

The role of knowledge-intensive business services in innovation processes

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Introduction

Today's knowledge-based economies are the result of the historical coincidence between long-term trends sprung up in industrial societies and turned apparent in progressive expansion of activities and investments related to scientific, technological and organisational knowledge as well as in a technological revolution of great scope – digital revolution.¹

This technological revolution can be considered to have helped accelerate some background movements that used to be at the base of industrial economies for a long time, especially:

- ▶ Progressive structural change that characterised the evolution of these economies, turned apparent in the move from agricultural and industrial activities towards services
- ▶ The increasing importance of innovation processes within these societies as a key factor for long-term growth, both in production and productivity

In both trends, business services take a leading role, particularly knowledge-intensive ones.

Business services: a key dynamic sector in developed economies

In the last decades, tertiarisation of the most developed economies has accelerated and seems to have partly changed its shape. The service branches having recently grown most in relative terms are basically those related to production, i.e. those services being part of the input used by companies in their production processes (cf. chart 1).

Growth pattern in the sector

Within all activities related to production services, business services play an important role. This sector has had the highest and steadiest growth in almost all developed countries in the last twenty-five years.

The increasing importance of innovation processes is a key factor for long-term growth.

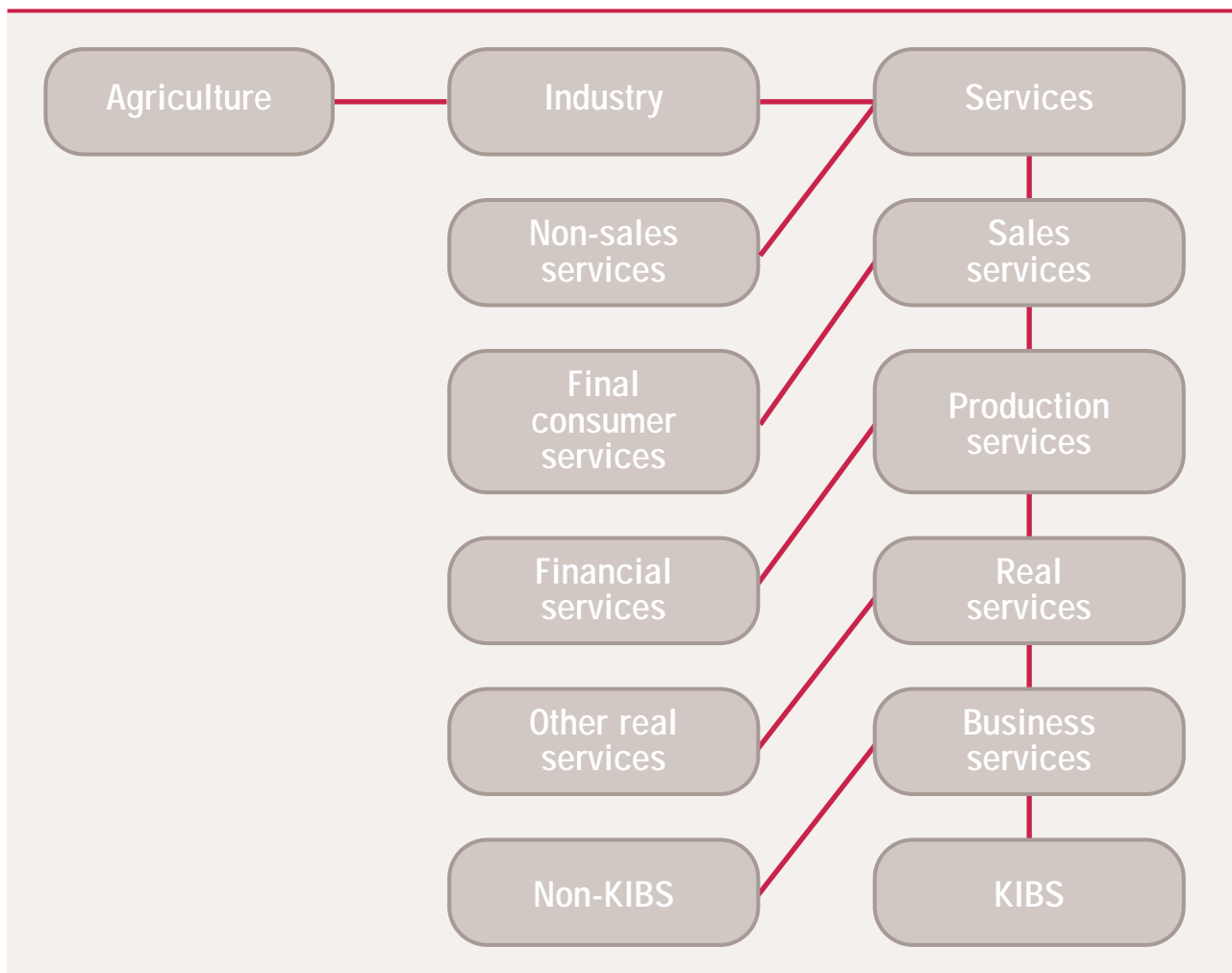
In the EU-15, employment in this branch reached an average annual growth rate of 4.5% between 1979 and 2003, far above overall employment, which grew only 0.6% over the same period. The rate of employees in business services thus increased from 4.6% to 11.4% of overall economy.

At the same time, the increase of the sector's contribution to gross added value within the EU-15 economy was also remarkable, with an average annual growth rate of 4.2%, again far above the 2.2% of overall annual growth rate in these countries. This means that the rate of business services increased from 5.8% in 1979 to 11.2% in 2003. The relevance of its main divisions is shown in chart 1.

This chart gives an indication of the size of business services in Catalonia. We can state that gross added value in the sector amounted to roughly 12 billion euros in 2004, equivalent to almost 8% of Catalan GDP (at current market value), which is about the same as the joint contribution of the food, beverages and tobacco, chemical and transport material industries, the three main manufacturing branches in Catalonia.

Also in 2004, almost 441,000 people were employed in business services, which is 14.2% of overall employment and 23% of all service activities in Catalonia.

Chart 1. Business services and KIBS within overall economic activities



- ▲ The service branches having grown most in relative terms are those related to production and being part of the input used by companies in their production processes.

Knowledge-intensive business services

Generally speaking, we can assert that business services are a set of activities providing «real», non-financial services to other private or public companies or organisations that use them as intermediate input to their value chain. Business service companies and their customers forge interactions of different kinds, the efficiency and quality of which usually has a very positive in-

fluence on the competitiveness of companies taking such services, assisting them in improving their economic efficiency, productivity and/or innovation capacity.

The business services sector embraces a set of quite diverse activities. This diversity becomes apparent in the manifold proposals made to classify this branch.² A criterion to classify business services that has been commonly accepted in recent years is that distinguishing knowl-

edge-intensive business services (usually known by their acronym, KIBS) from the rest (non-KIBS).

As chart 1 shows, KIBS contributed to 72% of gross added value and 54.8% of total employment in the whole business services branch in

Table 1. Gross added value and employment in business services and their main divisions: EU-25 (2002) and Catalonia (2004)

	EU - 25				CATALONIA			
	GAV ¹		EMPLOYMENT ²		GAV ¹		EMPLOYMENT ³	
	Sum	%	Number	%	Sum	%	Number	%
72. Computer activities	148,024	20.6	2,488	13.3	1,588.5	13.2	38,611	8.8
73. R&D	155,568	2.2	378	2.0	189.6	1.6	5,129	1.2
74.1. Legal, accounting, bookkeeping and auditing activities; tax consultancy, market research and public opinion polling; business and management consultancy; holdings	244,159	29.8	4,162	22.3	3,840.9	32.0	97,586	22.1
74.2. and 74.3. Architectural and engineering activities; technical testing and analysis	104,042	14.5	2,307	12.4	1,732.6	14.4	47,922	10.9
74.4 Advertising	35,522	4.9	896	4.8	792.8	6.6	21,806	5.0
Total KIBS	517,315	72.0	10,231	54.8	8,144.4	67.8	211,054	48.0
74.5. Labour recruitment and provision of personnel	68,451	9.5	2,632	14.2	1,001.5	8.3	71,190	16.2
74.6. Investigation and security activities	20,095	2.8	1,013	5.4	391.4	3.3	15,370	3.5
74.7. Industrial cleaning	40,887	5.7	2,720	14.6	940.7	7.8	76,861	17.3
74.8. Miscellaneous business activities	71,939	10.0	2,055	11.0	1,528.6	12.8	66,420	15.0
Total non-KIBS	201,372	28.0	8,420	45.2	3,862.3	32.2	229,841	52.0
Total business services	718,687	100.0	18,651	100.0	12,006.6	100.0	440,895	100.0

1. Unit: million euros
2. Unit: thousands of employees
3. Unit: employees

Source: Eurostat: *European Business 2004*. Idescat: *Annual service enquiry (2004)*

- ▲ Gross added value in the sector amounted to almost 8% of Catalan GDP (at current market value).



- ▲ A criterion to classify business services is that distinguishing knowledge-intensive business services (KIBS) from the rest (non-KIBS).

the (enlarged) EU in 2002. In Catalonia (in this case, data relate to 2004), these rates were lower: KIBS amounted to 67.8% of added value and 48% of employment in business services.

Beyond the specifics of business services – i.e. services to companies and public administration, not to households, and their use as intermediate consumption, not as final consumer services – KIBS are activities that basically serve

consulting (problem-solving) purposes, characterised by their knowledge intensity in most cases.

This knowledge-intensive character can be interpreted in terms of both the intensive use of highly skilled and specialised human resources and the conditions under which transactions between the supplier and the user of such services occur.³

Generally speaking, the purpose of KIBS activities is to make up for shortcomings companies in any industry as well as public administration may have, i.e. certain managerial gaps in different areas of a company – legal and financial framework, technological and human resource management, market knowledge and exploration, relations with their current and potential customer base, conception and management of their brand image and other intangible assets related to their identity. All in all, they contribute to reducing their clients' uncertainty in some aspect of their activity or decision-taking process.

In Catalonia, KIBS (knowledge intensive business services) amounted to 67.8% of added value and 48% of employment in business services.

To carry out this consulting activity, the KIBS firms, particularly their specialised staff, play not only an expert advisory role but often also that of identifying best practices (benchmarking) at other companies, dissemination and sometimes implementation of these experiences (cross-pollinating), providing adequate information and knowledge for diagnosing and solving problems, training client staff, mediation and negotiation (with suppliers or other external resources or with members or groups within the same company) as well as creating and organising most adequate interfaces between the client and their internal and external environment. All these possible tasks – almost always intermittent – often turn KIBS firms into agents promoting organisational and/or technological change with their clients.⁴

Innovation and services

Innovation has moved from a marginal position to key relevance in the growth model of ad-

vanced economies. The latter, which used to have a reproduction rationale at their base, typical of traditional industrial economies, are now moved by innovation.⁵ Current production of goods and services requires an ever bigger contribution of knowledge: more specific (scientific) knowledge, more technological intensity (increasing the rate of new capital goods and intermediate inputs) as well as a higher capacity to manage complexity and uncertainty, which requires a higher prevalence of knowledge assets in productive activities.

Without any doubt, companies are still at the heart of the innovation process. Their ability to innovate depends mainly on their internal competencies (i.e. their own knowledge, organisational and technology base) but also on their skills in finding, adopting, developing and enlarging knowledge generated elsewhere. Along these lines, a company never innovates apart from the rest but is subject to exhaustive interaction with its environment. Innovation, although turning real at the company, is mainly a social product, incubated in a given context, usually with strong territorial connotations, in which many players participate, either directly or indirectly, by adding their specific knowledge, initiatives and competencies to it. Innovation is therefore an essentially interactive, complex, uncertain and thus risky process.

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In this sense, the notion of *innovation system* as a concept articulating all this view of the process to generate and disseminate innovation as an interactive and complex process has earned widespread acceptance recently.⁶ An innovation system is made of a set of players and institutions interacting in the processes to produce, disseminate and use new, economically useful knowledge within a given territory or industry. Among these players we find first and foremost

KIBS can act as:

- ▶ Innovation *facilitators* helping implement new knowledge developed mainly at the client company
- ▶ *Carriers* selecting and giving specific information and knowledge generated mainly in other places, being then taken over by the client
- ▶ *Innovation sources*, when the same KIBS firm generates the knowledge the client needs to carry out their innovation processes

companies, represented by their own competencies but also by formal and informal networks within which they operate, together with suppliers, customers and competitors. Non-business organisations such as universities and other institutions of technological research and development as well as a diverse set of supporting institutions whose main function is to act as an interface between the different players in the innovation system also belong to this group.

Furthermore, there are formal and informal institutions providing rules, routines, common habits, established practices, laws and standards, which are key factors to generate the cognitive conditions and action by those players. Put in other words, interactions between these players and institutions come up in any innovation system; their nature, intensity, continuity and quality are elements on which the level of performance the system may attain depends heavily.

For a long time, the belief was that services in general were activities hardly prone to innovation due to scarce competitive pressure on their (often local and very segmented) markets and the significance of small, labour-intensive companies. However, contrarily to what many still think, «far from being a retardatory or parasitic industry, a considerable part of the service sector is, in truth, the facilitative milieu in which other productive activities become possible». ⁷ More precisely, business services (especially KIBS) are a means by which new technologies and organisation patterns can be introduced into business processes.

The role of KIBS in innovation processes

KIBS are a type of service activities fostering innovation in other economic areas beyond their own highly innovative character. They play an important role in any innovation system, to which they give variety and flexibility in transferring knowledge aimed at stimulating change, and act as a factor cohering the economic base of a territory as well as attracting new activities.

KIBS play a key role as an interface between players acting upon a geographically focalised innovation system, especially those specialised in generating new knowledge, such as universities and public and private research institutions, and those who are to use this knowledge for innovation processes, basically companies.

An important role of KIBS lies in providing a melting point between general technological knowledge and specific and localised requirements and problems of their customers.

Nevertheless, this bridging function is seldom restricted to mere information or encoded knowledge transfer. An important role of KIBS lies in providing a melting point between general technological knowledge – spread over the economy – and specific and localised requirements and problems of their customers. They thus operate as *catalytic agents* promoting a fusion of

generic or quasi-generic with more tacit knowledge, focused on daily practice at the companies and industries they serve.

This catalytic role KIBS play in knowledge-creating and innovation processes at their client companies may take different shapes.⁸

KIBS play thus a relevant role in transforming companies into learning organisations, mainly due to their involvement in the different knowledge conversion processes contributing to foster innovation.⁹

Rendering new services by KIBS firms is often the result of common interaction and efforts between the supplier and their client. This performance is in most cases a coproduction process. The resulting service quality mainly depends on the nature of such interaction¹⁰ and on the quality of the communication process between both parts.

KIBS and their clients therefore often have a relation that can be called *symbiotic*. Due to the nature of their activities, most KIBS recruit and cooperate with many client companies, disseminate and also absorb knowledge from many different sources, reprocess it and pass it on in the most appropriate way to suit their clients' requirements.

It can be said that through these activities, KIBS act as bridging institutions in the innovation systems and assist considerably in driving the ability to learn on behalf of the players operating in these systems. A territory's capacity to innovate thus depends heavily on the efficiency of KIBS.

The role of business services in the cohesion and promotion of the economic base of a territory

As has been previously mentioned, KIBS are a crucial factor for the cohesion and promotion of

the economic base of a territory. The picture of a local or metropolitan territory unequally served with generic resources that can be acquired on an open market and copied and transferred without limits is becoming more and more challenged.

On the contrary, the currently accepted representation of a territory is especially that of a complex «structure» permanently involved in actively finding specific resources and competencies. Their generation is not only nor mainly the result of isolated action of each company or any other player but also of other surrounding factors, providing cohesion and ensuring and fostering productivity and competitiveness if the latter are correctly driven.

The availability of a good KIBS offer is a crucial element to become more competitive.

From this perspective, the territory – perceived as the framework where a concentration of interdependent activities occurs – cannot be considered a mere physical support for localising and deploying these economic activities anymore but is per se a key factor for competitiveness of a given local socioeconomic system.

The key to localisation patterns, both of industrial and service activities, lies currently in the integration of geographical and territorial agglomeration advantages or, put in other words, in the complex relation between their general and specific advantages.

This means that the effect of competitiveness of a territorial structure needs to be measured especially by how production and innovation is organised at the companies based there as a whole. Beyond being well served with physical infrastructure, a territory also needs an adequate system to generate and absorb knowledge for increasing its competitiveness, for which a good KIBS offer is a crucial element.

In this sense, the role of KIBS as a second knowledge infrastructure has been particularly pointed out, adding in many aspects to the first one, of a clearly public, knowledge-based, more institutional and formal character, consisting of higher education and research institutions, (public) research labs and (also mainly public) technology transfer centres.

(Re-)orientation of innovation policies

Any innovation policy – or, as some put it, *science and technology policy* – consists of a set of tools public authorities use to promote and manage the process and management of acquiring technology capacities, basically by companies.¹¹

Measures making an innovation policy can be bundled in three basic types:

- ▶ Measures to strengthen technological capacities from an *offer perspective*
- ▶ Measures to foster market needs for technology innovation from a *demand perspective*
- ▶ Finally, measures to foster and ensure effective linkages between both sides to have technically and commercially successful innovation activities

So far, most innovation policies have generally been specifically geared to offer, through measures to support R&D and technological capacities in companies as well as the creation of an innovation climate and infrastructure favourable to it. However, measures to foster the dissemination of innovation, a stimulus to absorb such novelties – by companies and consumers in general – and an overall drive for innovation systems, improving exchange and communication mechanisms among the different economic stakeholders and correcting possible system fail-

ures that may occur, have been absent from these policies or have at best played a secondary role.

Having recognised the increasingly important role of many service – especially KIBS – activities in the innovation process within their own sector but also in the rest of the economy, innovation policies need to be substantially re-shaped, giving more room for measures to foster the dissemination of knowledge and competencies required for processes to innovate and foster relations and interactions between players operating in an innovation system from both the offer and the demand perspective. More precisely, innovation policy should currently be characterised by the following features:

- ▶ It needs to be closer to the specifics of service activities (service-friendlier). This means that:
 - ▶ Measures need to focus more on the non-technological dimension of innovation, which requires:
 - ▶ A stronger effort in resources for processes to develop capacities stronger related to this change
 - ▶ A better perception and stimulus of synergies between industrial and production service activities, especially in their innovation processes
 - ▶ As important as innovation policy itself are additional innovation policies and horizontal policies to support such activities, e.g. training and competencies
 - ▶ Public authorities need to strengthen their role in monitoring these innovation activities, which requires a better knowledge of the service sector and its evolution as well as a higher awareness
- ▶ Innovation policy also requires an according policy to integrate markets, especially those related to service, as well as to foster competition. This basically means:

- ▶ Eliminating legal and administrative obstacles on the European single market and in international service exchange
- ▶ Increasing competition in service markets, especially those related to production services
- ▶ Modernisation of public administration; in fact, competitiveness of most services for production is linked to a great extent to the performance of public administration
- ▶ Innovation policy needs to do away with possible shortcomings – both in quantity and in quality – of those inputs necessary for rendering services, especially production services, in an adequate manner by means of:
 - ▶ Providing adequate professional competencies by the staff of companies doing such activity
 - ▶ Providing enough communication infrastructures and measures to facilitate technical and financial access to such infrastructures on behalf of companies within these service sectors
 - ▶ Fostering R&D and related conception, design and marketing activities in production service sectors
 - ▶ Finally, innovation policy needs to improve the information system on service activities, turn it more transparent and reliable and improving its quality. This shall allow to improve knowledge in the service sector, the level of which is still very poor today.

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Notes

1. Cf. FORAY, D. (2000). *L'Économie de la Connaissance*, Paris: La Découverte.
2. At European level, the NACE (rev.1) by Eurostat includes business services in its section K («Real estate, renting and business activities»). Business services as such are the activities included in the divisions 72 to 74: computer and related activities (division 72), research and development (under contract) (division 73) and other business activities (division 74). A considerable proportion of these business activities correspond to the latter division. For this, the classification needs to specify the group in detail (three digits). In its publications, Eurostat does not even use one single pattern to delimit business service activities. In certain cases, it even includes renting of machinery and equipment without operator (division 71) and even real estate activities (division 70) into this category.
3. It is not easy to measure knowledge intensity of activities. The most common indicator in this case is the rate of employees with a higher education degree on the whole workforce of a company or organisation.
4. Cf. Bessant, J.; Rush, H. (1995). «Building bridges for innovation: the role of consultants in technology transfer», *Research Policy*, 24, p. 97-114.
5. Emerging knowledge-based economies have progressively set aside an economic regime – like the one represented by the *long-run* model – that combined brief spells of building new production capacities with longer phases of exploiting these capacities to implement an economic regime that is of quasi-permanent innovation, especially in certain fields, an economy of constant change, a regime requiring assets and competencies beyond novelty, giving priority to the capacity to adapt, flexibility, mobility, easy access to new knowledge and information and its later absorption.
6. Cf. LUNDBVALL, B. A. (1992). *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*. London: Pinter; NELSON, R. R. (1993). *National Systems of Innovation: A Comparative Study*. Oxford: Oxford University Press.
7. Cf. RIDDLE, D. I. (1986). *Service-led Growth: The Role of the Service Sector in World Development*. New York: Praeger.
8. Cf. BILDERBEEK, P.; DEN HERTOOG, R. (2000). «Conceptualizing (Service) Innovation and the Knowledge Flow between KIBS and their Clients». *Topical Paper*, S14S, STEP Group.
9. Cf. NONAKA, I.; TAKEUCHI, H. (1995). *The Knowledge-Creating Company*. Oxford: Oxford University Press.
10. In an extreme case, interaction can simply consist of pooling the knowledge resources every part has: a stock of relatively generic knowledge on the service supplier side, and a more specific, problem-related knowledge on the user side. On the opposed end, interaction can be considerably more active, e.g. a joint effort to formulate the problems to be solved and to find the most appropriate solutions – a true joint-production process.
11. Cf. KIM, L.; DAHLMAN, C. J. (1992). «Technology Policy for Industrialization: an Integrative Framework of Korea's Experience». *Research Policy*, 21, p. 437-452.