependence structure in the exchange relationship favors the supplier or customer. Prior research indicates that supplier dependence may moderate innovation generation in inter-organizational relationships (Petersen et al., 2005). Hence, we investigate the moderating effects of supplier design responsibility and supplier dependence on the link between relational capital and radical innovation.

This study considers the relationships of Taiwanese suppliers with global buyers in the electronics industry. Global supply chains present these EM suppliers with unique opportunities and challenges regarding engaging their downstream customers in radical innovation. Although cross-border, customer-supplier relationships possess a rich diversity of resources and skills, suppliers may find it difficult to mobilize relational capital and fully exploit the generative capabilities of close, cooperative relationships. Furthermore, many contracting suppliers, particularly those from EMs, often compete through low-cost, standardized production, and are highly dependent on their international original equipment manufacturer (OEM) customers due to their limited resources and organizational capabilities (Jean, Kim, & Sinkovics, 2012). Nevertheless, new product development is a critical growth opportunity for EM suppliers; capitalizing on relationships with major international customers offers the potential to develop radically new innovations that can broaden suppliers' product lines for other customers, enhancing their international market competitiveness. For example, some Taiwanese suppliers have recently taken on more responsibility for product design for their international customers and have transitioned from the role of assembly-oriented OEMs to that of original design manufacturers (ODMs). For example, ASUS, a Taiwanese electronics firm, has evolved its business model from OEM to ODM and now takes responsibility for new product development for many leading global customers (Doz & Wilson, 2012). Hence, the empirical context of this study offers an excellent opportunity to examine the ability of suppliers to generate

innovations from customer relationships in global supply chains.

This study strives to make three contributions to the international business literature on innovation in international buyer–supplier relationships. First, whereas prior studies focus on the drivers of innovation activities in individual firms, this study investigates the mechanisms of innovation generation in buyer–supplier relationships in global supply chains, referred to as relationship-based innovation in this study. Few studies are conducted with integrated models to coherently investigate the mechanisms that account for innovation from interfirm relationships (Berger & Lester, 2015). Recent studies call for additional research to understand the capabilities required for successful radical innovation in business-to-business (B2B) markets (Roy & Sivakumar, 2010; Roy, Sivakumar, & Wilkinson, 2004). Our contribution lies in addressing the gap in the literature regarding relationship-based innovation (Griffin et al., 2013) by focusing on radical innovation in the context of global supply chains. Second, this study empirically examines the processes through which relational capital affects the radical innovation that emerges from international customer–supplier relationships. We advance conceptual understanding of the relational capital–innovation link by analyzing alternative paths and mechanisms. We contribute by identifying distinctive capabilities including proactive customer orientation and joint learning capability as key enablers that help realize the potential benefits of relational capital in the process of radical innovation generation. Third, this study explores the contextual moderating effects of supplier design responsibility and supplier dependence on the linkages between relational capital and innovation generation. Thus, we contribute by offering an alternative, context-based explanation for the conflicting and occasionally contradictory empirical evidence regarding the relational capital–innovation link.

## 1. Theory and hypotheses

### 1.1. Relationship-based innovation in global supply chains

In line with (Story, Daniels, Zolkiewski, & Dainty, 2014), in this study radical innovation refers to the propensity of a supplier to introduce novel products in the marketplace that incorporate substantially different technology and can fulfill customer needs better than existing products. Relationship-based innovation is defined as generating radical innovations through engagement with a supply chain partner, often an international customer; these innovations enable a supplier to offer new products to other customers, enhancing its overall competitiveness (Chandy and Tellis, 1998).

Prior studies use different approaches to identifying the drivers of radical innovation. In recent reviews, (Roy & Sivakumar, 2010; Roy et al., 2004) synthesize different drivers of radical innovation including organizational culture, senior leadership, process, organizational characteristics, and product launch strategy. However, previous conceptual and empirical studies do not fully examine the process of radical innovation generation based on relationships in an international B2B context (Slater, Mohr, and Sengupta, 2014). To address this gap, we focus on relational capital as a key driver of radical innovation in international customer–supplier relationships. Unlike incremental improvements, radical innovation involves high risk, uncertainty, and complexity. Relational capital is characterized by trust, congruent goals, and a harmonious atmosphere between exchange partners oriented toward the long term (Dyer & Singh, 1998). Importantly, relational capital can enhance the amount and quality of knowledge and information-sharing between partners, and curtail the risks and complexity that can hinder radical innovation in global supply chains (Soosay et al., 2008).

### 1.2. Relational capital and innovation

Previous research identifies the important role of relational capital

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