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Identifying innovative suppliers in business networks: An empirical study

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ABSTRACT

In the literature, considerable attention has been given to the role of supplying firms in the context of innovation. However, not every supplier is capable of contributing to a buyer's innovation performance. In addition, the willingness and commitment of suppliers to collaborate with buyers is not always apparent. Thus far, the literature has not given a conclusive description of the nature of innovative suppliers due to a lack of empirical evidence. In this study, we seek to identify a set of characteristics that can identify those suppliers that can make significant contributions to a buyer–supplier collaboration. Our statistical analysis of survey data shows that a supplier's technical characteristics and collaborative attitude, and the buyer–supplier relational characteristics on buyer–supplier relationships explain an important part of a supplier's contribution to buyer innovation. At a theoretical level, the findings of this study explain why some suppliers contribute more effectively than others to buyer–supplier innovations. At a practical level, the findings provide managers with a more complete picture of those suppliers with the highest expected innovation contribution in their network.

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1. Introduction

Business networks are an important source of the innovation performance of firms (Ahuja, 2000; Baum, Calabrese, & Silverman, 2000; Corsaro, Ramos, Henneberg, & Naudé, 2012; Wilkinson & Young, 2002). Industrial Marketing and Purchasing (IMP) theory posits that the interactions among actors, resources, and relationships in networks form an important basis for the technological development of industries (Håkansson, 1987; Roy, Sivakumar, & Wilkinson, 2004). From this perspective, IMP researchers strive to better explain innovation in business networks (e.g., Hoholm & Olsen, 2012; Ritter, Wilkinson, & Johnston, 2004). The interactions between firms enable the combination of existing ideas in new ways that are especially relevant to the creation of new ideas in the form of innovations (Ridley, 2010; Romer, 1990; Welch & Wilkinson, 2002). The literature on network collaborations focuses increasingly on buyer–supplier relationships (e.g., Wynstra, Von Corswant, & Wetzels, 2010). Many of these studies describe the positive effect of supplier involvement on buyer innovation, which is defined as “the encouragement of improvement by the supplier with regard to how the buyer solves problems, develops ideas, and thinks of (process) improvements” (Mooi & Frambach, 2012, p. 1025).

Although many scholars describe the positive effects of buyer–supplier relationships, merely involving any supplier in design programs does not guarantee direct improvements in innovation performance (Freytag, Clarke, & Ewald, 2012; Liker, Kamath, Nazli Wasti, &

Nagamachi, 1996). Choosing a supplier with the wrong capabilities can lead to lower innovation performance or even project obstruction (Wognum, Fisscher, & Weenink, 2002; Zsidisin & Smith, 2005). Buying firms can increase their innovative performance by collaborating with the most innovative suppliers. However, the most innovative supplier in a certain supply network cannot dedicate its best resources to every buyer (Gulati, Nohria, & Zaheer, 2000). Therefore, if competitive buying firms rely on the innovativeness of the same suppliers, then “it would be extremely difficult for a buyer to create competitive advantages through a shared supplier network” (Dyer & Hatch, 2006, p. 703). Without the commitment of innovative suppliers to exclusive relationships with specific buyers, firms might fail to obtain innovation contributions from their suppliers and therefore lose the ability to differentiate themselves from their competitors (Takeishi, 2001). Thus, to obtain greater innovation value from their relationships with the suppliers in their networks, buying firms need to identify those suppliers that are both capable and willing to contribute to innovations for the buyers.

In the IMP literature, some theoretical frameworks that can be used to identify innovative suppliers have been proposed. For example, Reese (2006) introduces a decision model for selecting the ‘right’ supplier. Schiele (2006) proposes a framework in which he introduces supplier characteristics as well as relational characteristics that are argued to have a positive effect on buyer–supplier innovations. Even though early IMP studies empirically explored the different functions of buyer–supplier relationships (e.g., Håkansson & Snehota, 1995; Walter, Ritter, & Gemünden, 2001), the literature provides few empirical insights into the antecedents of buyer–supplier innovation. Without a clear empirical indication of the nature of innovative suppliers, it would be very difficult for buying firms to fully benefit from the potential innovation value present in their supplier networks. In this study,

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we attempt to shed light on this issue by analyzing survey data in which the innovation contributions of 242 suppliers are evaluated by their buying firms. The main questions driving this paper are the following: What characteristics of suppliers might signal their high potential for making an innovative contribution to a buying firm, and how can a buying firm obtain an exclusive commitment from a supplier in order to achieve a better innovation contribution than their competitors?

To answer these questions, we develop and test a framework to (1) empirically identify the *supplier characteristics* that explain the innovation potential of different suppliers, (2) examine the *supplier's collaborative attitude* and identify how a supplier's willingness to collaborate enables the buying firm to better exploit the innovation capabilities of the supplier, and (3) determine which *relational characteristics* lead to a stronger supplier commitment resulting in a greater innovation contribution from the supplier.

2. Conceptual framework and hypotheses

The physical and social interactions in business networks enable firms to exchange and combine existing knowledge and create new knowledge (Mouzas & Ford, 2009; Romer, 1990). Different types of network collaborations can provide firms with different types of knowledge, ultimately leading to higher innovation performance (Ahuja, 2000; Baum et al., 2000; Laursen & Salter, 2006). Many potential innovation partners can be distinguished and different types of innovations can result from these collaborations. Von Hippel focused on the role of lead users in the innovation process (Thomke & Von Hippel, 2002; von Hippel, 1988). Chesbrough (2003) identifies the advantages of involving other companies in "open innovation" processes, naming the growing competence of suppliers as one reason for the advent of open innovation. This paper focuses on buyer–supplier collaborations. Buyer–supplier collaborations are important sources for innovation (Walter et al., 2001; Young, Wiley, & Wilkinson, 2009) and have been shown to result in a wide range of innovation outcomes (Song & Di Benedetto, 2008; Soosay, Hyland, & Ferrer, 2008).

2.1. Characteristics of innovative suppliers

In the literature that focuses on the characteristics of suppliers in buyer–supplier innovation, the characteristics of individual suppliers are assumed to be important factors. In particular, much attention has been paid to suppliers' technical characteristics, which are typically expressed in measurable terms (Ho, Xu, & Dey, 2010; Park & Krishnan, 2001). However, as these technical characteristics are exploited by the buying firm, Croom (2001) argues that the effectiveness of the interaction between the buyer and supplier might be determined also by the collaborative attitude of the supplier.

A collaborative attitude is the cooperative propensity or external orientation embedded in a supplier's organization (Bidault, Despres, & Butler, 1998; Deshpandé, Farley, & Webster, 1993). A supplier might possess innovative capabilities, but without the willingness to collaborate, these capabilities might not be utilized effectively. Therefore, whereas much of the recent literature on supplier evaluation and selection focuses on so-called "hard facts" (i.e., the analysis of criteria such as certifications and R&D expenditures using multi-criteria approaches), recent conceptual works argue that not only these technical aspects but also aspects of the supplier's attitude towards the collaboration should be considered as well (Croom, 2001; Schiele, 2006). Therefore, to obtain a more complete picture of the characteristics of innovative suppliers, this study differentiates between the technical characteristics and the collaborative attitude of the supplier.

2.2. Buyer–supplier relational characteristics

To fully examine the characteristics of the supplier's contribution to buyer innovation, not only the supplier characteristics but also the

relational characteristics of the buyer–supplier relationship are relevant (Azadegan, Dooley, Carter, & Carter, 2008; Croom, 2001; Schiele, 2006). Collaborations with external partners have become important mechanisms for firms to enhance their innovation capabilities. Subsequently, the number of inter-firm collaborations has increased substantially over the past decades and these collaborations have become a central strategic component for many firms (Lavie, 2007). As more and more buying firms seek similar collaborations with the same innovative suppliers, it becomes increasingly difficult for these buyers to mobilize supplier's resources and gain an advantage over competitors that are sourcing from the same supply base (Ellegaard & Koch, 2012). This phenomenon, where more and more buying firms seek similar collaborations with the same suppliers, has been described mainly from a resource-based perspective, as innovative suppliers might have enough resources to satisfy only a limited number of buyers (Gulati et al., 2000). Therefore, suppliers must decide which buyer will receive their primary innovative resources and thereby benefit in terms of innovations.

To obtain a full understanding of the characteristics that play a distinguishing role in the contribution of a supplier to buyer–supplier innovation, a conceptual model is constructed in which three groups of constructs are identified: (1) supplier characteristics, (2) the supplier's collaborative attitude, and (3) the relational characteristics of the buyer–supplier relationship. Fig. 1 shows the conceptual model used in this study.

2.3. Conceptual model and hypotheses

2.3.1. Supplier characteristics: Professionalism

A firm's internal innovation activities have been shown to influence their innovation collaborations with external partners (Cassiman & Veugelers, 2006). For example, Salomo, Weise, and Gemünden (2007) show how process management capabilities directly improve a firm's innovation performance, whereas Naveh (2007) and Scott-Young and Samson (2008) focus on role process formalization, pre-defined milestones, and prioritized goals to explain innovation performance. Furthermore, higher levels of project management capabilities have been shown to lead to higher levels of new product development (NPD) performance (Ethiraj, Kale, Krishnan, & Singh, 2005).

Petroni and Panciroli (2002) link suppliers' project management competences to innovation and find that the best performing buyer–supplier relationships "show a distinctive profile in terms of project management competence" (p.146). In addition to the direct and indirect effects of these competences on innovation, the process and project management capabilities indicate a certain organizational maturity that are often used as prerequisites in audits used by buying firms to evaluate suppliers (Moultrie, Clarkson, & Probert, 2007). Suppliers that exhibit high levels of professionalism (i.e., skills, competence, and expertise) can be expected to make a greater contribution to an innovative collaboration than their peers with lower levels of professionalism. Consequently,

H1. *Suppliers with higher levels of professionalism make a greater innovation contribution in a buyer–supplier relationship.*

2.3.2. Supplier characteristics: R&D expenditure

If the aim of a buyer–supplier collaboration is an innovative outcome, an important set of factors would be the so-called "hard facts" describing a supplier's innovative capabilities. Suppliers that have well-developed innovation capabilities can be expected to make a greater contribution to the innovations of their buying firms. Expenditure on innovation is used often to assess this innovation capability. Firms with a higher R&D investment per employee are more likely to be innovative (Griffith, Huergo, Mairesse, & Peters, 2006). In an analysis of 170 UK firms during the period 1988–1992, Wakelin (2001) found that innovative firms have substantially higher R&D expenditures than non-innovative firms.

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