



## Search scope and innovation performance of emerging-market firms<sup>☆</sup>



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### ABSTRACT

This study investigates the effects of search scope along the supply chain on the innovation performance of small and medium-sized enterprises (SMEs) in emerging markets. In this research, we develop a conceptual framework by integrating organizational learning theory and relationship governance theory. Based on a sample of 176 Chinese listed SMEs and longitudinal data, the results of this study show that upward and downward search scopes along the supply chain further strengthen the positive effect of R&D capability on the innovation performance of emerging-market firms. The article concludes with implications for practice and future research.

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### 1. Introduction

Existing research suggests that inter-organizational relationships (e.g., Freeman, 1991; Pittaway, Robertson, Munir, Denyer, & Neely, 2004; Powell & Grodal, 2005; Wu, 2011), including connections with downstream customers (Greer & Lei, 2012; Ngo & O'Cass, 2013) and upstream suppliers (Johnsen, 2009; Subroto & Sivakumar, 2010), have an important effect on innovation. The literature on interfirm relationships asserts that firms working closely with customers and suppliers can obtain new insights and knowledge from these sources, contributing significantly to innovation performance (Johnsen, Phillips, Caldwell, & Lewis, 2006; Prahalad & Ramaswamy, 2000; Skaggs & Youndt, 2004). Such a search for information in the network of interfirm relationships enables businesses to benefit from working with these partners by gaining access to assets and business ideas that they were unlikely to exploit on their own (Coviello, 2006; McFadyen & Cennalla, 2004; Rodan & Galunic, 2004). This broadly enriches companies' knowledge pool and helps them identify and trade upon complementary assets offered by exchange partners (Classen, Anita, Yannick, & Martin, 2012; Holmen, Pedersen, & Torvatn, 2005).

The ability to trade upon a network of inter-organizational relationships and search for ways to achieve joint innovation is critically important for opening new business opportunities for firms (Hoang & Antoncic, 2003) and constitutes a driving force in the development and growth of innovation performance (Cohen & Levinthal, 1990; Mooi & Frambach, 2012; Roy & Sivakumar, 2010; von Hippel, 1988). In our research, search scope refers to the extent to which a firm widely explores new ideas and knowledge among its upstream and downstream partners (Katila & Ahuja, 2002).

Although numerous past studies demonstrate the effects of interfirm relationships on innovation performance, the results of prior studies on the relationship between search scope, R&D capability, and innovation performance are still inconclusive. Some research work suggests that diverse inter-organizational relationships reduce the positive impact of R&D capability on innovation performance, while inter-organizational relationship commitment strengthens the R&D capability and innovation performance relationship (Eisingerich, Rubera, & Seifert, 2009). The following questions thus remain. Are firms from emerging markets such as China more likely to benefit from greater innovation performance when they work with a selected few firms or a broader base of exchange partners, such as suppliers and customers? Does reliance on a limited number of customers and/or suppliers hinder or facilitate innovation? This research seeks to answer these questions and examine the links between search scope, R&D capability, and innovation performance for firms from emerging markets.

Addressing these questions is of critical importance because emerging-market firms competing with multinationals from developed countries in global markets frequently cannot afford to lose time to catch up and have a keen interest in obtaining the maximum returns

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for their R&D investments in terms of innovation performance (Amsden & Chu, 2003; Luo & Tung, 2007; Tsai & Eisingerich, 2010; Wu, 2011; Yin & Choi, 2005). As part of this research, we use panel data of a sample covering 176 Chinese listed small and medium-sized enterprises (SMEs). Our research contributes to the literature in several important ways. In developing our arguments about the relationship between R&D investments and innovation performance, we explore the role of search scope along the supply chain and examine how the degree of search scope moderates the impact of R&D on emerging-market firms' innovation performance. Searching in an organization and among exchange partners is recognized as one part of the organizational learning process (e.g., Katila & Ahuja, 2002). In this research, we integrate the relational governance literature and organizational learning theory by identifying the types of search behaviors of other organizations along the supply chain and highlighting the importance of interfirm relationships on innovation performance.

Firms learn from each other and build up interfirm assets through ongoing collaborations and interactions (Coviello, 2006; Gulati, 1995; Hoang & Antoncic, 2003; McFadyen & Cennalla, 2004; Rodan & Galunic, 2004). Managing buyer–supplier relationships with key firms is crucial for strengthening the link between R&D investments and innovation performance. This research sheds additional light on these important issues and proposes that search scope concentrating on key firms affects the relationship between R&D capability and innovation performance.

The paper proceeds as follows. In the next section, we review the literature and develop a theoretical framework to test a set of formal hypotheses. We then describe our sample, discuss our methodology, and present the results of the empirical analyses. The final section concludes with a discussion of the research results and provides implications and directions for further research.

## 2. Theoretical background and hypotheses

A significant amount of literature highlights the interactive character of the innovation process, suggesting that innovation results are favored by the presence of relationships, networks, alliances, and other forms of interactions with external sources of knowledge (Brown & Eisenhardt, 1995; Freeman, 1991; Pittaway et al., 2004; Powell & Grodal, 2005; von Hippel, 1988). Prior research work confirms that network ties can be valuable tools for fostering innovation performance; for example, these knowledge links can afford firms easier access to new ideas (Lasagni, 2012).

A sizeable number of previous studies focus on the innovation performance along the supply chain (Bao, Chen, & Zhou, 2012; Lau, Tang, & Yam, 2010; Viet & O'Cass, 2013). The results from the European Community Innovation Survey and other national innovation surveys demonstrate that suppliers (together with clients or customers) are the most sought-after innovation partners ([OECD], 2010). As noted in prior work, it is more likely for firms to source external knowledge along the supply chain because firms share complementary competences and engage in information and knowledge sharing on a routine basis (Lasagni, 2012).

SMEs should rely more heavily on external knowledge as an input to innovation than large firms (Malecki & Tootle, 1996; Zhou & Li, 2012). Suppliers and customers are often assumed to be engaged in partnerships with SMEs, as their competences are most likely to be complementary (Lasagni, 2012). In their in-depth literature review of research on small businesses and their external relationships, Street and Cameron (2007) further highlight SMEs' reliance on their network partners for access to knowledge and innovation efforts.

Some recent studies (Lee, Lee, & Pennings, 2001; Van Dijk, den Hertog, Menkveld, & Thurk, 1997) have begun to analyze open innovation in smaller organizations to test whether the innovation performance of SMEs can be enhanced by the strategic use of external relationships. As Lasagni (2012) notes, the innovation performance is

higher in SMEs that are proactive in strengthening their relationships with innovative suppliers, users, and customers.

### 2.1. Search behavior and innovation performance

According to the behavioral theory of the firm and organization learning theory, innovation is the result of search activities. Firms' search activities broadly enrich their knowledge pool, enhance recombinatory search, and help build complementary assets (Classen et al., 2012). Firms' search behaviors vary across two distinct dimensions: search depth (how frequently the firm reuses its existing knowledge) and search scope (how widely the firm explores new knowledge) (Katila & Ahuja, 2002). With regard to search depth, scholars suggest that an increase in search depth can positively affect product innovation through three types of experience effects but that excessive depth can also have at least two negative effects, limits to improvement along a technological trajectory and rigidity (Katila & Ahuja, 2002). Regarding search breadth, some researchers also found that an increase in the search breadth can enrich the knowledge pool but that extremely high levels of breadth can increase knowledge integration costs and decrease reliability (Katila & Ahuja, 2002). Consistent with Katila and Ahuja (2002), researchers have found a positive relationship between search scope and product innovation (Leiponen & Helfat, 2010). Some studies further show a curvilinear effect of search scope on product innovation, indicating a potential “oversearch” by firms (Katila & Ahuja, 2002; Laursen & Salter, 2006).

Broader search horizons are of particular importance for innovation processes in small and medium-sized enterprises (SMEs), where knowledge and other resources are often limited (Classen et al., 2012; Ebersberger & Herstad, 2012; Street & Cameron, 2007). Network ties are an important channel for SMEs' search activities (Liu, Luo, & Shi, 2003; Ramasamy, Goh, & Yeung, 2006). Strong network ties generally suggest search depth. Strong ties between a firm and its customers prevent the firm from remaining flexible in a dynamic market (Christensen & Bower, 1996; Hamel & Prahalad, 1994). The established literature argues that strong ties constrain firms from making radical changes in their market offerings and/or business models (Christensen & Raynor, 2003; Danneels, 2003). That is, weak ties lead to innovation and renewal, while strong ties lead to loyalty but only incremental improvement (Fredberg & Piller, 2011).

Given firms' limited resources, potential trade-offs exist between “going the extra mile” to keep exchanging partners and connectedness to a diverse set of exchange partners. Specifically, time and effort invested in managing connections with a diverse range of partners may reduce firm resources dedicated to keeping extant relationships (Eisingerich et al., 2009). For SMEs, which lack strong capabilities, breadth is better than depth because 1) SMEs are more flexible regarding integrating relatively broad new information, 2) SMEs have an unbalanced capability with large-size customers, with whom they are generally unable to communicate fully, and 3) the majority of SMEs from emerging economies are not the global technology leaders in their business field.

### 2.2. Search scope and innovation performance

Based on the above discussion, we present a research framework and develop relevant research hypotheses in the following (Fig. 1).

Cohen and Levinthal (1990) note that a firm's R&D activity can not only generate new information but can also improve the firm's ability to assimilate and exploit existing information. As Zahra and George (2002) emphasize, the amount of external knowledge that a firm observes is an increasing function of its absorptive capacity. At the same time, for a given quantity of identified external knowledge flows, the degree by which the firm derives benefits also depends on its absorptive capacity and technological capability (Caloghirou, Kastelli, & Tsakanikas, 2004; Kim, Basu, Naidu, & Cavusgil, 2011; Zhou, Gao, Yang, & Zhou,

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