



## Portuguese knowledge intensive business services: What do we know about them?

### O que sabemos sobre os *knowledge intensive business services* portugueses?

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#### ABSTRACT

In Europe, most of the earlier studies applied to KIBS (knowledge intensive business services) were developed in North European countries (Finland, Sweden, Norway, UK or German) where that research is already consistent and widespread. However, the study of KIBS is in its infancy in other European countries. In this article we demonstrate that research into Portuguese KIBS is still very recent and incipient.

We also aim to contribute to the discussion of the significance of KIBS to Portuguese economy where the weight of services sector is preponderant.

We present a literature review showing how the KIBS have evolved in Portugal by drawing portraits of two decades. We complement this with an empirical study using the Community Innovation Survey (CIS) 2008.

We emphasize that there is still much to learn about Portuguese KIBS.

**Keywords:** KIBS, CIS 2008, Portugal, evolution, innovation.

#### RESUMO

A maior parte dos estudos europeus sobre KIBS (knowledge intensive business services) foram desenvolvidos em países da Europa do Norte (Finlândia, Suécia, Noruega, Reino Unido ou Alemanha), onde esses estudos já são consistentes e esse conhecimento já está disseminado. Contudo, noutros países da Europa, o estudo encontra-se ainda na sua infância. Neste artigo pretendemos demonstrar que o estudo dos KIBS portugueses é ainda muito recente e incipiente.

É também nosso objectivo contribuir para a discussão sobre a importância dos KIBS para a economia portuguesa, onde o peso do sector dos serviços é preponderante.

Apresentamos uma revisão de literatura que mostra como evoluíram durante duas décadas os KIBS portugueses e apresentamos alguns retratos dessa evolução. Esta revisão é complementada com um estudo empírico para o qual foram utilizados os dados do Inquérito Comunitário à Inovação (CIS) 2008.

Envidenciamos que ainda há muito a aprender sobre os KIBS portugueses.

**Palavras-chave:** KIBS, CIS 2008, Portugal, evolução, inovação.

#### 1. Kibs – some important remarks

KIBS are currently known as a subsector of the service sector. These services are distinguished by their characteristics and are part of the so-called KIS-knowledge intensive services, which aggregate public and private services entailing the commercial use of intensive knowledge. Both sides (public and private) belong to the knowledge-based economy. This economy is characterized by the on-going requirement not only for codified learning but also the necessary skills to apply this knowledge (OECD, 1996).

In the late 1980's and early 1990's, researchers detected specific traits of some service sector firms that currently can be summarized as follows:

- Companies or private organizations (Bilderbeek *et al*, 1998);
- Based on professional knowledge (Bilderbeek *et al*, 1998; Miles, 2007);
- Use of knowledge based on science and technology (Miles, 2007);
- Represent sources of information and knowledge (e.g. consulting and reports), (Miles *et al*, 1995);
- Apply their own knowledge to produce intermediary services to be introduced in the productive processes of their customers (Bilderbeek *et al*, 1998; Miles *et al*, 1995);
- Have a competitive importance mainly applicable in the business context (Miles *et al*, 1995).
- Are innovative and exhibit many similar features to high-tech manufacturing (Miles *et al*, 1995; Miles, 2007; Doloreux *et al*, 2010).

Influence their customers' choice and use of new forms of innovation and organizational practices (Miles, 2007).

In addition to the above features, Miles *et al* (1995) refer the importance of KIBS companies in the process of knowledge transference between companies. Miles (2007: 293) also states that " *KIBS are agents for creating, integrating and*

*bearing knowledge*" and stresses the role of KIBS in this transference and dissemination.

The study conducted by Hertog and Bilderbeek (1998) highlights some important aspects relatively to KIBS:

- KIBS are catalysts in the creation of knowledge and innovation processes for their clients' companies. Knowledge can be created by them or developed in cooperation with their clients;
- KIBS play a role that enables knowledge conversion processes, helping their clients to become learning organizations;
- The intervention of KIBS is mainly process oriented, non-contractual and implies the use of tacit knowledge.
- The experience in the development of a project could be used as a basis for developing new services and to provide solutions to solve some similar problems faced by future clients.

In summary, KIBS are considered vital to enhancing the competitiveness of developed economies. They also play a central and broader role in the diffusion of concepts and innovative ideas, as a source of intangible capital and in initiating and developing activities that support other sectors in their innovation process.

#### 2. KIBS – difficulties in the classification

Nowadays, there is little controversy about the classification of KIBS. The classifications were so diverse in the past (e.g. NACE) in several countries that it was difficult to build a comprehensive organization of KIBS.

Moreover, the following questions should be underlined:

Can we distinguish and group KIBS?

Is it possible to make comparisons between countries or even regions?

A temporal comparison is even more complicated as it also limits comparisons and longitudinal studies and the codes have

changed over the years e.g.– NACE was revised several times in Portugal (CAE Rev. 1, 2.1 and 3).

Focussing on the Portuguese case in particular, Table 1 summarizes the main changes that have taken place over the past 60 years.

**Table 1 - Summary of changes in classifications of economic activities in Portugal (from 1953 to 2007)**

Year	Changes
1953	First Portuguese version of NACE resulted from a translation of an international statistical classification.
1961	1st revision CITA-1 making adaptations in line with the situation in Portugal.
1964	Improvements to CITA-1, with adaptations to the Portuguese reality.
1970	Adoption of the CITA-rev2.
1973	Preparation of CAE Rev. 1, after adjusting to Portuguese circumstances.
1991	CAE rev.2
2002	CAE rev 2.1
2007	CAE rev 3: harmonized with the latest United Nations (ISIC Rev. 4) and EU (NACE Rev. 2) classifications.

Source: INE, 2007.

Hales (1998: 1) describes the difficulties arising from the changes: "mapping and measuring of services is fundamentally difficult both because they are a residual category in classifications of industrial activity and because they are changing significantly in both structure and function". A similar problem was reported by Bilderbeek *et al* (1998) in their study of T-KIBS.

In fact, only a correct identification (of both providers and activities) can prevent the generalization of KIBS (Doloreux *et al.*, 2010). Miles *et al* (1995), the IOIR (2003), and the OECD (2005) also noted that the variety of classifications for services was one of the problems that prevented an accurate view of the differences and similarities between them. A further problem facing researchers is that this group is essentially formed by SME's (IOIR, 2003; Agência de Inovação, 2010).

Over the years, empirical studies have been conducted on various types of KIBS. Table 2 brief describes some of the main studies identified in the literature according to the region, the theme and the main conclusions.

**Table 2 - Studies on "KIBS" and some conclusions**

Author (s)	Region studied	Theme	Main conclusions
Windrum and Tomlinson (1998)	United Kingdom and Netherlands in comparison with Japan.	Impact of innovative performance of services and KIBS sector on national output and productivity earnings.	Detected the requirement to distinguish between a general increase in the level of activity of KIBS and other services and their degree of integration into the national economy. Different patterns were found.
Muller (2001)	French regions of Gironde and Alsace and the German regions of Baden, Saxony and Lower Saxony.	Interactions between SME's and KIBS (various sectors).	KIBS have an important role in innovation systems. They can improve innovation and contribute to national and regional development. Presented the hypothesis of a virtuous circle of innovation among SME's and KIBS.
Aslesen and Isaksen (2004)	Oslo Region, Norway	Interactions between the software industry, organizational consultants and their clients.	The existence of KIBS clusters in the region encourages the provision and demand for services, as well as prompts the free flow of ideas and knowledge. Most companies recognized consultants as an important source of information on innovation activities. Businesses that benefit most from an intervention of KIBS are those that are more competitive.
Kam and Singh (2004)	Singapore	IT and related services; Market research; Management consultancy, architecture, engineering, prospecting, R&D, advertising and publications.	Although KIBS are more innovative than manufacturing companies, they are still below the level found in the more developed regions. Detected evidence that most innovative companies are also the fastest-growing and have a higher degree of internationalization.
Toivonen, M. (2007)	Finland	Support policies and development of to KIBS.	It was found that the existence of a basis for research and analysis of the data obtained in the various surveys in several regions of the country is considered important to the preparation and implementation of policies to support KIBS.

Source: Authors' own elaboration.

### 3. Portuguese KIBS: a literature review complemented by empirical evidence

A number of authors (Miles *et al.*, 1995; Hertog and Bilderbeek, 1998; Hipp, 2000; André *et al.*, 2002; Miles, 2007) consider KIBS to be agents of dissemination and transference of knowledge and innovation for their clients, that cannot be dissociated from the national/regional economic and social environment (macro and micro). Moreover, it is reasonable to assume that KIBS present particular characteristics in each country or region, which can be explained by their specific social and economic conditions. André *et al.* (2002) describe

the economic and social context in Portugal from a historical perspective.

Portuguese history and evolution of its economy since the mid-20<sup>th</sup> century have influenced the current state of Portuguese KIBS.

The process of economic openness and integration in Europe goes back to 1959 (the year of the accession to the EFTA-European Free Trade Association) and it was after this that the conversion of manufacturing sector and economic growth began (Santos, 1977).



Significant changes took place in Portugal's economic structures between 1968 and 1974. The steel, chemical and shipbuilding industries emerged in the periphery of Lisbon triggering widespread migration from rural to urban regions and contributing to the increase of the secondary sector. During this period, large industrial groups were developed and the country benefited from foreign investment and trade (Santos, 1977).

This fostered the demand for business services such as market research. The large international consultancy firms were established in Portugal at this time (André *et al*, 2002).

The 1974 revolution was another milestone in Portugal's economic history as it led to democracy and political openness in the country as well as to some political and economic instability. The economic, financial and legal issues that arose due to greater difficulties and political instability in this period resulted in the development of other consulting activities, e.g. financial and legal (André *et al*, 2002).

During the 1980's, Portugal accompanied the worldwide development of information technology and the expansion of the leading consulting companies (André *et al*, 2002).

The second half of the 1980s was marks by Portugal's accession to the EEC (European Economic Community) when it received funds to develop the country and promote economic and social convergence with Europe. This resulting surge in demand for business services for consulting projects was followed by a significant increase in the number of KIBS in Portugal; the change in the productive structure gathered pace and the weight of services in the Portuguese economy increased (André *et al*, 2002; Royo, 2010).

Table 3 presents the evolution of the population employed by sector since 1975 and the evolution of the economic structure. In 1975, there was a reasonable balance of employment across the three production sectors but this changed steadily; the primary sector fell from 33.9% to 9.9%, and the secondary sector remained fairly stable until about 2005 when it started to decline. In contrast, the tertiary sector almost doubled over the period.

**Table 3 - Evolution of the population employed by sector of activity (%)**

Years	Sectors of activity		
	Agriculture, livestock, hunting, forestry and fisheries	Industry, construction, energy and water	Services
1975	33.9	33,8%	32,3%
1980	28,6%	36,1%	35,4%
1985	23,8%	34,7%	41,5%
1990	17,9%	34,4%	47,6%
1995	11,5%	32,1%	56,4%
2000	12,7%	34,5%	52,8%
2005	11,8%	30,6%	57,6%
2010	10,9%	27,7%	61,4%
2011	9,9%	27,3%	62,8%

Source: Pordata / INE - employment survey.

Although the Portuguese service sector has grown over the last 35 years, few empirical studies have focussed specifically on the service subsector of Portuguese KIBS (Sarkar *et al*,

2008; Carvalho and Costa, 2010; Pinto and Carvalho, 2011). Table 4 outlines the studies on Portuguese KIBS, the sample, years of study and some findings.

**Table 4 - empirical studies conducted on KIBS in Portugal**

Study	Sample	Years of study	Notes
<b>Portugal Knowledge-intensive services and modernization (André <i>et al</i>, 2002)</b>	Case-study of 7 Portuguese companies.	1980s and 1990s.	Analysis of the dynamics of use of KIS and establishes how far client-consultant relationships led to the adoption of truly innovative procedures.
<b>The influence of KIBS in R&amp;D indicators (Fernandes <i>et al</i>, 2011)</b>	39,254 KIBS in 2003 and 34,610 KIBS in 2008 from Coface Group database.	Evolution from 2003 to 2008	Search for empirical evidence of the relationship between the existence of KIBS and R&D indicators in Portuguese regions.
<b>Atlantic KIS project (Agência de Inovação, 2010)</b>	Contacted 1404 KIS <sup>a)</sup> with 177 responses (12.61% response rate)	Autumn 2009 to spring 2010	Objectives: a diagnostic study on supply and demand of KIS; identify specialization and barriers to the use of KIS; determine the sectorial and specialization complementarities among regions

a. includes public and private sector.

Source: Authors own elaboration

### 3.1. Geography and territory

A number of researchers (Aslesen and Isaksen, 2007; Fernandes and Ferreira, 2010) sought to understand and map KIBS across the territory and identified reasons for their different geographic distributions, such as interactivity, the sensitivity of the market or the quality and type of knowledge (Wood, 2003).

Marshall and Wood (1995:39) emphasize the question of spatial concentration highlighting that "services are central to modern economic restructuring and growth, but they play many different roles, in different economic and geographical circumstances. In some cases they follow, and in others they lead wider patterns of restructuring. [...] The complexity and diversity of much interaction in modern services also encourages their spatial concentration".

Some empirical studies note that certain types of KIBS are concentrated in specific regions and also suggest reasons for this:

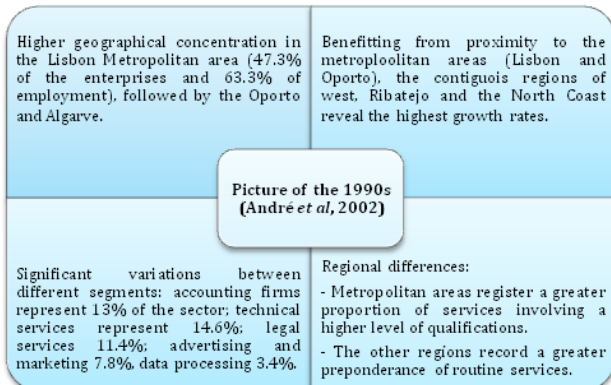
- Aslesen and Isaksen (2007): two KIBS sectors were studied (organizational consultants and software development) in Oslo, Norway. The proximity proved important since many projects require cooperation with customers;
- Hyypiä and Kautonen (2005): although they concluded that geographical proximity *per se* does not guarantee the existence of KIBS-customers relations, they argue that a certain degree of proximity is an important condition for the maintenance of these relationships.

The geographical concentration is analyzed in literature from both the supply and demand sides (Bilderbeek *et al*, 1998; André *et al*, 2002; Aslesen and Isaksen, 2007; Agência de Inovação, 2010).

In order to understand the geographical location of KIBS in Portugal we draw some pictures.

Figure 1 reveals some marked differences in the spread and geographical concentration both in terms of the number of companies and the type of activities.

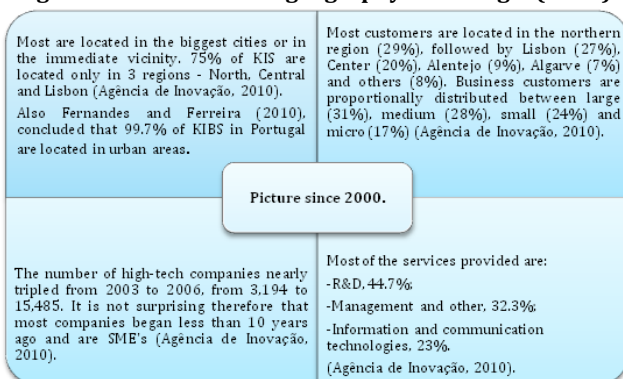
Figure 1- Picture of geography of KIBS in Portugal in the 1990s



Source: own elaboration based on the authors cited.

In Figure 2 we present the geographical concentration in urban regions and note marked differences in the activities carried out by KIBS from the year 2000.

Figure 2-Picture of KIBS geography in Portugal (2000)



- a) The criterion used was to consider rural areas the regions with fewer than 5,000 inhabitants and the urban regions the region with more than 5,000 inhabitants (Kayser (1990) quoted by Fernandes and Ferreira (2010)).

Source: own elaboration based on the authors cited.

Aslesen and Isaksen (2007:8) provide a clear explanation for the concentration of KIBS in urban areas :

*"Urban businesses have better access to such services than do firms in other regions, in particular compared to those in peripheral areas. Thus, urban businesses can be more frequent users of knowledge services that are most efficiently offered by close proximity than firms located in other areas. And firms that benefit from geographical proximity to knowledge intensive services may choose to locate in urban areas. Consequently there is an increased demand for knowledge intensive*

*services from urban firm, leading to a further increased supply of such services in big cities, which in turn stimulates the demand, and so on."*

On the other hand, some researchers also note that an environment conducive to the development and appropriation of knowledge is fundamental for knowledge transfer. Such argumentation is presented according to Cohen and Levinthal (1990), in their theory of the absorption capacity. Those authors have defined as "absorptive capacity", "the ability to exploit external knowledge[...]. [...] the ability to evaluate and utilize outside knowledge [...] [...] an ability to recognize the value of new information, assimilate it, and apply it to commercial ends"(Cohen and Levinthal, 1990: 128). On the other hand, Roper and Love (2006) argue that a regional absorption capacity is conditioned by the existence of a labour market with more or less absorption capacity.

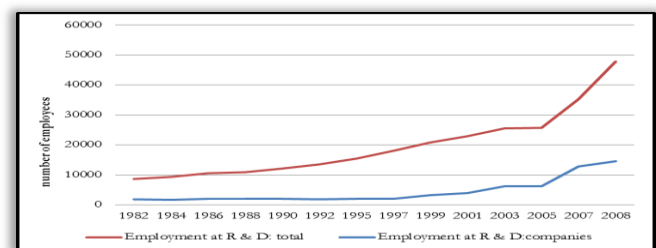
### 3.2. Human resources, R&D and innovation in KIBS

Evidence suggests that the nature and knowledge base of KIBS is such that the academic level of their employees is higher than that of the average company (Miles, 2007).

André *et al* (2002: 292) also mention that "In the European context, the average education level in business services in Portugal is low, but it is much higher than the national average".

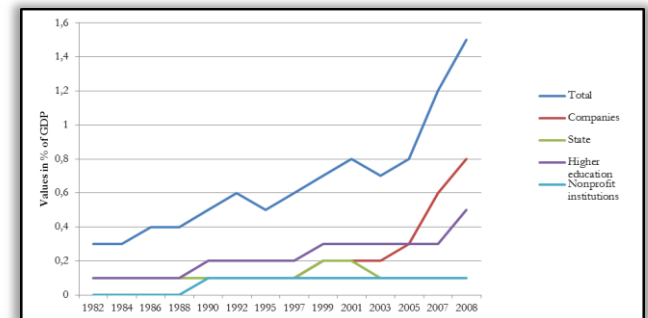
Figures 3 and 4 show the distribution of employment in R&D in Portugal. After a period of relative stability until 1997, companies in the sector clearly took off and R&D spending in 2008 reached 0.8% of GDP (more than 50% of the total) and approximately 30% of all personnel employed in R&D worked in R&D companies.

Figure 3- Employment in R&D in Portugal from 1982 to 2008



Source: Pordata (with GPEARI/MCTES and INE-BP).

Figure 4- R&D Expenditure as a percentage of GDP in Portugal from 1982 to 2008



Source: Pordata (with GPEARI/MCTES and INE-BP).

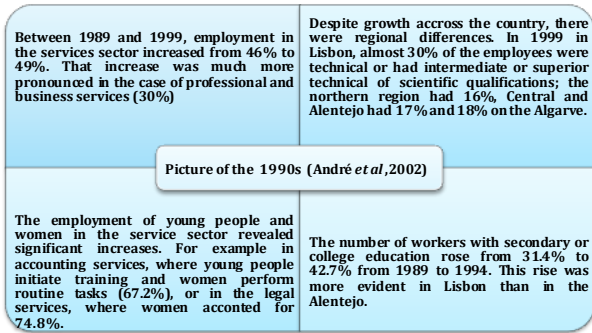
Fernandes *et al* (2011: conclusion) concluded with their multivariate analysis that "changes in R&D indicator are explained by the number of KIBS. [...] This relationship allows us to infer that where there are more knowledge-intensive firms are also more persons with higher education. [...] Thus, we can still say that these knowledge-intensive companies have a significant impact on the employment of skilled labor in the regions where they are located".

Given the above mentioned importance of the region and proximity, the cities and especially those that have centres of knowledge (typically universities and research centres), are presented as areas where the most skilled human resources are concentrated. Those areas are one of the factors presented that influence the concentration of KIBS.

In figure 5 we show the human resources employed in KIBS in Portugal and highlight some changes in the numbers and their skills. It also reveals some geographical differences.



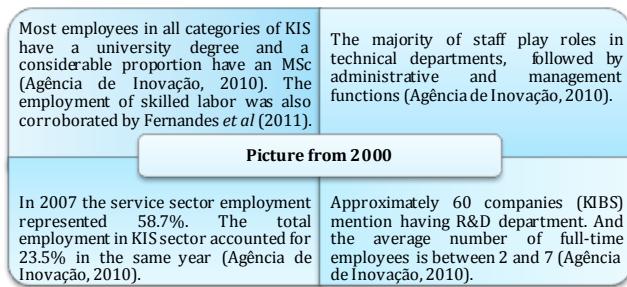
**Figure 5- Picture of human resources in KIBS in Portugal in the 1990s**



Source: own elaboration based on the authors cited.

Figure 6 summarizes the skills of KIBS employees since 2000, considering job and R&D departments creation.

**Figure 6 - Picture of human resources in KIBS in Portugal from 2000**



Source: own elaboration based on the authors cited.

**4. KIBS in Portugal: an analysis supported on CIS 2008**

The literature review is now complemented by a descriptive analysis with the Portuguese Community Innovation Survey 2008 in order to improve the characterization of this subsector. Activities were differentiated as set out in Table 5.

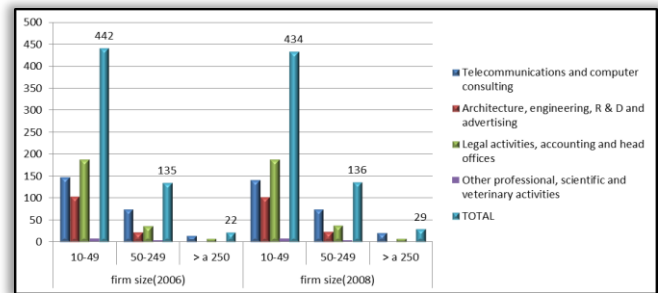
**Table 5 – Activities by sector and NACE code**

Manufacturing sector	NACE
Extractive industries	05 to 09
Food industry, drink and tobacco	10 to 12
Textile and leather	13 to 15
Wood industry, paper and printing	16 to 18
Petrochemical industry, chemical and pharmaceutical	19 to 23
Metallurgical and metal products	24 to 25
Computing, electric equipment, motor vehicles	26 to 30
Furniture and other transformation industries	31 to 33
Electricity, gas and water	35
Collection, treatment and water distribution. Residential waters and waste	36 to 39
Construction	41 to 43
Services sector	Nace
Wholesale and retail. Vehicle repair.	45 to 47
Transports	49 to 51
Postal activities and transportation support.	52 to 53
Video editing, television and radio	58 to 60
Telecommunications and computer consulting	61 to 63
Finance and insurance	64 to 66
Legal activities, accounting and head offices	69 to 70
Architecture, engineering, R&D and advertising	71 to 73
Other professional, scientific and veterinary activities	74 to 75
KIBS subsector	Nace
Telecommunications and computer consulting	61 to 63
Legal activities, accounting and head offices	69 to 70
Architecture, engineering, R&D and advertising	71 to 73
Other professional, scientific and veterinary activities	74 to 75

Source: Authors elaboration.

Analysis of figure 7 confirms that most KIBS have between 10 and 49 employees (74% in 2006 and 73% in 2008), with only a small minority having over 250 employees (3.7% in 2006 and 4.8% in 2008). This was also the case in other countries and regions, e.g. Singapore (Kam and Singh, 2004), Navarra and Galicia in Spain, Brittany in France, Devon and Cornwall in the United Kingdom, and the South East and Border, Midland and Western regions of Ireland (AKP, 2011).

**Figure 7 – size of KIBS in 2006 and 2008 (in number of employees)**



Source: own elaboration from GPEARI/MCTES data, CIS 2008.

Literature review and empirical studies of other countries (Windrum and Tomlinson, 1998; Muller, 2001; Kam and Sing, 2004; Corrocher *et al*, 2008;) reveal that the KIBS subsector has been in a continuous growth. The data for these variables is set out in tables 6 and 7 to confirm whether or not there is a similar trend in Portugal.

Table 6 compares the average growth of all sectors (including KIBS), with the average growth of KIBS. It is important to note changes in KIBS size. Most companies reported that the number of employees rose the 10-49 category to that of 50-249 employees. This trend is not surprising and indeed KIBS are sometimes referred in the literature “fast growing gazelles” (Henrekson and Johansson, 2010; Acs, 2011).

**Table 6 - growth of average company size from 2006 to 2008**

Growth/ size of firms	Growth (10-49)	Growth (50-249)	Growth (> 250)
Average growth of all sectors	0.92	1.00	1.06
Average growth of manufacturing	0.89	0.95	1.04
Average growth of services	0.97	1.07	1.09
Average growth of KIBS	0.97	1.08	1.13

Source: own elaboration from GPEARI/MCTES data, CIS 2008.

Table 7 presents the change in turnover between 2006 and 2008. It suggests that the increase in size is accompanied by a rise in turnover. It also shows that increase in company size and turnover was higher in KIBS than in service sectors.

**Table 7 – Average growth of turnover in 2006/2008 (%)**

Growth / Turnover	2006/2008 variation
Average growth of all activities	19.70
Average growth of manufacturing	20.15
Average growth of services	19.17
Average growth of KIBS	19.45

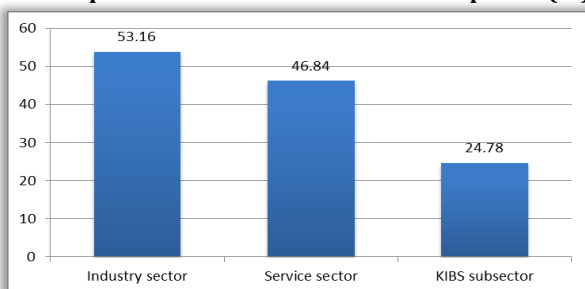
Source: own elaboration from GPEARI/MCTES data, CIS 2008.

A comparison of the figures for human resources in KIBS in the 1990s and since 2000 reveals a trend of specialization and increased qualifications in these companies and the development of innovation and R&D departments.

It is now important to analyze the practical consequences of these changes in the development of innovation in KIBS and to explore their influence. Figure 8 illustrates the volume of expenditure on innovation in each sector as well as the total volume of spending on innovation. The manufacturing sector represents 53.16% of total expenditure on ; a similar situation is found in other countries, like Singapore (Kam and Singh, 2004; Wong and He, 2005) and United Kingdom (Miles, 2007).

The service sector contributes with 46.84% of the total spent on innovation, 24.78% of which comes from the KIBS subsector (note that in this graph, the value of KIBS is included in the service sector). The significance of this figure is clear given that KIBS represent only 9.55% of the companies and 6.23% of total turnover of the sample.

**Figure 8 – each sector’s expenditure on innovation vis-a-vis expenditure on innovation of all companies (%)**

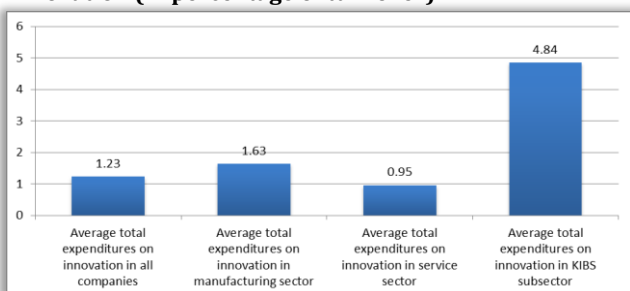


Source: own elaboration from GPEARI/MCTES data, CIS 2008.

Figure 9 gives a broader perception of the proportion of spending on innovation in each of the major sectors. Manufacturing sector and the companies that innovate in this sector spend 1.63% of their turnover on innovation. The services sector spent 0.95% and KIBS subsector spent 4.84% on innovation. These results enhance the value of the subsector KIBS .

In order to highlight the above, we use the following citation from IOIR(2003:9), “Analyses of earlier CIS data for the whole EU have indicated that the proportion of innovators is highest amongst the technology-oriented services, such as IT services and technical services. Their reported innovation levels are comparable to high-tech manufacturing.”

**Figure 9 - Average spending for innovative companies on innovation (in percentage of turnover)**



Source: own elaboration from GPEARI/MCTES data, CIS 2008.

Table 8 complements this data by showing both the amount and percentage of the average expenditure on innovation. It shows that KIBS not only spend more on innovation as a percentage of turnover, but also contribute most to the average amount.

As shown in the Table, KIBS spent an average of 877,455.37 euros on innovation compared with only 341,309,63 euros by the total number of companies in the sample; they even spend twice as much as the services sector as a whole (a figure already influenced by the KIBS).

**Table 8 – Average of total expenditure on innovation in 2008 and percentage of turnover**

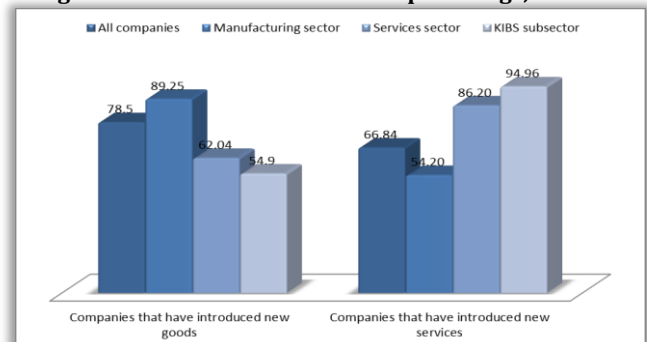
	Amount	As a percentage of turnover (all companies)	As a percentage of turnover (only innovative firms)
Average of total expenditure on innovation in all companies	341,309.63	1.23	1.65
Average of total expenditure on innovation in manufacturing sector	287,193.81	1.63	2.32
Average of total expenditure on innovation in services sector	434,150.55	0.95	1.23
Average of total expenditure on KIBS subsector	877,455.37	4.84	5.72

Source: own elaboration from GPEARI/MCTES data, CIS 2008.

In order to understand how the spending on innovation originates outputs, the next figure (10) illustrate the results of two variables, namely introduction of new goods or introduction of new services and reveal the following:

- KIBS introduce fewer new goods and services than the manufacturing and services sector as a whole. Manufacturing sector introduces the most goods (89.25%).
- KIBS firms are worth almost 95% of the introduction of new services. This is 8% higher than services sector, when aggregated.

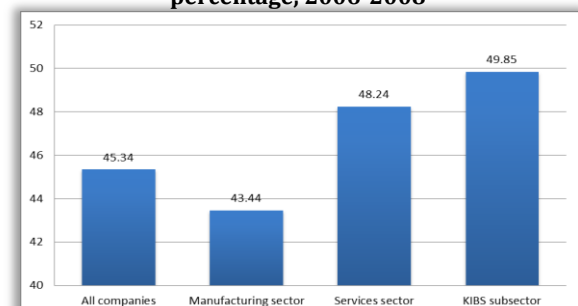
**Figure 10 – Innovative companies that introduced new goods or services in the market in percentage, 2006-2008.**



Source: own elaboration from data of GPEARI/MCTES, CIS 2008.

If we analyze the companies that introduced new goods and services on the market simultaneously, we see from figure 11 that KIBS record the largest percentage. KIBS represent 49.85% of all companies. This is greater than the aggregate service sector, which records 48.24% and manufacturing sector which records 43.44%.

**Figure 11 – Innovative companies that simultaneously introduced new goods or services in the market in percentage, 2006-2008**



Source: own elaboration from GPEARI/MCTES data, CIS 2008.



## 5. Concluding remarks

There has been growing interest in researching KIBS in recent, particularly the late 1980s and 90s and following the continued interest in the service sector as a whole.

KIBS is distinct from the service sector in a number of ways, notably:

- The different types of KIBS (technological - T-KIBS or professional - P-KIBS);
- The different geographies and their impact on innovation systems and regional locations;
- Their role as a vehicle for the transfer of knowledge to their clients;
- Their propensity for innovation;
- Their superior innovative performance compared with other companies;
- Their fast growth.

This study summarizes the research on Portuguese KIBS through a literature review, notably on the different facets of KIBS and studies of other regions and countries. A historical analysis concluded that Portuguese KIBS have made a positive evolution over the last 20 years (1990-2008).

Examples of changes during this period were recorded in the activities KIBS have changed over this period from mainly legal support services, accounting or advertising in the early 1990's to R&D services, management and information technologies since the turn of the century.

Reference was also made throughout this study to the changes in the type of human resources working this subsector and the rise in the number of qualified personnel. It should also be noted that Portuguese KIBS reveal similar trends to those in other regions or countries:

- They consist mainly of SMEs;
- Their growth rate is higher than that of other firms i.e. in the manufacturing sector and service sector as a whole;
- They are concentrated around the most important urban centers.

The results of the descriptive analysis of the CIS-2008, combined with the literature review are summarized in Table 9.

**Table 9 - A picture of Portuguese KIBS**

	Current situation	Previous situation
Classifications	Since 2007 and the harmonization of the NACE codes, Portugal is better prepared to perform comparative studies with other countries.	The course of the various changes made it difficult to compare studies about KIBS based on NACE codes.
Dimension	Portuguese KIBS follow similar trends to those of other countries, mainly in terms of dimension (most are SMEs).	This situation was identical.
Growth	Portuguese KIBS are the fastest growing companies in terms of size and turnover.	No data is available for comparison, however growth tendency of KIBS was detected
Innovation expenditure	KIBS spend more on innovation as a percentage of turnover than other firms. In Portugal, in 2008, ¼ of the amount spent on innovation came from KIBS.	There are no data for comparison
Introduction of new goods and services	Compared with others firms, KIBS introduce more services (in percentage terms). These firms also introduce more goods and services.	There are no data for comparison.

Source: Own elaboration

While this study outlines current knowledge about Portuguese KIBS, and also reveals what we do not know about them (and therefore indicates future research paths):

- The different behaviors of several types of KIBS and their grouping according to their homogeneity or heterogeneity;
- The differences in propensity to innovation inside the group;
- The difference in the types of innovation engaged in;
- The degree of internationalization;
- The types of internal or external cooperation;
- The sources of information used in their innovation process;
- The degree and patterns of openness.

The priority for future research must be to increase knowledge about the above-mentioned aspects to permit a more precise mapping of Portuguese KIBS and also about its propensity to innovate.

One limitation of our study was precisely the lack of previous research about Portuguese KIBS which prevents comparisons. Nevertheless, public policies applied to innovation that involves KIBS must consider their importance as agents of growth and vehicles of innovation, particularly in developed countries.

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