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How Important Are Knowledge Intensive Business Services For Innovation? A Brief Discussion Based on the Spanish Case

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Abstract

This paper aims at discussing the importance of knowledge intensive business services (KIBS) for innovation based on the Spanish case. Our findings point to an active role of these activities as innovators, showing similar levels than medium or even high-tech manufacturing. Nevertheless, we do not find support to affirm that KIBS play an outstanding role as knowledge carriers and bridges for innovation, as usually emphasised by the literature. On the contrary, universities and technological centres are seen as much more active partners and sources for innovation by Spanish companies. The latter suggests that in the Spanish innovation system there is a well differentiated role of KIBS and the public knowledge infrastructure formed by universities, research and large part of the technological centres.

Key Words: KIBS; innovation; interactions; system

1.- KIBS role in innovation systems: a new knowledge infrastructure?

The so-called "knowledge-based economy" refers to a situation where knowledge is increasingly present in all economic activities. Some services like computer activities, R&D services, as well as different type of consultancy services (e.g. engineering, technical, advertising) are just an expression of this trend, since they depend to a great extent on professional knowledge (related to specific technical fields) and they provide, at the same time, intermediate products and services that are knowledge based (Miles et al., 1995). These activities, also known as knowledge intensive business services (KIBS), tend to concentrate at metropolitan and well developed regions in contrast to less developed regions, where the presence of these activities is much poorer as they usually depend on the external provision of KIBS (González-López, 2009).

According to different authors, KIBS play a key role in systems of innovation as facilitators, carriers and sources of innovation (OCDE, 2006; Bilderbeek et al 1998; Hertog & Bilderbeek, 1998a). Hertog & Bilderbeek (1998b) define KIBS as a “second knowledge infrastructure” complementing and sometimes merging with the first and traditional knowledge structure, formed by universities and public research centres. KIBS are also considered as “bridges to innovation” (Czarnitzki & Spielkamp, 2000) because they carry knowledge among organisations by means of multiple interactions (with clients, competitors, partners, etc). As an example, KIBS might facilitate their clients’ innovations by helping them adopt solutions previously developed in other sectors or companies (i.e. any software solution). In this regard, Miles (2008) points out that KIBS combine various types of highly specialized knowledge, both codified and tacit, in order to develop problem-specific solutions for their clients. Finally, KIBS are also important innovators and, as Nählinder (2002) points out, they are among the most innovative activities within the service sector, with a similar performance as many high-tech manufacturing activities.

Several empirical studies have been conducted in order to know more about the role of KIBS in innovation systems. One of the first studies was carried out by the authors previously mentioned, Hertog & Bilderbeek (1998b), based on the Dutch case. Their results point to a relevant role of KIBS in the Dutch innovation system, in some aspects like R&D cooperation or their use as information sources, at the same level as the public knowledge infrastructure. In another study based on the British Community Innovation Survey, Tether (2005) concludes that neither KIBS nor the public research infrastructure have high relevance in terms of participation in formal networks for innovation and in their use as information sources for innovation. Nevertheless, the author indicates that KIBS play a slightly more active role in the British innovation system than the public infrastructure in both formal and informal networks.

Our objective in this paper is to add to the discussion of the role of KIBS in innovation systems by using a similar approach to the one used by Hertog & Bilderbeek (1998) and Tether (2005), applied to the Spanish case. We analyse the role of KIBS from two different viewpoints: first as innovators, i.e. their function as agents contributing to the innovation effort and to the measurable capacity of the system and, second, as carriers or bridges for innovation (analysing both their participation in cooperation agreements for innovation and their use as information sources).

2.- KIBS importance in Innovation Systems: the case of Spain

In the following paragraphs we discuss the importance of KIBS in the Spanish innovation system. Our insights are based on the analysis of the data provided by the Technological Innovation Panel (PITEC), which is used to build the Community Innovation Survey in Spain. The panel refers to two years, 2005 and 2006, and it contains information for more than 12.000 companies.

KIBS as innovator agents

Service companies have been traditionally considered as poor innovators in comparison to manufacturing activities. This view is partially biased by a narrow conception of innovation, focused primarily on technological innovation. Nevertheless, even when we use the same approach to measure innovation in manufacturing and service industries, we see how KIBS show high innovation performance (both from the input and output perspective). Thus, our data reflects that average expenditure on innovation made by KIBS companies (considering only those companies that spent on innovation) was slightly higher than both manufacturing and the overall economy average. Although KIBS average expenditure is biased by the high values of the R&D activities branch, other activities like engineering and other technical services show values not far from the economy average. Something similar happens when dealing with employment on innovation functions, as KIBS average employment in research and development is higher than the manufacturing average. Not only the R&D branch but two other KIBS branches, software and engineering activities, employ in average more people for R&D activities than manufacturing activities.

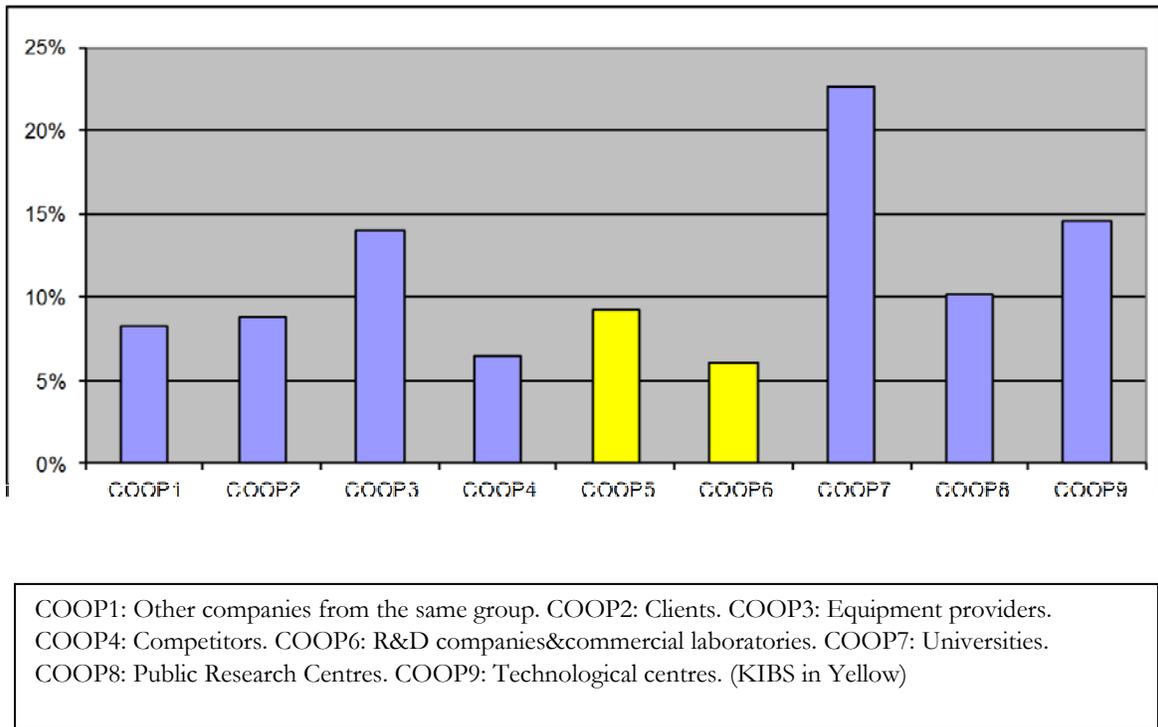
When it involves the capacity of KIBS to introduce innovations in the market, we see how these activities show a high innovative profile. Our results show that almost 75% of KIBS companies developed product-related innovations during the period 2005-2006, a percentage slightly higher than the economy and manufacturing activities in average. In particular, computer and software activities show similar innovative levels than medium tech manufacturing and not very far from high tech manufacturing. On the other hand, as expected, KIBS good innovative performance is more visible when it involves service innovation (in comparison with product innovation).

Finally, we have also found that KIBS activities in general show, in comparative terms, an innovative performance much intense than their effort in undertaking formal innovation activities. This trend is particularly clear in the case of computer activities and software and, to a lesser extent, in engineering and technical activities. This fact might be understood as an evidence of the specific nature of innovation in KIBS, less dependent on formal activities and more on informal contacts and interactions. In fact, when we correlate the average innovation expenditure (both by company and employee) with the propensity to innovate, results show a significant correlation for all firms, but KIBS companies.

KIBS as knowledge carriers and bridges for innovation

The panel provides us with information about the use of KIBS as cooperation partners for innovation activities. Nine different potential partners are asked to be assessed by companies cooperating for innovation purposes. Among them at least two can be considered as KIBS: experts and consultancy firms on the one hand, and R&D companies/commercial laboratories on the other. Data shows that KIBS do not play an outstanding role for cooperation agreements in comparison with other agents, particularly with universities that are the preferred innovation partner for Spanish companies and with technological centres. These results contrast with the ones indicated above, found by Tether (2005) for the UK case. At least in the Spanish case the traditional knowledge infrastructure formed by universities and public research centres plays a significantly more active role in formal networks for innovation than the so-called second infrastructure formed by KIBS (Figure 1).

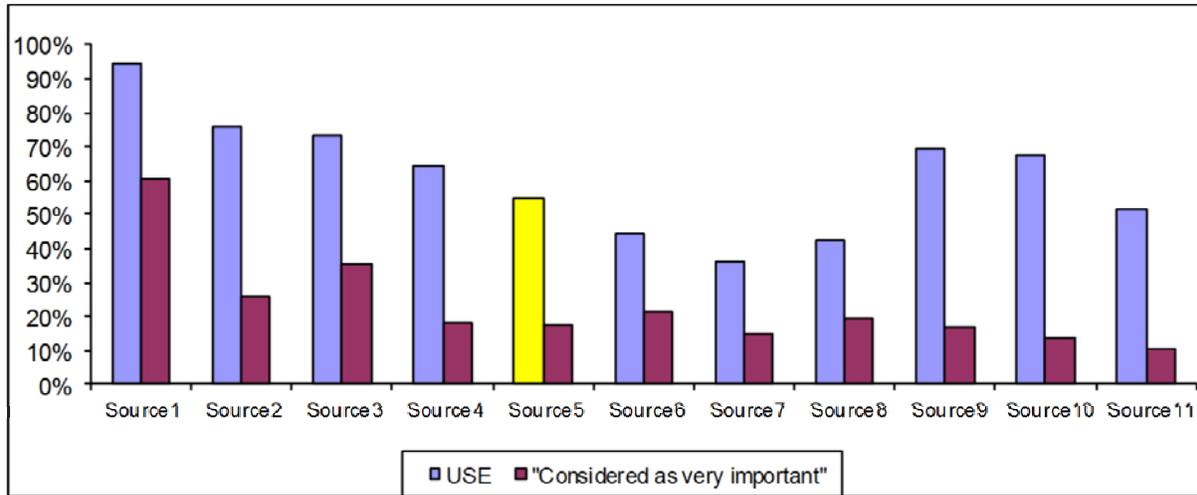
Figure 1. Cooperation for R&D by type of partner (% of firms cooperating with)



Source: Own-elaboration based on PITTEC data

The panel includes also data about the use of and importance given by firms to information sources for innovation where one of them refers to KIBS (consultants, laboratories and private institutes). More than 50% of the companies affirmed to have used KIBS as an information source for innovation, although less than 20% of them considered it as very important. KIBS were slightly more used than universities or technological centres as information sources although universities were considered as “very important” by a higher share of users compared to the KIBS case. The relevance given to KIBS as information sources for innovation is in any case very far from the one given to external sources like clients, competitors or equipment providers (Figure 2).

Figure 2. Use of information sources for innovation (% of firms using and rating sources)



Source1: Internal to the company or group. Source2: Equipment providers. Source3: Clients. Source4: Competitors. Source5: Consultants, laboratories or private institutes. Source6: Universities. Source 7: Public research centres. Source8: Technological centres. Source9: Conferences, fairs and exhibitions.

Source: Own-elaboration based on PITTEC data

The previous results about formal and informal interactions involving knowledge and innovation transferences, suggest a clearly differentiated role between KIBS and universities (and public research centres). Thus, universities are seen as a major collaborative agent when dealing with formal interactions, explicitly aimed at innovation purposes. Nevertheless, the use of the public infrastructure is lower than KIBS when dealing with informal interactions, probably not directly raised for innovation purposes, but acting anyway as information sources for innovation. That makes KIBS infrastructure probably more flexible and with a higher scope than the public knowledge infrastructure, more narrowly specialized on producing knowledge for specific R&D projects. Nevertheless, the higher use of KIBS in formal interactions contrasts with the lower importance given to the information and knowledge they “carry” with them. This can be related either to a poor development of the KIBS sector in Spain or to a less complex profile of the services provided by KIBS. I.e. many professional firms provide ordinary and routinary services and solutions to their clients, in many cases aiming cost reductions or other ends but not because of knowledge acquisition purposes.

3.- What have we learnt from the Spanish case about KIBS importance for innovation

In this paper we have briefly discussed the role of KIBS in innovation systems based on the case of Spain. Our conclusions partially challenge the theoretical role of KIBS as a key element in innovation systems and therefore as a relevant factor for promoting innovation. The importance of KIBS seems to be rather sustained on their direct involvement in R&D and innovation activities as they are among the most innovative activities in the Spanish economy, showing a propensity to introduce innovations very similar to medium and even high-tech manufacturing activities. Nevertheless, the role of KIBS pointed by the literature as knowledge carriers and bridges for innovation is not reflected by the importance given by Spanish firms to KIBS, as formal and informal interactive partners. The so-called “first infrastructure”, formed by universities and technological centres, is considered more important, in particular when dealing with formal cooperation for innovation. In this regard, we suggest that there exists a differentiated role of KIBS and universities within the Spanish innovation system. Thus, the public knowledge infrastructure is more narrowly specialized on producing knowledge for specific scientific and technological projects, whilst KIBS act as a more diffused and flexible infrastructure, carrying routinary information and knowledge that is poorly valued by companies in comparison with the knowledge embodied in interactions with universities.

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