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## **The Determinants of Market Extension in Knowledge-intensive Business Services: Evidence from a Regional Innovation System**

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### **Abstract**

The aim of the paper is fill this theoretical and empirical gap by explaining the firm-level factors that influence the market extension of KIBS. The analysis is based on a quantitative study.

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## **Abstract**

Several studies have emphasized the role of knowledge-intensive business services (KIBS) in fostering innovation within metropolitan areas and regional innovation systems. These areas are able to express a high and demanding request for services from KIBS and hence stimulate their rise and development. Despite large literature on KIBS emphasize the relevance of spatial proximity with customers many KIBS develop relationships on an international scale. There are not studies that explicitly focus on such discrepancy. The aim of the paper is fill this theoretical and empirical gap by explaining the firm-level factors that influence the market extension of KIBS. The analysis is based on a quantitative study on more than 150 KIBS supplying design or communication services located in the Veneto region (North-East Italy), an area that can be described as a regional innovation system. Four variables have been selected and considered to have a positive relationship with KIBS' market extension: size, experience, service standardization and investments in network technologies. Our results confirm that three out of four of them – standardization excluded – positively influence KIBS' market extension. Policy implications are also discussed.

## **Introduction**

As the literature points out (den Hertog, 2000; Muller & Zenker, 2001; Bettencourt *et al.*, 2002; Strambach, 2008), the production and diffusion of knowledge is the key element of business services that are knowledge-intensive such as software production, R&D, market research, or management consulting<sup>1</sup>. Not surprisingly, several studies have emphasized the role of knowledge-intensive business services (KIBS)<sup>2</sup> in fostering innovation within metropolitan areas (Saxenian, 1994; Bryson, 1997; Wood, 2002; Simmie & Strambach, 2005; Aslesen & Isaksen, 2007; Doloreux *et al.*, 2010) and regional innovation systems (Muller, 2001; Muller & Zenker, 2001; Strambach, 2002; Cooke & Leydesdorff, 2006).

Local contexts such as metropolitan areas and regional innovation systems show a high density of KIBS on average. These areas are able to express a high and demanding request for services from KIBS and hence stimulate their rise and development. The same contexts provide a number of other location conditions that are favorable to KIBS (Egelin *et al.*, 2004; Andersson & Hellerstedt, 2009).

However, spatial proximity is not the only factor that matters. In fact, many KIBS develop relationships – with customers, suppliers and other economic players – on an international scale and a greater number of them develop relationships beyond the local context (i.e. the metropolitan area or the regional innovation system in which they were founded) (Bryson & Rusten, 2005).

What firm-level factors influence the market extension of KIBS? This is not a negligible question, yet there is no study that has addressed it directly. Our paper seeks to provide a first contribution in this regard, by enlarging the theoretical debate focused on the link between KIBS start-ups and specific areas such as big cities and regional innovation system. Section 2 of the paper discusses theoretical and empirical contributions on this issue by referring to both supply and demand side explanatory factors. Section 3 reviews the empirical evidence on market extension in KIBS, related to different geographical areas. Section 4 presents the determinants of market extension scattered highlighted in the literature that we explore from an integrated perspective. To test our hypotheses we carried out a quantitative study on KIBS supplying design or communication services located in the Veneto region (North-East Italy), an area that can be described as a regional innovation system (Cooke & Memedovic, 2003) (section 5). Section 6 of the paper describes the research methodology and the results obtained from our empirical analysis. The concluding section discusses the results and indicates directions for further research and policy implications.

### **KIBS within the Local Contexts: The Role of Spatial Proximity**

Spatial proximity plays an important role in explaining the selective birth, survival and growth of KIBS in metropolitan areas and regional innovation systems. Several theoretical and empirical analyses have shown that such spatial contexts provide

favorable conditions both in terms of demand and supply. It is specifically the co-presence of demand and supply factors that is of critical importance (Egeln *et al.*, 2004; Andersson & Hellerstedt, 2009).

Starting from the demand side, the presence of a large number of businesses in a limited space, and therefore the presence of a high demand for intermediate goods and business services, tends to generate a supply of inputs dedicated to the satisfaction of the local demand independently of the type of input and the industry. If we focus on services, the size of the potential local market is a strong factor in encouraging the emergence of local suppliers. The production of these inputs is based on interaction with the client, as the abundant service marketing literature has pointed out (Grönroos, 2000; Zeithaml & Bitner, 2000), and as a consequence, it is distance-sensitive. This sensitiveness is all the more evident when we consider KIBS (Koch & Strotmann, 2006; Andersson & Hellerstedt, 2009). In fact, a high level of customization characterizes most KIBS' services and this requires a face-to-face interaction with the client managed through a series of meetings, starting from the phase that precedes production of the service in a strict sense. In addition, the interaction with clients is an incomparable learning process that KIBS use to improve its services and develop new ones.

As Aslesen and Isaksen (2007) showed, organizations that benefit from spatial proximity to KIBS may choose to locate in areas that have a relatively large number of these service providers. Consequently, the supply of knowledge-intensive services and demand for them are mutually reinforcing. To manage successfully the production of services and innovation processes KIBS need to interact not only at the downstream side of the supply chain, with their customers, but also upstream with suppliers of services, software and other technologies. So, in big cities and regional innovation systems, KIBS can benefit from a supply factor that operates symmetrically with respect to the demand factor described above (Aslesen & Isaksen, 2007).

As regards the supply side, the literature identifies other location factors that characterize areas with a high density of KIBS. All these drivers relate to the production and diffusion of knowledge (Audretsch & Feldman, 1996; Daniels & Bryson, 2002; Audretsch & Lehmann, 2005; Koch & Stahlecker, 2006; Aslesen &

Isaksen, 2007; Andersson & Hellerstedt, 2009). Firstly, universities produce graduates with backgrounds to be utilized by KIBS. Secondly, these firms have easy access to highly skilled labor employed in other local organizations. Thirdly, there are many manufacturing firms, service firms or knowledge institutions such as universities and public research centers that can act as incubators of entrepreneurial ideas related to the KIBS sector (spin-off processes). Finally, KIBS can develop relationships with other KIBS, university departments or research centers in order to access to useful information and knowledge, or to carry out joint projects.

In general, there are different supply factors at work both simultaneously and in sequence. An example follows. A university engineering department starts a demanding project of applied research; a student participates in the project while writing her thesis; in this way she contributes to the production of new knowledge and at the same time absorbs this knowledge. On this basis, the student develops a KIBS entrepreneurial idea that she wants to pursue after graduation. The location chosen is very close to her university department, because the possibility to interact with researchers in the department is considered a very important element during the start-up phase (and even after). But the young graduate could choose another option: he takes a job at an already-existing engineering company located not far from the university, where he partially uses the knowledge acquired at the university (first knowledge spillover), but, above all, he acquires knowledge about the market which, combined with the previous knowledge, helps him to improve his entrepreneurial idea of a new KIBS. He eventually leaves the company and starts up his own firm in the same region (second knowledge spillover, in the form of spin-off).

### **KIBS beyond the Local Contexts: Some Empirical Evidence**

In short, metropolitan areas and regional innovation systems are contexts that foster the creation and growth of KIBS. However, after the early stage of a KIBS' life, spatial proximity may also become a limit to further growth. Koch and Strotmann (2006, p. 616) have clearly highlighted the reasons why a broader spatial reach may become more advantageous to the growth of a KIBS or, more in general, of a firm: "first, the simple assumption that a bigger number of potential clients and partners

increases the chances of successful contacts, and, second, that by an expansion of spatial reach, new and different knowledge can enter the firm and potential lock-ins can be more probably avoided”.

KIBS can actually develop relationships – with customers, suppliers and other subjects – beyond the boundaries of local context, as evidenced by the fact that a non-negligible number of them work on an international scale. The most common ways of internationalization within the KIBS sector are as follows: i) to undertake foreign direct investment in some form (greenfield investments, acquisitions, joint ventures with foreign partners), or ii) to use personnel travelling overseas, mainly due to the need for a close interaction between KIBS and their customers (Roberts, 1998; Miozzo & Soete, 1999; Blomstermo *et al.*, 2006; Doloreux *et al.*, 2010). However, internationalization is a goal that KIBS achieve following two opposite paths: some of them internationalize gradually (stage model) while others fall into the category of “born global” (Roberts, 1999; Toivonen *et al.*, 2009). The latter are KIBS whose business model includes foreign direct investments right from their birth or very shortly thereafter, and thus pose a strong challenge to the traditional view of internationalization process as a sequence of stages (Madsen & Servais, 1997; Chetty & Campbell-Hunt, 2004).

It is also interesting the case of KIBS that do not operate abroad but develop relationships beyond the local context (Strambach, 2001; Bryson & Rusten, 2005). Some empirical studies, which focused on the relationships with customers, showed that these “national” or “domestic” KIBS represent a significant fraction of the total number of KIBS in a given area. These studies addressed different geographical areas.

Corrocher *et al.* (2009) for instance carried out a study on KIBS in Lombardy - one of the most industrialized regions of Europe – that went through a structural change over the last fifteen years, from a manufacturing-based to a service-based economy. By applying the technique of cluster analysis to a sample of 441 KIBS, the authors identified four different patterns of innovation. Regarding the issue we are concerned, among the many variables analyzed in the study there is the spatial reach of KIBS with regard to clients: regional, domestic or international. Although the vast majority of Lombardy KIBS in all four clusters do not work beyond the regional

market, the share of national KIBS is between 10 and 20% in three clusters of four (the exception is the cluster with the lowest number of units in the sample)<sup>3</sup>. Instead, the incidence of KIBS with foreign customers does not exceed 3% in any cluster, due to the presence of few very large consulting companies in the sample.

Other contributions are consistent with these empirical results. Aguilera (2003) analyzed 250 KIBS in the Lyon metropolitan area (France) and found that customers outside this area account for 58.0% of the total turnover of KIBS, while foreign customers account for only 6.7%. Aslesen and Isaksen (2007) studied two sectors of KIBS (software industry and organizational consultants) that are highly concentrated in the capital region of Oslo, Norway. They found that the 600 KIBS in the sample provided about two-thirds of their services outside the local market. Finally, Koch and Strotmann (2006) focused on the post-entry phase of KIBS (to a maximum of eight years after) studying three regions of Germany, namely Bremen, Munich and Stuttgart. In their sample of 446 firms the average share of turnover earned outside the regional market was 54.0%.

### **In Search of the Determinants of Market Extension in KIBS**

Given the results discussed in the previous section, it is useful to ask what firm-level factors may influence the market extension of KIBS. As far as we know, there is no study that has addressed this research question directly, while there is no lack of theoretical and empirical contributions on the determinants of innovativeness in KIBS, e.g. Koschatzky (1999), Gallouj (2002), Tether (2003, 2005), Hipp & Grupp (2005), Leiponen (2005), Freel (2006), Amara *et al.* (2009).

We propose a conceptual framework aiming at explaining the KIBS market extension based on variables we consider relevant for the analysis of the role of spatial proximity in KIBS' approach to the market. Those variables have been scattered described in the literature on KIBS, but neither addressed in an integrated view nor explored directly. In our conceptual framework, market extension is considered as the dependent variable, driven by the following firm-based independent variables :

1. firm size,
2. firm experience,
3. standardization *versus* customization of services,
4. investment in network technologies.

According to Dhanaraj and Beamish (2003, p. 245), the resource-based view of the firm “addresses the central issue of how superior performance can be attained relative to other firms in the same market and posits that superior performance results from acquiring and exploiting unique resources of the firm”. In the light of this principle, two typical and simple characteristics of all firms, i.e. their size and their experience, have been frequently used as indicators of the resources at the firm’s disposal, potentially influencing its performance. In particular, several empirical studies investigated the direct effect of these variables on export performance and a good number of them found a significant positive influence of size or experience on export performance as the reviews conducted by Zou & Stan (1998) and by Sousa *et al.* (2008) analysis. Based on these considerations, the following two propositions arises:

*H1.* The size of a KIBS has a positive influence on its market extension.

*H2.* The experience accumulated by a KIBS has a positive influence on its market extension.

As mentioned before, services on average are characterized by a higher degree of customization compared to goods. Consequently, the supplier-customer interaction and spatial proximity assume greater importance. However, theoretical contributions on such issues give ambiguous results. On the one hand, in the case of KIBS the level of customization of services offered by them is higher than other service sectors (Corrocher *et al.*, 2009). On the other hand, Tether *et al.* (2001) found that even in two typical KIBS industries – i.e. software and technical services – there is a significant number of firms who provide wholly or largely standardized services – so one can observe an internal variety in the KIBS’ service offering and in the degree of standardization. For the latter category of KIBS the spatial proximity becomes

irrelevant, since standardization reduce the need for interaction. The third hypothesis that we wish to test is therefore:

*H3.* Standardization of services provided by a KIBS has a positive influence on its market extension.

The developments in information and communication technologies (henceforth ICT) have affected the KIBS sector in different ways (Miozzo & Soete, 2001). The most important implications are related to network relationships. Antonelli (1999) affirms that – without denying the relevance of interaction and the role of tacit dimension in the KIBS activity – ICT allow firms operating in remote locations to dialogue and exchange codified as well as tacit knowledge no matter the distance involved. Those processes enhance KIBS internationalization (Roberts, 1998), not only with foreign customers, but also with national clients operating abroad (Corrocher *et al.*, 2009). Final hypothesis follows:

*H4.* Investments in network technologies by a KIBS have a positive influence on its market extension.

[Figure 1 approximately here]

### **Veneto as a Regional Innovation System**

To test our research hypotheses, we carried out a quantitative analysis on KIBS specialized in design and communication services and located in the Veneto region (North Eastern part of Italy). The selection of this area is based on the fact that it has the characteristics of a typical innovation system as defined by Cooke (1998). Moreover, Cooke & Memedovic (2003) include the Veneto among the regional innovation system case studies described in a study supported by UNIDO (United Nations Industrial Development Organization) and focused on this topic. Hence, it represents a perfect context to study KIBS and their processes of market growth.

Veneto is among the more developed regions in Europe in terms of rate of employment and GDP per capita. According to the OECD classification, in 2008

Veneto had the third largest share of manufacturing firms with a high-technology content (about 9.3% of Italy's total, 3<sup>rd</sup> region in Italy). But this region also has many local clusters or industrial districts in low- and medium-tech industries, such as the eyewear district of Belluno, the sportswear district of Montebelluna, or the furniture district of Livenza (Corò & Rullani, 1998; Corò & Grandinetti, 2001; Sammarra & Belussi, 2008). Industrial districts are populations of SMEs that share a certain territory and a product specialization. Moreover, the district population is characterized by a high degree of division of labor among firms: many of them are specialized in one or a few intermediate phases of the production process or operate at the end of this process, while the others are involved in the supply of machines, technologies and various kinds of business services (Becattini, 1990; Sforzi, 2003).

Besides the dense network of relations that characterize each district, it is important to notice the presence of intense connections among firms belonging to different districts. From this perspective Veneto can be considered a regional system of (sub-regional) industrial districts.

Another distinctive trait of the Veneto region is the large presence of medium-size manufacturing firms (between 50 and 499 employees, annual turnover between 13-290 Ml Euro, Mediobanca-Unioncamere source) (Coltorti, 2007). From this perspective, Veneto ranks second beyond Lombardy in Italy, while it ranks first in terms of relative presence. The number of medium-size firms has increased due to the growing process of small companies - located within and outside industrial districts – which are at the core of the most dynamic part of the regional industrial system (Chiarvesio & Micelli, 2007; Grandinetti *et al.*, 2010).

Finally, in recent times the Veneto region experiences also a significant growth of the major KIBS sectors as identified by Miles (2005), specifically in terms of new firms. Such phenomenon can be explained by two factors: on the one hand, the high density of demand formed by small and medium manufacturing companies; on the other hand, the processes of growth described above have increased the need for knowledge-intensive services, due to a qualitative evolution of the demand (Corò & Grandinetti, 2010). Even though the average size of KIBS in Veneto is very small, their contribution to the production of value added in the region is not marginal, together with their role in supporting innovation and competitiveness of local firms.

In particular, KIBS operating in design and communication play a crucial role in supporting SMEs' product innovation strategies, as well as their market positioning and customer relationship management (Bettioli & Di Maria, 2010).

## **Research Methodology and Findings**

### *Sample and data collection*

We decided to test our hypotheses by focusing only on firms specializing in design and communication, due to their relevance in the Veneto economy as well as to their role in innovation processes of firms located in industrial districts. Firms of our sample were randomly selected from a dataset of 3,014 KIBS specializing in design and communication and located in the Veneto region. The list of KIBS was extracted from the catalogue of firms registered with the system of Italian Chambers of Commerce and according to the areas of specialization of interest to our research. The number of firms interviewed was 155 out of 3,014 (5.1%). The sample was balanced in order to reflect the different areas of specialization included under the heading of "design and communication services". The industry codes of specialization used for the sampling process are included in Table 1.

[Table 1 approximately here]

The sample is homogeneous with regard to the nature of the specialized services provided by the KIBS. This is an important element to consider in order to test our research hypotheses, as few studies suggest that there are significant differences within the "wide" KIBS sector as far as the domains we want to explore in our study are concerned (Tether & Hipp, 2002; Tether, 2005; Corrocher *et al.*, 2009). The interviews were carried out in July 2009. The collection of information was based on a structured questionnaire implemented through phone interviews targeted to entrepreneur-owner of KIBS.

### *Variables*

Our analysis is based on the five variables identified and described in the literature section: market size or extension (dependent variable), firm size, firm experience, service standardization, investment in network technologies (independent variables).

*Market size.* In order to measure the market size the variables included in the questionnaire refer to the distribution (in percentage) of annual turnover in four areas: Veneto, other Italian regions, European Union (EU15) and other countries. Since our aim is to study the market extension beyond the regional level, we aggregate KIBS into two main groups: the first category includes KIBS with clients exclusively located in the Veneto region, the second group refers to KIBS with clients located also in other regions and/or abroad. We named the first group “local” KIBS and the second group “national” KIBS.

*Firm size.* Firm size was measured by considering the following variables included in our questionnaire: total turnover, number of employees, number of branches/offices, frequency of personnel transfer from KIBS to its customers during the service provision process (scale 1-5: 1=never, 5=always). The first two are the most frequently used as measures of firm size, while the others were included to take account of the highly distance-sensitive services provided by KIBS (Roberts, 1998; Miozzo & Soete, 1999; Knobens & Oerlemans, 2006).

*Firm experience.* This construct was measured by considering two variables: firm age, i.e. the number of years in business; the number of founders (one or more than one). We choose to include the second variable due to the fact that KIBS development is very recent in the Veneto region. Firms initiated by more founders – each of them bringing specific knowledge and relationships – can benefit from a larger experience basis that can be exploited from the beginning. Hence, this resource increases the successful rate during the early phase of its life (Feesser & Willard, 1990; Garnsey, 1998).

*Service standardization.* As the level of service standardization is concerned, Tether *et al.* (2001) classify services into three categories: standard services (those without customer specific changes), partially standardized (or customized) services and fully customized or “bespoke” services. We have split the intermediate category into two different situations: standard services with limited customer adaptation, and modular services. Modularity is in fact a driver for customization not only in

manufacturing sectors (Feitzinger & Lee, 1997; Ahmad *et al.*, 2010), but also in services (Pekkarinen & Ulkuniemi, 2008). The level of standardization has been measured in terms of the weight (in percentage) of each service provided into the four categories.

*Investment in network technologies.* A first item we chose to gauge this construct is the presence of a Customer Relationship Management (CRM) system allowing the KIBS interacting with close and distant customers. We also add the variable related to the intensity of the electronic exchange of information and documents among employees (scale 1-5: 1=never, 5=always). In fact, as described by the internal marketing view, the presence of “good” within-organization relationships is a key to having “good” relationships between the service organization and its customers (Rafiq & Ahmed, 2000).

The variables measured on a five-point scale have been then redefined on a dichotomous scale: low (from 1 to 3), high (4 or 5).

### *Results*

KIBS in the sample (and in the population) are usually small firms with an average of 3.3 people working in the organization (entrepreneurs included) and an annual turnover of 248.6 thousand € (the turnover data refer to 2008). The distribution of market extension shows that 36.2% of KIBS interviewed work exclusively with clients located in the Veneto region, while in the majority of KIBS (63.8%) market extension overcomes regional borders. Within this group, KIBS with international customers are a small group (11.2% of the whole sample). Those results are consistent with other empirical studies we referred to develop our research questions and discussed in section 2 (i.e. the study carried out by Corrocher *et al.*, 2009 on KIBS in Lombardy).

Table 2 shows the results of the test carried out to verify our hypotheses on the firm-determinant of KIBS market extension.

[Table 2 approximately here]

*H1*. All the variables used to measure the KIBS dimension were found to have a significant and positive impact on market extension, confirming the first hypothesis of our conceptual framework. The statistical significance is higher when considering the employment rate ( $p < 0.01$ ) than the total turnover, multiple locations (branches or subsidiaries) and personnel transfer from KIBS to client firms ( $p < 0.05$ ). It is worth noticing that even for national KIBS the development of new branches in addition to the headquarter is infrequent (9.3% of sub-sample), while they usually transfer their own personnel to the client's organization temporarily (44.3%). Those results are consistent with the small size of the KIBS interviewed.

*H2*, relating to the influence of the KIBS experience, the hypothesis is confirmed only when considering the presence of a founding group. More than 46% of national KIBS has this characteristic, with a higher and significant rate ( $p < 0.01$ ) compared to local KIBS (20.0%). Instead, both groups have no differences in terms of average age (which is 12 years for the whole sample): interestingly, national KIBS seem younger than local KIBS.

In *H3* we argued that the degree of standardization of services provided by a KIBS has a positive influence on its market extension: this hypothesis was not supported. In fact, there are no statistically significance differences in none of the four categories of services analyzed (fully standardized, with limited customization, modular and fully customized). Interestingly, the large majority of KIBS – about 85% in both national and local KIBS - offer their customers services that are fully customized.

In *H4* we created a positive connection between the intensive use of network technologies by a KIBS and its market extension. Our results revealed a highly significant, positive impact of the use of a web-based CRM ( $p < 0.01$ ) and a significant, positive impact of the electronic exchange of information and documents within the KIBS ( $p < 0.05$ ).

[Figure 2 approximately here]

## **Discussion and conclusive remarks**

Scholars have shown a growing interest in knowledge management, innovation and the role of spatial proximity in KIBS (Muller & Doloreux, 2009). However, our knowledge on the determinants of market extension by these service providers is still limited. We aimed at offering an original contribution to the theoretical debate on KIBS on this issue by developing four hypotheses and testing them on about 150 KIBS located in a regional innovation system.

**On size.** Our result on the impact of KIBS size (in terms of turnover and employees) on market extension is consistent with Koch and Strotmann (2006), who are however oriented to identify drivers of KIBS' growth. Those scholars analyzed the post-entry performance – measured in terms of employment growth – of newborn KIBS in three German regions and they found that: “Those firms having partners outside their location and those firms succeeding to extend their market spatially are most likely to increase their employment” (p. 625).

Concerning the other variables related to size that we include in the analysis we stress the personnel transfer from KIBS to client firm since this process characterizes in a pervasive way the group of national KIBS. From this point of view, Knoblen and Oerlemans (2006) in a review on the literature on proximity and inter-organizational collaboration (not only on KIBS) present the emerging notion of temporary geographical proximity: “This notion implies that actors need not be in constant geographical proximity when collaborating, but that meetings, short visits and temporary co-location might be sufficient for actors to build other forms of proximity (such as organizational), which subsequently allow collaboration over large geographical distances” (p. 74).

**On experience.** Our results confirm that experience is relevant when considering the founding team at the basis of KIBS' start-up. The age of a KIBS is not relevant to its capability to grow beyond the borders of the local market. As described by many studies, spatial proximity is crucial for the birth and start-up process of KIBS in relation to the presence of numerous factors on both the supply and demand sides. However, after the first stage of a KIBS's life, the strategic vision of single entrepreneurs becomes of great importance: that is, the behavior of persons that – in small and simple organizations like the KIBS firms in our samples – embody the strategic decisions and entrepreneurial factor (Miller, 1983). Those entrepreneurs

decide to undertake an active search for growth opportunities beyond the local context. This vision has also been proposed by Falay *et al.* (2007) on “born global” firms.

Moreover, the age is not a good proxy of experience, specifically because it does not take into account of the cumulative know-how of the future entrepreneur/s and human resources in the phase antecedent the KIBS’ birth. Nevertheless, the influence of the experience on market size is mitigated by the business model of the new firm, otherwise it is not possible to explain the phenomenon of “born global” KIBS in areas characterized by a large potential market (Toivonen *et al.*, 2009). Entrepreneurs might in fact perceive the potential problems of lock-in effect related to the focus only on the local market. In the concept of business model we can also include, in fact, the degree of innovativeness of services provided: the more innovative the services, the higher the gap between potential and real demand. Hence, innovative KIBS are pushed to enlarge at the early stages of their business history to find new opportunities beyond the local market. The case study of Catas is consistent with this framework. Catas is an institutional KIBS founded in 1969 with the task of carrying out quality control on the products manufactured by the firms located in the chair industrial district (North-East Italy). It was set up to respond to a specific need: the barriers to entry that the quality and safety regulations on products – in force in some foreign countries and particularly in Germany – represented for the firms of the chair district. In that period there were many firms within the district (more than 1,000) but few were seriously involved in exporting, however, so the demand for services supporting quality was very limited. In the first phase of its life, the centre was engaged on two fronts to deal with this gap in local demand, both within the district and outside it. On the internal front, a training program was devised for potential clients, thereby creating the premises necessary to make the new (for the district) supply of services comprehensible and attractive. On the external front, Catas started to actively seek those businesses in the furniture industry which, because of their size and quality policies, would potentially be more interested in the services offered by Catas. Starting from these bases, Catas gradually grew by developing sales outside (and inside) the borders of the district (Grandinetti, 2011).

In short, market extension is not always the result of an evolutionary path of the KIBS starting and learning locally and then extending the market.

**On service standardization.** Our results do not support the positive relationships between service standardization and market size. This outcome can be explained in terms of homogeneity of the KIBS we observed. In the design and communication services, customers ask for creative outputs. Hence, KIBS offer largely customized services tailored on the needs of clients. While the output is really customized, we argue that KIBS specialized on design and creativity focus their attention more on the standardization of the processes at the basis of service offering (i.e. the methodology on how the creativity is activated and organized in terms of internal division of labor) than on the product (that still requires a high degree of customization). In fact, such process plays a crucial role for increasing productivity without losing variety in the offering. In other KIBS specialization such as information technologies – as other scholars stated – the level of standardization or modularity can be higher, with eventually positive impacts on KIBS' market size. Since our analysis is based only on a specific category of KIBS, further research should test our hypothesis on other KIBS specialization.

**On network technologies.** Investing in network technologies improve the KIBS capability to enlarge its market beyond the local context. A useful reference can be found in the Larsen's concept of distributed knowledge system (2001). The author proposes in fact the idea of interpreting KIBS as a distributed knowledge system, where human resources play a crucial role in the production of knowledge through interaction among internal KIBS personnel (in addition of cooperation with external colleagues). In this perspective, the technological infrastructure supports such interaction even at distance. As far as the CRM is concerned, we should also highlight that this is a selective and sophisticated technology, there are probably a large number of KIBS (national one) that rely on more soft and easy-to-use technologies such as e-mail for interaction with customers.

To sum up, we propose a profile of national KIBS. Even though those firms operate in a larger market than regional KIBS does not mean that they refuse relationships or, better, the opportunity to interact through relationships – as stressed by many studies on KIBS (den Hertog, 2000; Muller & Zenker, 2001; Strambach,

2001; Bettencourt *et al.*, 2002; Czarnitzki & Spielkamp, 2003). On the contrary, national KIBS establish more intense relationships with customers, suppliers and other partners in their value networks than local KIBS (Table 3). Since national KIBS do not increase service standardization, they solve the problem firstly by recreating the spatial proximity through personnel transfer and secondly by exploiting the advantages of network technologies.

[Table 3 approximately here]

**Policy implications.** Policy makers paid an increasing attention to KIBS as a mean for sustaining local competitiveness (Miles, 2005; EMCC, 2005, 2006). Especially in Europe and USA, where traditional manufacturing is moving towards low cost countries, KIBS are considered an important part of the evolution of the local economy into a more sophisticated service industry. KIBS would sustain the competitiveness of the local manufacturing firms, producing added value services related to key processes: product innovation, design, marketing, technology, etc. KIBS are strategic for taking fully part to the knowledge economy.

These views led policy makers to sustain and promote the development of new KIBS, giving economic help for start-ups specialized in innovative services. The rationale is that the investments in KIBS are significant per se and will pay out in the near future in terms of jobs and local competitiveness. Moreover policy makers invested directly in KIBS in the sector of technology transfer with the birth of mixed private and public capital firms. Technology transfer was considered a strategic bridge between the world of science and technology and local manufacturing firms, giving to the latter the opportunity to access qualified knowledge. This is true especially in Italy, where almost each local chamber of commerce invested in a technology transfer firm.

The results of our research lead to a reconsideration of policy making in this field. Policy makers should change their view on KIBS: they are not just a local phenomenon; they tend to be global players. KIBS development and growth requires the opportunity to extend the market beyond the limitation of regional boundaries. The knowledge developed by the KIBS in its interaction with the customer or other

partners need to be exploited into a global market, looking for new potential customer. New knowledge elaborated in the local context can increase when included into larger circuits of global markets. In the global market there are new opportunities for developing new knowledge and for exploiting the codified one already developed in the local context. Instead of just considering technology or knowledge transfer, policy makers should also take into account the importance of transforming local KIBS into global ones, sustaining a more strong internationalization of services. This is crucial for developing the quality of KIBS and for sustaining its growth over time, with also positive impacts on the local economic system. Those KIBS should be considered as knowledge gatekeepers: Morrison (2008); Lazaric et al. (2008); Grandinetti (2011). Aslesen and Isaksen (2010) adopt a similar concept, that is they refer to KIBS as knowledge mediators in regional innovation systems.

Market extension has two important implications that we wish to emphasize. First, the interaction with diversified and locally spread customers is important from an exploratory point of view: it multiplies KIBS' opportunities for learning, new knowledge creation, and innovation. This effect is amplified by the fact that the large majority of national KIBS systematically collaborate with other players in their value networks. Second, by expanding their markets, the national KIBS in our sample also become more attractive to local more advanced, innovative and demanding customers, which otherwise would look for KIBS located outside the local context. These external KIBS are the competitors of the more advanced KIBS in the Veneto region, which enlarge their markets beyond the local context.

A first limitation of our study is that it is still preliminary. Further research should be devoted to comparing KIBS specializing in services other than design and communication. Moreover, in order to validate our research question, further research could focus on extending the analysis to KIBS embedded in diverse economic systems in order to identify similarities or differences in their market approach and knowledge management. Our empirical analysis was carried out with a quantitative method, which could be integrated by qualitative case study approach to deepen understanding of the phenomena considered.

## Notes

1. The definition of the KIBS sector is not consistent across different studies. However, most of them include the NACE division 72 (Computer and related activities), the NACE division 73 (Research and experimental development) and a collection of sub-sectors from division 74 (Other business activities) (Miles, 2005; Muller & Doloreux, 2009).
2. Hereafter we use the acronym KIBS to indicate both the knowledge-intensive services and the organizations providing them.
3. Interestingly, KIBS in this cluster distinguish for their close interaction with customers both in the service production and innovation development.
4. Relational intensity was gauged through the following variables: degree of interaction with customers measured in terms of frequency of face-to-face meetings to develop the service and monitor the service's delivery (scale 1-5: 1=never, 5=always); intensity of collaboration with other firms in the service's production measured in terms of sporadic or systematic terms.

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Table 1. Sample characteristics by area of specialization

Areas of specialization	Code <sup>a</sup>	Universe		Sample	
		a.v.	%	a.v.	%
Development of advertising campaigns	73.11.01	1,230	40.8	66	42.6
Activities of fashion design and industrial design	74.10.10	627	20.8	30	19.4
Activities of technical designers	74.10.30	463	15.4	21	13.5
Activities of web page graphic designers	74.10.21	291	9.7	14	9.0
Public relations and communication	70.21.00	118	3.9	6	3.9
Other design activities	74.10.90	27	0.9	1	0.6
Other activities of graphic designers	74.10.29	72	2.4	5	3.2
Web portal	63.12.00	11	0.4	3	1.9
Activities of engineering studios and other technical studios	71.12.00	38	1.3	2	1.3
Activities of architectural studios	71.11.00	10	0.3	0	0.0
Services of integrated engineering planning	71.12.20	91	3.0	5	3.2
Marketing campaigns and other advertising services	73.11.02	36	1.2	2	1.3
Total		3,014	100.0	155	100.0

<sup>a</sup> Numbers refer to the Italian ATECO code of classification.

Table 2. Determinants of market extension

Determinants and variables <sup>a</sup>		National KIBS	Regional KIBS
<i>Firm size</i>			
2008 Total turnover (thousand €, mean)	*	284.3	119.7
Employees (mean)	**	3.9	2.1
Single office (% of firms)	*	90.7	100.0
Multiple locations (% of firms)	*	9.3	0.0
Personnel transfer from KIBS to client firm (% of firms)	*	44.3	25.5
<i>Firm experience</i>			
Number of years in business (mean)		11	13
One founder (% of firms)	**	53.6	80.0
Group of founders (% of firms)	**	46.4	20.0
<i>Standardization of services (% of firms)</i>			
Fully standardized services		3.1	2.7
Standard services with limited customization		5.7	8.2
Modular services		6.6	3.8
Fully customized services		84.6	85.3
<i>Investment in network technologies (% of firms)</i>			
Intranet (file sharing)	*	63.9	30.9
Web-based CRM	**	42.3	20.0

<sup>a</sup> N. of local KIBS=55; N. of national KIBS=97. T-test was used to test differences in continuous variables, while Chi-square was used for dichotomous variables. Differences between local KIBS and national KIBS have been tested (\* p<0.05; \*\*p<0.01).

Table 3. Relational intensity

Variables (% of firms) <sup>a</sup>		National KIBS	Regional KIBS
Intense interaction with customers	*	62.9	45.5
Systematic collaborations within the value network	*	43.3	25.5
Sporadic collaborations within the value network	*	56.7	74.5

<sup>a</sup> N. of local KIBS=55; N. of national KIBS=97. Differences between local KIBS and national KIBS have been tested (\* p<0.05; \*\*p<0.01).

Figure 1. The conceptual model

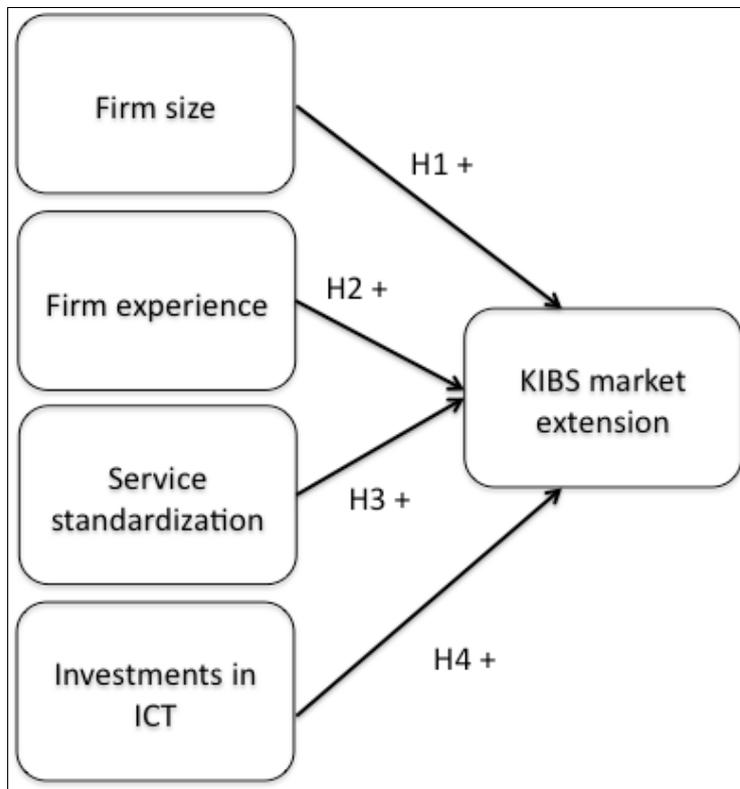


Figure 2 - Findings

