



The path of innovation: purchasing and supplier involvement into new product development



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ARTICLE INFO

Article history:

Received 13 February 2014

Received in revised form 3 October 2014

Accepted 8 January 2015

Available online 21 March 2015

Keywords:

Innovation

Supplier collaboration

Strategic sourcing

Purchasing knowledge

Technological uncertainty

ABSTRACT

This paper aims to investigate the effects of supplier collaboration on the firm innovation performance as well as the enabling characteristics of the purchasing function. This is an original contribution as few papers empirically test the effect of supplier collaboration (meant as supplier involvement, development, and integration) on innovation performance and – simultaneously – the contribution of strategic sourcing activities and purchasing knowledge. Also, we explore the technological uncertainty of the purchase as an important contingent factor that might influence the firm's innovation strategy and the emphasis on supplier collaboration or strategic sourcing.

Towards this end, we develop a theoretical framework and test it through a survey conducted on a sample of 498 companies worldwide. Results show that innovation, as a category priority, does lead to emphasize supplier collaboration and strategic sourcing which, in turn, ensure better innovation performance. Empirical evidence also shows that, on the one hand, adequate purchasing (managers) knowledge enables greater supplier collaboration and strategic sourcing; on the other hand, technological uncertainty put greater emphasis on innovation strategy as well as on strategic sourcing.

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1. Introduction

“[C]ompanies rarely innovate by themselves” (Edquist, 1997): innovation is the product of a network rather than of a single person or firm. As a matter of fact, the open and collaborative innovation paradigm represents a way to support the innovation effort by accessing external resources (e.g., knowledge, technology, human workforce) that the focal firm might lack (Chesbrough & Crowther, 2006; Pisano & Verganti, 2008). This study focuses on new product development (NPD) capabilities, which is one of the facets of innovation.⁵

In this context, supplier and –later – purchasing department involvement into innovation processes has been recognized as a potential source of sustainable competitive advantage, even though the literature is not fully consistent. Among external sources of innovation, suppliers have

a crucial role in improving firms' innovation performance (e.g., Clark, 1989; Handfield, Ragatz, Petersen, & Monczka, 1999): they know their customers' business and mechanisms for knowledge transfer from supplier to customer are typically in place (Yu, 2008). Suppliers' contribution assumes various forms, such as supply of innovative components and product/process technologies (Walter, 2003), or joint product development projects (Bonaccorsi & Lipparini, 1994). Earlier and more extensive supplier involvement emerged as one of the most effective ways to improve NPD process performance (Clark, 1989; Ragatz, Handfield, & Petersen, 2002). However, engaging suppliers into collaborative innovation is not so easy to achieve (Krause, 1999; Smals & Smits, 2012). Firstly, the availability of highly-skilled suppliers is not sufficient per se: both buyer and supplier must be willing to participate into shared NPD projects and possess the necessary experience and capabilities to do so (Monczka, Handfield, Scannell, Ragatz, & Frayer, 2000; Schiele, 2006). Secondly, the interest in the subject by an increasing number of firms, the concentration of supply markets, the increasing outsourcing/offshoring rate are shifting the bargaining power from buyers to suppliers, who become highly selective and resistant to adapt to customers' requests (Christiansen & Maltz, 2002). In order to have access to the best resources, such as brainpower, the customer must increase its level of attractiveness (Schiele, Veldman, & Hüttinger, 2011). Firms' top management is therefore dedicating more resources to engage suppliers beyond traditional power-dominated

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⁵ For an exhaustive review of different meanings of innovation and innovativeness the reader might refer to Garcia and Calantone (2002).

relations (Cox, 2001) and to enhance their knowledge of supply markets as well as capabilities of scouting appropriate suppliers, i.e., suppliers with the right skills (Modi & Mabert, 2007).

A naturally consequent stage of research investigates what role the purchasing department plays in innovation, as it has become the common interface with the supply base (Araujo, Dubois, & Gadde, 1999; Ellram & Pearson, 1993). Firms increasingly recognize a strategic role to the purchasing department, which manages firm's expenditures (normally accounting for more than 50% of the firm's turnover) together with internal customer departments. Therefore, today the goals of the purchasing department go well beyond savings and costs reduction. While standard and easy-to-find purchasing categories do require cost minimization, critical categories emphasize other competitive priorities, such as quality, flexibility, and innovation (Luzzini, Caniato, Ronchi, & Spina, 2012).

Although the literature recognizes that the purchasing department might represent a critical cornerstone for adapting innovation from suppliers and stewarding it through the product lifecycle, a broad empirical analysis of supplier and purchasing involvement on the innovation performance is still missing. So far, the literature focuses on adequate organizational setting (McGinnis & Vallopra, 1999a), production process development/improvement (McGinnis & Vallopra, 1999b), or the influence on organizational financial performance (Carr & Pearson, 2002). Table 1 summarizes the (chrono)logical trend in the literature described above that leads to emphasize our perspective about NPD.

Complementary to the majority of existing research, this study investigates the antecedents of purchased product and service innovation considering both supplier and purchasing related factors as well as their mutual relations. We consider the supplier's role by including supplier collaboration as a key variable to achieve innovation, whereas the purchasing's role is modeled through strategic sourcing. We also

Table 1
Selected literature on collaborative NPD.

Stream	Content	Authors
Open and collaborative innovation	Innovation is the outcome of a collective effort rather than the product of single person or firm.	Chesbrough and Crowther (2006), Edquist (1997), Freeman and Soete (1997), Parker (2000), Tether (2002)
Role of suppliers in innovation	Among the possible sources of innovation outside the firm's boundaries, suppliers are one of the most valuable. Suppliers' engagement might have different forms, such as: <ul style="list-style-type: none"> • Supplier involvement into NPD; • Supplier development; • Supplier integration. 	Anderson and Weitz (1992), Bozdogan et al. (1998), Clark (1989), Das et al. (2006), Dowlatshahi (1998), Frohlich and Westbrook (2001), Handfield et al. (1999), Henke and Zhang (2010), Jayaram and Tan (2010), Johnsen (2009), Koufteros et al. (2007), Krause and Wagner (2008), Lindner et al. (2003), Nellore (2001), Petersen et al. (2003), Ragatz et al. (1997), Wagner and Hoegl (2006), Wynstra et al. (2003)
Role of purchasing in innovation	The purchasing department is the natural interface/coordinator of the supply base, therefore it must be capable to take part into NPD activities.	Carr and Pearson (2002), Lakemond et al. (2001), McGinnis and Vallopra (2001), Schiele (2010), van Echtelt et al. (2008), Wagner (2003), Wynstra et al. (1999, 2003), Wynstra and Ten Pierick (2000), Wynstra et al. (2001)
Role of supplier and purchasing involvement	Supplier and purchasing involvement together are understood as a strategic instrument taking effect on the financial performance, organizational settings or production process improvements.	Carr and Pearson (2002), McGinnis and Vallopra (1999a, 1999b)

theorize that purchasing knowledge is key to make the most of the firm's supply base as it facilitates both supplier collaboration and strategic sourcing efforts. Moreover, we consider the firm's innovation strategy as an important enabler of supplier collaboration and strategic sourcing. We test our theoretical model by means of structure equation modeling using data collected with a survey of 498 international firms.

In the next section the theoretical background and research hypotheses are explained, followed by the research method (i.e., the survey and measures used). The last three sections present data analysis, discuss results, and summarize main conclusions respectively.

2. Theoretical background

Compared to the widespread literature on supplier involvement and its potential benefit on the NPD process, relatively smaller and more recent attention has been paid to the role of the purchasing department, which is increasingly taking the lead in the management of supply relationship. It is still not clear whether or not the purchasing department significantly contributes to the innovation outcomes (Mendez & Pearson, 1994); more specifically, we wonder whether or not purchasing professionals' knowledge facilitate the process of supplier involvement and therefore the firm capability to innovate.

CAPS research (2011) emphasizes the relevance of supply network relationships as a mean to speed up innovation ideas to commercialization. The proposed set of main supply strategies contains the crucial aspects addressed by this study: robust category strategy development and execution; early supplier involvement in new product development; supplier relationship management with a focus on trust building and communication to develop preferred customer status and first access to supplier innovations; supply base management to assure access to a "bookshelf" of key suppliers with leading innovation capabilities; equitable contracting and risk/reward approaches; systems and processes to acquire, evaluate and implement supplier innovations.

Our theoretical framework grounds on the Resource Based View of the firm (RBV) and some related perspectives such as the extended RBV, Dynamic Capabilities, and the Knowledge Base View (KBV). RBV suggests that possessing resources that are rare, inimitable and non-substitutable can lead to competitive advantage and better performance (Barney, 1986, 1991). This kind of resources is commonly owned by a firm but can also be acquired from suppliers. Furthermore, they might be physical assets but also knowledge and capabilities of people working inside the firm. However, according to Day and Wensley (1988), not only does a firm need to attain superior resources but it also needs to convert those resources into positional advantages (such as cost reduction, faster delivery, or higher innovation). Positional advantages offer value added benefits that customers would pay a price premium to obtain, and thus enable a firm to achieve superior performance (Song, Song, & Di Benedetto, 2011).

Innovation can be considered a positional advantage and is precursor of success (Chen, Damanpour, & Reilly, 2010; Henard & Szymanski, 2001; Song & Parry, 1999; Song et al., 2011; Swink & Song, 2007). We therefore focus on two possible antecedents (i.e., sources of advantage): supplier collaboration and strategic sourcing, which are in line with the RBV and the abovementioned derivatives (e.g. Ramsey, 2001). Also, we argue that possessing compelling purchasing knowledge is an important enabler of both sources of advantage. In our view, the skills and competences of purchasing managers only influence innovation outcomes in an indirect way through the collaboration with suppliers and strategic sourcing related to NPD. Finally, we include innovation strategy as the factor leading to look for specific sources of advantage. The resulting theoretical model is shown in Fig. 1.

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