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## International Business Review

journal homepage: [www.elsevier.com/locate/ibusrev](http://www.elsevier.com/locate/ibusrev)



# Is the degree of internationalization associated with the use of knowledge intensive services or with innovation?

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### ARTICLE INFO

#### Article history:

Received 8 February 2014

Received in revised form 13 August 2014

Accepted 3 October 2014

Available online xxx

#### Keywords:

Innovation  
Internationalization  
Manufacturing  
Service use

### ABSTRACT

This paper investigates the use of external business services by exporting manufacturing firms, and questions whether this use is connected to their innovation behaviour. We examine this issue by analysing the association between different types of innovation (product, process, management, and marketing) and internationalization, and the extent to which the use of these services for internationalization is moderated by the firm's level or type of innovation. Drawing on an original survey of 804 manufacturing establishments in Quebec, Canada, the results show that exporting establishments use a wider variety of KIBS, and are more innovative than non-exporters. Although both innovation and KIBS-use are associated with internationalization, only for innovation is the association unambiguous. After controlling for size, sector and age, there is no evidence that exporting manufacturers have more recourse to KIBS than non-exporters: they are, however, more innovative.

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## 1. Introduction

Given the increasing complexity faced by businesses in their innovation process and in the innovation environment, the service sector is becoming particularly important for the economy as a whole and for innovation in particular. Innovation can be strongly dependent on service utilization. This is particularly true of 'Knowledge-intensive business services (KIBS)' which often trigger and strengthen processes of knowledge conversion and development in users' innovation processes (Martinez-Fernandez, Miles, & Weyman, 2011; Mas-Verdu, Wensley, Alba, & Garcia, 2011; Miles, 2008; Shearmur & Doloreux, 2014). In this respect, the innovation literature has emphasised their contribution as facilitators, carriers or sources of innovation, with firm competitiveness and innovativeness increasingly depending on knowledge content (den Hertog, 2000).

Likewise, KIBS-use is understood as being important in the internationalization process, as KIBS are sources of information on new markets, regulations and laws, as well as for the logistics of international trade (Bryson, Daniels, & Warf, 2004; Fletcher & Harris, 2012). The causal direction is less clear than for innovation

however, since establishments may turn to KIBS as they encounter the challenges of internationalization (in which case KIBS-use is a consequence on exporting), or may become exporters if they are intensive KIBS users (in which case KIBS-use is a cause of internationalization) (Griffith & Rubera, 2014).

Furthermore, it has been well established that an important characteristic of exporting firms is that they are more innovative than non-exporting firms (Cassiman & Golovko, 2011). The question therefore arises as to whether the KIBS-use observed in exporters is a consequence of their innovativeness – since it is fairly clear that, notwithstanding the possibility of some reverse causation (Macpherson, 2008), KIBS actively participate in bringing innovations to fruition.

This paper explores whether exporting firms are more innovative, and whether they use more external services than non-exporters. It then seeks to ascertain whether innovation and service-use are independently associated with internationalization, or whether innovation mediates the relationship between internationalization and KIBS-use. In other words, even if – as expected – exporting establishments have more recourse to external services than non-exporters, is this because these firms are more innovative? To our knowledge, no study has addressed the use of services for internationalization whilst taking into account the degree of innovation as a possible explanatory factor.

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The empirical analysis is based on original establishment-level data which provides information on the use of a wide range of services and on innovation activities carried out by 804 manufacturers in Quebec, Canada. Empirical research devoted to the use of services, whether for internationalization or for innovation, is still relatively scarce despite the recognized importance of this sector. This is attributable to the lack of suitable data: innovation surveys carried out by national authorities (Survey on Innovation in Canada; Community Innovative Survey in Europe) and other occasional *ad hoc* surveys focus upon a wide array of innovation factors, enquire about export activities, but do not incorporate questions relating to a full spectrum of external services. Hence, this data set is unique in that it contains information on the use of 15 different services, on different types of innovation – product, process, organizational and marketing – and on each establishment's export levels.

This study contributes to the literature on innovation and international business. Studying the association between innovation and service-use in the context of internationalization will improve our understanding of the role of services, which has received more theoretical treatments than empirical investigation (den Hertog, 2000; Miles, 2012; Muller & Doloreux, 2009). In the context of the international business literature, this study contributes to our understanding of service-use in firms with differing degrees of internationalization, varying from domestic firms, through *ad hoc* exporters, to international firms. It provides exploratory empirical results which help in understanding the role services play in internationalization. We find that although exporting establishments – whatever their degree of internationalization – have more recourse to KIBS than non-exporters, this relationship is partly mediated by innovation, and partly mediated by other establishment characteristics such as size and sector. Thus the use of services appears to be indirectly associated with exports – the key factors connected with internationalization being innovation and other firm-level characteristics.

The paper is organized as follows. Section 2 presents the literature review on innovation, internationalization and the role and contribution of services – KIBS in particular – to innovation. Section 3 describes the database and methodology, including the data sources used, variable definitions and measurements used in the analysis. Section 4 presents empirical results on the modes of service use and innovation across different categories of internationalization. Section 5 summarises the main results, discusses their implications for theory and practice, and highlights issues for future research.

## 2. Literature review

### 2.1. Open innovation and external knowledge sources

It is now widely recognized that the innovative success of a firm depends on its ability to effectively coordinate and integrate a broad range of internal and external sources of scientific and technological knowledge (Dahlander & Gann, 2010; Sammarra & Biggiro, 2008). Initially, innovation was conceived as a linear process where firms relied almost exclusively on knowledge created internally or acquired at the initial, conceptual, stages, and thus was characterized by a relatively weak need for knowledge integration from external sources. More recent understanding of innovation depicts it as an open and distributed process, recognizing the systemic and social dimensions of innovation and, specifically, the importance of external knowledge, learning and feedback (Kline & Rosenberg, 1986; Lundvall, 1992).

From this perspective, it has been suggested that innovation is an open process relying on 'the use of purposive inflows and outflows of knowledge to accelerate internal innovations, and

expand the markets for external use of innovation, respectively' (Chesbrough, 2006: 1). The open innovation paradigm differs significantly from earlier conceptualizations of the innovation process where the firm was portrayed as the locus of innovation, with its internal processes as the determining factor. This change in paradigm fundamentally shifts the locus of innovation: without denying that internal capacities and processes are of key importance, the role of external knowledge as a source of innovation is now likewise acknowledged and emphasised (Lichtenthaler & Lichtenthaler, 2009; Nieto & Santamaria, 2007).

Within this new context, not only are external knowledge sources given additional weight in the innovation process, there is also a change in perception whereby useful knowledge is understood as widely distributed, and firms must be well connected to identify and access it. As the innovation process becomes more open, intermediate markets have arisen where firms can interact and transact at various stages that were once closed or occurred internally within the firm (Dahlander & Gann, 2010; Huizingh, 2011). Purposive outflows of knowledge, or technology exploitation, lead the firm to leverage its existing technological capabilities beyond its boundaries. Purposive inflows, or technology exploration, lead the firm to capture and transform knowledge from external sources to modify its current technological capabilities (Nieto & Santamaria, 2007). Although a firm may have access to external knowledge, it may not recognize its potential value nor have the capacity to assimilate it to its existing knowledge base (Cohen & Levinthal, 1990). In this context, the firm's absorptive capacity is important, especially for exploring learning and innovation. Recent empirical work provides support for the theoretical understandings of absorptive capacity, whereby it contributes directly to innovation by allowing for the identification and translation of external knowledge inflows into tangible benefits for the firm.

Even though the firm can open itself to external partners, it may not be able to appropriate all information and knowledge to which it has access. This is explained by the inherent characteristics of knowledge, as tacit knowledge is more difficult and costlier to transfer than codified knowledge. Furthermore, openness is a two-way transaction, and each firm needs to develop a strategy whereby it focuses upon knowledge sources that are likely to be useful, assesses the costs of divulging knowledge it possesses, and considers the variety of ways knowledge can be acquired (Dahlander & Gann, 2010). Indeed, knowledge can be developed internally or absorbed from the firm's external environment via a variety of external sources (Doloreux & Shearmur, 2013; Sammarra & Biggiro, 2008). These sources can come from the market (i.e., clients, suppliers, competitors, and service firms, including KIBS), institutions (i.e., education and research establishments, and public and private research laboratories and institutes), or other external sources such as conferences, trade fairs, scientific journals, trade or technical publications, and professional and industrial associations (Amara & Landry, 2005). Of these, KIBS have the advantage of reducing the risk of knowledge and information leakage to competitors since there is a contractual link between client and provider, and of also being sources of highly specific and focused know-how.

### 2.2. Internationalization and external knowledge sources

Internationalization is defined as "expanding (activities) across country borders into geographical locations that are new to the firms" (Hitt et al., 1994: 298). A growing theme in the international business literature – similar to that just described for innovation – is that of knowledge as a key resource (Saarenketo, Puumalainen, Kyläheiko, & Kuivalainen, 2008; Yli-Renko et al., 2002) and a driver of internationalization (Eriksson, Johanson, Majkgård, & Sharma,

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