KNOWLEDGE INTENSIVE BUSINESS SERVICES AND IT'S ROLE IN THE ECONOMY: THE CASE OF SPAIN

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"The investment in knowledge always produces the best benefits"

-Benjamin Franklin

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1. INTRODUCTION

The changing environment and the unstoppable advance of technologies has led to the creation of new economic models under the premise that we are immersed in a new "knowledge-based era". Consequently, at present, knowledge is an increasingly important resource in organizations.

Manuel Castells (1966) quotes: "today the basic unit of economic organization is no longer the entrepreneur, the family, the company or the State, but a network composed of several organizations and what unites them is nothing more than the spirit of information" So, this will be one of the terms to be addressed in the development of this work. As a result of this situation and these new emerging economic models, there is a need for companies to focus their efforts on adapting to the new environment and therefore, to pay special attention to innovation. therefore, in paying special attention to innovation.

Thus, the demand for new changes in economic conditions have affected the entire production system, but there is a group of activities that have been key to innovation: the Knowledge Intensive Business Services which we will refer to as KIBS in the development of this work and that in general terms, whose activities are linked to the demand for organizations to innovate and respond to market demands, improving their processes to respond more effectively to customer demands and make companies more competitive.

The structure of the paper will consist of a first part with a theoretical framework where the concepts of innovation and knowledge economy will be reviewed as they are fundamental to understand the subsequent section where KIBS will be defined. In this section we will present the most interesting characteristics, the types of KIBS that the literature collects, their classification and the impact they have on innovation.

Next, a deep analysis of the impact of knowledge intensive business services in Spain, the use of knowledge in the country, future trends and, finally, how the pandemic has affected knowledge and innovation will be presented.

Finally, some personal considerations are presented as a conclusion, summarizing the key points of the work. What has motivated me to choose this title is the fact that it is a subject, in my opinion, still little known in Spain, but which in the near future will gain a lot of importance.

2. THEORETICAL FRAMEWORK

2.1. Concept of innovation

The concept of innovation has a great importance for economic development, It is also a key factor for the generation of value for the companies since it is closely related to competitiveness and the generation and maintenance of competitive advantages.

There are multiple definitions for this concept in the literature:

The word innovate has its origin in the Latin *innovare* which means to change or alter things by introducing novelties (Medina Salgado & Espinosa Espíndola, 1994).

Also, in a more everyday use of language it means to introduce a change. The definition provided by the Royal Spanish Academy says: “creation or modification of a product, and its introduction in a market”

Innovation is the complex process that brings ideas to market in the form of new or improved products or services. This process is composed of two parts not necessarily sequential and with frequent back-and-forth paths between them. One is specialized in knowledge and the other is mainly dedicated to Its application to turn it into a process, product or service that incorporates new advantages for the market (CONEC, 1998).

Despite of the fact that, in the history of society, this term has always been linked to an industrial and technological context is also linked to the field of commerce and development of new processes and obtaining a competitive advantage. It's a process that affects all functional areas of the company, as well as the adoption of new marketing and communication models, so, innovation it is not only related to the creation of a new product or a new technology, but it is a broader concept. Consequently, companies must bet on a strong culture of innovation that is consistent with their strategic objectives.

2.2. Knowledge economy

We understand by knowledge “the human and dynamic process that consists in justifying a personal belief towards certainty”. This vision of knowledge places the main point on the question of how we correctly justify our own beliefs. However, leaving aside these aspects, in the definition itself there are two elements to stand out from the economic point of view. First of all, the fact that the knowledge is related to human action and second, that the generation of Knowledge is dynamic and changing since it has a high interaction with the environment. Thus, the human action of creating knowledge can be considered an economic activity.

There are some difficulties in quantifying the knowledge intensity of these services. For (Miles, 2005) the training and education of employees could be an indicator. The problem is that this indicator does not consider experience or unproven education, experience being one of the key resources for the activity of KIBS, since, as will be developed in later sections, a company without a high degree of experience and specialization is not very competitive in the market. This indicator also does not take into account other forms of knowledge, such as the learning capacity of the organization as a whole or its capacity for interaction and acquisition of information from the environment.

Another point against it is that it underestimates the performance of service companies. In order to include the value of what is produced, it would be necessary to have data on R&D expenditures or the number of patents obtained by knowledge-intensive industries, although sometimes the recognition of industries as KIBS is relatively unusual.
Another approach is to define knowledge intensity as the ability to integrate different sources of information and knowledge into the firm's innovation processes.

So what is a knowledge-based economy?

It is a sector of the economy that uses information as a fundamental element to generate value and wealth by transforming it into knowledge and in consequence offer to the society products and services that improve the quality of life. The societies that base their development on these types of economies encourage the investment in human capital, which improves the people's skills to invent and innovate in order to generate new knowledge and promote ideas that become products and services and thus improve the welfare of society.

The increase in the rate of creation, accumulation and use of knowledge has led the current societies towards a new paradigm that redefines the economic game and what has been called the knowledge-based economy. On this, knowledge is recognized as the true essence of competitiveness and the engine of long-term development. Currently the possession and exploitation of conventional factors of production such as land, raw materials, labour work and capital are important, but they are not enough to advance in the career towards competitiveness.

What will allow us a better positioning is the creation of factors specialized among which stand out the highly qualified human capital, the innovation, science, technology. Investing in these is important. The challenge is the transition from a factor-driven economy to an economy driven by investment to finally become an economy driven by innovation.

We can say that knowledge-based economies are those which invest in human and social capital and promote the generation of new knowledge to create well-being and solve difficulties in society. Some of his distinctive traits is the ability to invent and innovate, that is, create new knowledge and new ideas that are incorporated into products, processes, services and organizations. Understand the role of innovation today it is then essential.

The knowledge-based economy is characterized by a possible scenario with structural transformations in the economy. In this context, the rapid creation of new knowledge and improved access to it are factors that increase efficiency, innovation, quality of goods and services and equity. On the other hand, the revolution in information and communication technologies and the improvement of human capital reflected in education are the main structural factors that make this scenario possible. The ICT revolution makes electronic commerce and the transmission of information to any part of the world possible in a matter of seconds, while the improvement of human capital responds to the demand for new competencies linked to the needs of society, involves the learning capacity of national institutions, in the productive and academic sectors, as well as the generation of networks for problem solving and the intensive use of knowledge in the social space.

The fields in which the knowledge economy plays are diverse: education, research and development, high technology, information technology, telecommunications, robotics,

nanotechnology and the aerospace industry. It is an investment in intangible capital that has not stopped growing since the end of the 20th century.

So, what does the knowledge economy bring to the industrial paradigm?

- Increase exports of goods and services.
- Generate new, higher-skilled employment.
- Promote the increase of added value in the production of goods and services to increase comparative advantage.
- Promote the development of the knowledge market and its application in productive sectors, services, education, health, etc.
- Attract foreign investors.

3. KNOWLEDGE INTENSIVE BUSINESS SERVICES (KIBS)

3.1. Concepts and theoretical context of KIBS

The Knowledge Intensive Business Services (KIBS) are organisations that offer professional knowledge services to other companies and have knowledge as the basis of their competitive advantage.

In the last decade of the 20th century, knowledge became increasingly important in the economy and manpower and capital intensive activities became less and less important, making way to the emergence of new knowledge-based activities requiring highly specialised workers. KIBs include a variety of services such as: auditing, IT services, HR management, accounting, R&D, almost all areas that constitute an organisation. Its main activity is the creation and implementation of knowledge to provide solutions to those organisations that require a high component of knowledge that they do not have.

One of the most recent definitions is the one by Bethencourt et al. (2002), who describes KIBS as "Enterprises whose main value-added activities consist on the accumulation, creation or distribution of knowledge in order to develop a customised service or a product solution that satisfies customer needs"

Muller & Doloreux (2007) highlight three important elements that they consider to be the essence of KIBS. First, KIBS are business services specialised in the provision of services demanded by companies and public organisations and not produced for private consumption (Strambach, 2001).

The second is, they are "knowledge-intensive" companies that offer services in terms of labour skills (Miles 2005) or in terms of the conditions for transactions between the service provider and the service user/provider (Hauknes,1999).

The third, they are "knowledge-intensive companies" that are carrying out complex operations, usually of an intellectual nature, in which human capital is the dominant factor (Alvesson, 1995).

Table 1. KIBS's definitions

Author	KIBs definition	KBIS characteristics
Miles et al. (1995)	"services that involved economic activities which are intended to result in the creation, accumulation or dissemination of knowledge"	• They rely on professional knowledge to a high extend; • They either are themselves primary sources of information/knowledge or they use knowledge to produce intermediate services for their client's production processes; • They are of competitive importance and supplied primarily to business.
Den Hertog (2000)		• Private companies/organisations; • They rely on knowledge or expertise's related to a specific (technical) discipline or (technical) functional domain; • They supply intermediate products and services that are knowledge based.
Toivonen (2004)	"those services provided by business to other businesses or to the public sector in which expertise plays an especially important role"	• They have numerous and versatile contacts with different stakeholders; • They form a node in a system of customers, cooperation partners, public institutions and R&D establishments.
Pardos, Gomez-Loscos & Rubiera-Morollon (2007)	"personalized services that offer a relatively diversified rang with high quality provision"	• They imply an important connection with information, new technologies, new management, production/sales techniques, to new markets.
Koch & Strotmann (2008)	"Highly application-oriented services (in which) tacit knowledge plays an important role"	• They require specialized knowledge and cumulative learning processes
Consoli & Elche-Hortelano (2010)	"Intermediary firms which specialise in knowledge screening, assessment and evaluation, and trade profesional consultancy services"	

Source: Malgorzata Zieba, 2013. p. 5

Knowledge Intensive Business Services are a potential source of innovation; which companies are taking advantage of to incorporate their comparative advantage into their strategies in order to open up a gap in the competitive environment.

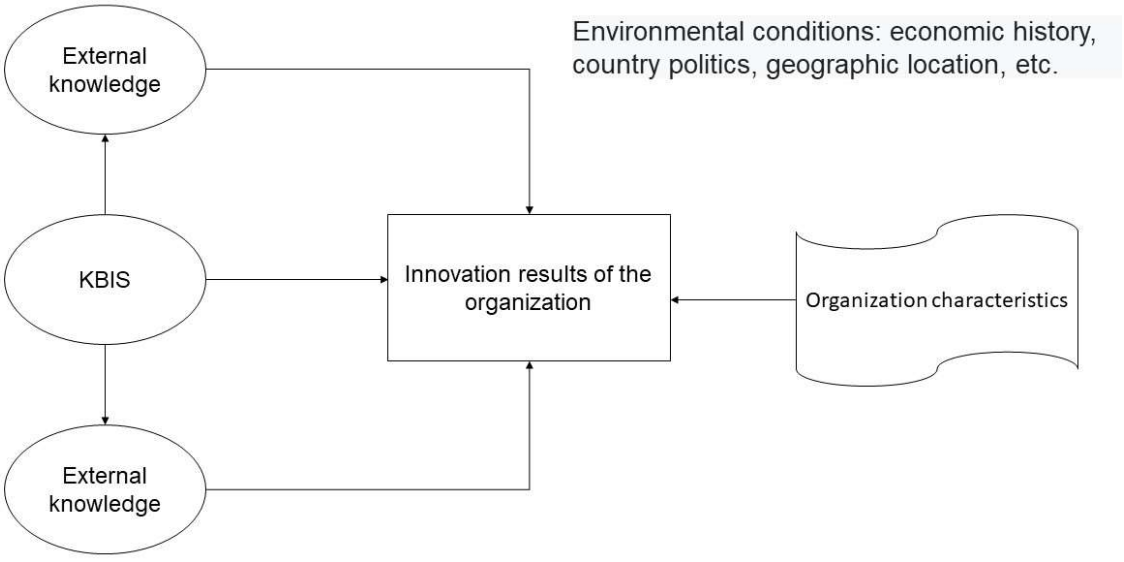
In addition, the expansion of KIBs is crucial for the paradigm change towards a knowledge-based economy, contributing to increase the labour factor and helping to add value in the production processes of products and services.

As explained above, the success of KIBs relies on the knowledge of the employees, so they are considered inputs and outputs and their objective is the creation of a marketable product or service.

That is why they are external agents that are dedicated to increase the knowledge of organisations, to improve their processes and to make more effective use of knowledge from both internal and external sources.

The illustration below summarises the sources of knowledge an organisation employs and how environmental factors impact on innovation.

Figure 1. Role of KBIs on innovation



Source: Jm Berne, 2019

3.2. Importance of KIBS

Many author consider the KIBS like fuel in the economy as they provide knowledge and the know-how that is critical for continuous growth. Aslesen and Isaken (2010) argued that the KIBS not only transfer knowledge but also contribute to a collaborative learning process between the clients and the KIBS. From this collaboration can emerge new knowledge (Den Hertog 2002) as a result of the combination of the scientific and technical information. Knowledge-intensive business services (KIBS) can raise the productivity and com- petitive capacity of urban economies by fostering innovation (OECD, 2006; Simmie and Strambach, 2006; Gago and Rubalcaba, 2007). In sum, the importance of the KIBS resides in their contribution to the innovation system of the countries offering solutions to potential problems of the firms. They contribute in reducing the unemployment rate and they play an important role in the national or regional competitiveness. They disseminate and diffuse information and knowledge at different level through the institutions in clusters, industrial district or the innovation ecosystem.

The knowledge provided by the KIBS help to add up value in the production process of goods or services and enable firms to compete. The SMEs use intensively the KIBS in the place of an R&D department as they don't have fund to afford such area or this department needs some specific knowledge that do not manage to solve specific problems.

3.3. Classification of KIBs

As mentioned in the previous section, the KIBS are developed in multiple areas: business, education, investigation, research, technology, education, training, health, etc. They also employ highly qualified staff specialised in the skills needed for each service with the purpose of transforming and using this knowledge to produce wealth. (Strambach, 2008).

Much of the literature assumes that most of these industries are homogeneous, when in fact there are different typologies of knowledge and strategies based on different types of services.

In general terms, KIBs can be classified into two categories: firstly, T-KIBs are knowledge-intensive technological services whose beneficiaries are companies or investigation groups in need of knowledge.

These services are considered the engine of innovation as they directly boost innovation in processes and products through Research and Development by providing new tools to the other KIBs that act mainly on markets and business organisation.

T-KIBs have as their final result the provision of a technological service or the development of a new product, process or the resolution of a specific complex issue. The value chain is structured as follows: core technology and infrastructure, technology development and know-how.

They are therefore very important as a driving force in the knowledge economy as they can make a change in the environment and make use of technology to solve market needs.

Table 2. Technology-based KIBs

New Technology-Based KIBS
• Computer networks/telematics (e.g. VANs, on-line databases); • Some Telecommunications (especially business services); • Software; • Other Computer-related services (e.g. Facilities Management; • Training in new technologies; • Office services involving new office equipment; • Building services (centrally involving new IT equipment such a Building Energy Management Systems); • Management Consultancy involving new technology; • Technical engineering; • Environmental services involving new technology (e.g. remediation, monitoring, scientific/laboratory services) • R&D Consultancy and “high-tech boutiques”.

Source: Miles et al., 1995. p.29

On the other hand, P-KIBs refer to technology-intensive professional services. These services provide products that are themselves primary sources of information and knowledge, or use their specialised knowledge to produce services that facilitate their clients' own activities.

Table 3. Professional Services

Traditional Professional Services, liable to be intensive users of new technology
• Marketing/advertising; • Training (other than in new technologies); • Design (other than that involving new technologies); • Some financial services (e.g. securities and stock-market-related activities); • Office services (other than those involving new office equipment, and excluding "physical" services like cleaning); • Building services (e.g. architecture; surveying; construction engineering; but excluding services involving new IT equipment such as Building Energy Management Systems); • Management Consultancy (other than that involving new technology); • Accounting and bookkeeping; • Legal services; • Environmental services (not involving new technology, e.g. evironmental law; and not

Source: Miles et al,1995

The KIB market is highly fragmented with a very high number of small and specialised businesses and a large number of highly diversified suppliers. But differentiations can be seen on the classification described above.

For example, P-KIBs are more unpredictable, providing more varied solutions to more specific problems and creating more complementary services. For this reason, professionals are the key to achieving objectives through problem-solving strategies (Consoli et al. 2010). However, T-KIBs are a field where technical assistance and machine maintenance are more important, while routines and processes are more repetitive and more standardised.

Recently, Martinez-Fernandez & Miles (2006) discussed another category of KIBS mostly specialised in innovation related to communication, marketing or organisational issues. C-KIBS are focused on offering services in relation to creativity and ICT (information and communication technologies) activities of companies and organisations.

Innovative providers of creative business services (C-KIBS) have similarities with P-KIBS but have many companies that develop and apply innovations in marketing and communication, and combine this with innovations (I Miles, Belousova & Chichkanov, 2017).

Miles et. al (1995) discussed about non-KIBS services by referring to some emerging activities that are very similar to KIBS and that also use highly specialized professionals.

There are discussions on the classification of these services because, like KIBS, they provide important knowledge and transfer a lot of information as well. Specialised health services, agriculture, forestry, mining and gas etc.

Table 4. Types of KIBs

Type of KIB	Sector
P-KIBS	Marketing, financial services, administration, accounting, training (everyone that i not linked to the development of new technologies)
T-KIBS	IT, consulting R&D, telecommunications (associated with new technologies)
C-KIBS	Marketing, I+D+I, engineering

Source: own elaboration

3.3.1. Sectors and activities of the KIBS

The continuous change in the environment in which companies operate has meant that companies have had to adapt to the needs of their customers. For this reason, they are forced, as mentioned above, to adopt new ways of producing and being more competitive in the markets, adopting new ways of producing, using new technologies and applying new strategies.

Because of this, knowledge intensive business services develop and evolve according to the demand of organisations and under the pressure of changes in the environment and market requirements.

To realise these changes, knowledge plays a key role.

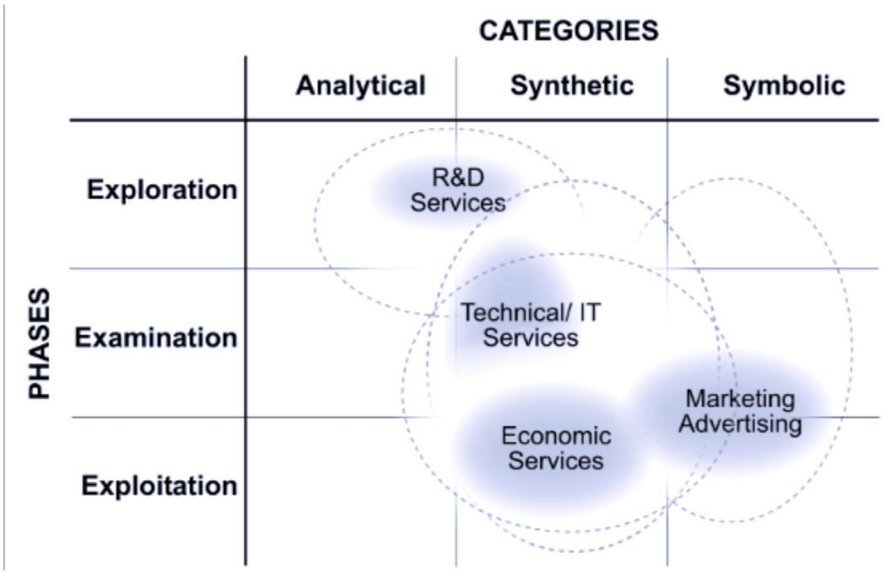
Zieba (2013) points out that companies are increasingly unable to meet the challenges of the environment with their own resources. This would explain the increasing expansion of KIBS.

In addition to acting as innovation agents, KIBS are also seen to act as "innovation bridges" connecting science with customers (Czarnitzki & Spielkamp, 2003).

Most KIBS are mainly oriented towards IT and R&D related activities. Strambach (2008) classifies KIBS on the basis of the nature of their knowledge: analytical, theoretical or symbolic.

He also refers to the phases that knowledge can follow in relation to its nature.

Figure 2: Nature and phases of the KIBS



Source: Strambach et al. 2008 p.161

The same authors have made a list of the activities on which the KIBS do each step or level taking in to account the nature of its development.

Table 5: KIBS phases and knowledge nature

Phase	Analytical	Synthetic	Symbolic
Exploration	Contract research Contract development	Experimental engineering Pre-design	Market research Scouting Open space
Examination	Testing and validation	Feasibility studies Prototyping	Market estimation Proof of concept Strategic consulting
Exploitation	Patenting	Series – production readiness	Marketing campaign Branding

Source: Strambach et al. 2008 p.161

3.3.2. Innovation Strategies for T-KIBs and P-KIBs

In this section we will analyse the different innovation strategies of T-KIBs and P-KIBs from the following perspectives:

- Sources of information
- Business models
- Competencies
- Size

KIBs receive information from external environmental factors to feed their knowledge. This will allow them to innovate and adapt the business to the changing environment and achieve better comparative advantages while generating new value proposals for customers.

Studies show that obtaining information from different sources to innovate improves the effects of these innovations for processes and products, and optimises the economic impact of these innovations.

P-KIBs use clients and internal information as their main sources of information. These are services where there is a high interaction between staff and clients. However, T-KIBs are based more on external collaborations for their innovations, in addition to the sources used by P-KIBs, as they are developers of new technologies, other significant sources are added such as: magazines, competitors, universities, etc. (Berne 2019).

So, in terms of business models, T-KIBs are known for their dynamic and highly organised business models, which allow them to offer a differentiation-based and R&D proposal, that is difficult for competitors to imitate. While on the other hand, P-KIBs are more inactive business models, providing more traditional services and easier to imitate, and the experience and high qualification of the employees will make the matching between the activities imperfect and therefore more difficult to maintain the comparative advantage.

3.3.3. Role of KIBs in innovation

Knowledge-intensive industries provide services as producers of innovation for organisations. Their role is to provide innovative solutions to consumer demands. In general, it can be said that KIBs act as sources of innovation for firms. The impact on innovation efforts is not the same for each type of KIB. T-KIBs use more of their own

resources and there is a low interaction with customers, however, P-KIBs need to feed on external factors and maintain a close relationship with their suppliers.

In general terms, its most important functions include:

- Transferring knowledge to organisations and know-how management.
- To adapt existing knowledge to the particular needs of the client.
- To be sources of information for other sectors
- Carrying out innovative activities

Mas-Verdú et al. (2011) after an empirical study concluded that the relationship between KIBs and innovation progress is positive and is not always linked to the use of technology as is the case of P-KIBs or service companies. Moreover, the information feeds back, in other words, it is bidirectional, the services provide knowledge to the KIBs and the opposite. In this way they offer customers the development of new knowledge and innovation by generating specific production solutions and allowing mutual learning thanks to feedback.

KIBs identify the internal factors and improve the internal innovation capacities of customers, but their role is not to transfer technology directly to customers but to provide them with tools to develop their own skills. In this way they make both internal and external sources of innovation available to customers.

There are five types of innovation according to the literature: product, process, delivery, strategic and management and marketing and (Amara et al.2009) includes two more: strategic innovation and delivery innovation.

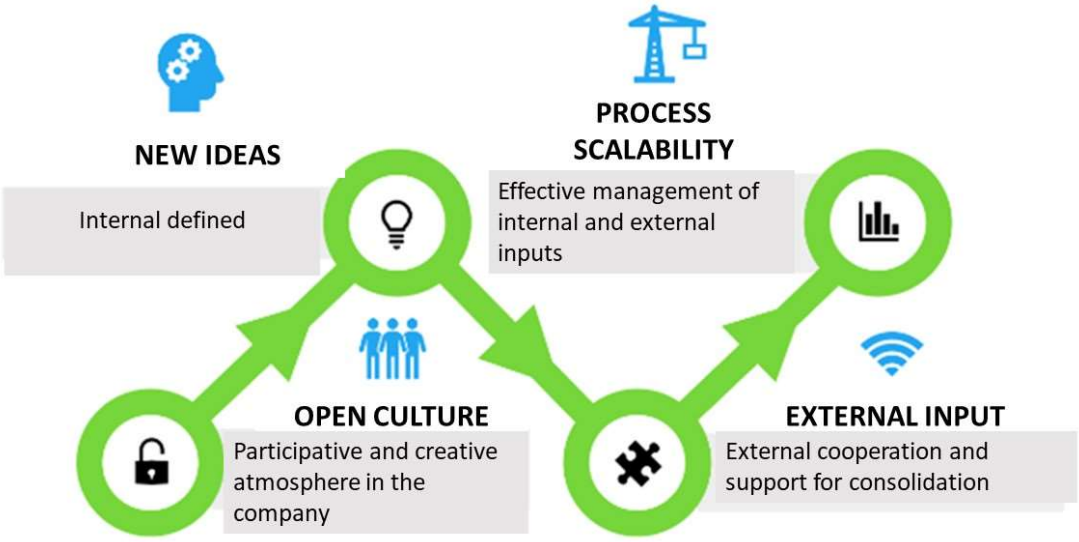
Strategic innovation refers to the implementation of new or modified business strategies. Delivery innovation is defined as the development of changes in the way the company delivers its products or services to customers.

Product and process innovation are linked to technology while the others are more linked to organisational innovation. All these forms of innovation are complementary to each other.

Based on the information found, (Amara et al.2009) says that technological innovations are more relevant in KIBs. In addition, the younger companies are more interested in pioneering innovations and less in process innovations. However, KIBs innovate by combining new and old knowledge through knowledge obtained through experience and knowledge gained by the employees (learning by doing process).

Summarizing, the following picture illustrates the factors involved in making innovation happen:

Figure 3. Innovation management, success keys



Source: Sivoula, 2017

3.4. Comparison of the evolution of knowledge-intensive services in less developed countries versus industrialized economies.

Between the 19th and 20th centuries, the economy began to undergo a process of industrialization. In the mid-twentieth century there was a growth in the service sector and in the twenty-first century is when the importance of the knowledge-based economy began to stand out.

The existing inequality between countries with less advanced economies and those with industrialized economies is based on the importance of the industry sector, progress in services and knowledge penetration. Emerging countries show a preference for the agricultural sector and slow development in industry, services and knowledge. However, in industrialized countries there is a great advance in knowledge-intensive activities.

It should be noted that there is a clear relationship between a country's development and its positioning in knowledge-intensive services. It should be noted that a large part of the success of KIBS development in European countries is due to localization, being in the capital regions or in important urban areas with a relevant economic position in international markets.

Countries with less advanced economies that are leaders in knowledge-intensive services include: Peru, Panama, Argentina, Brazil, Brazil, Uruguay, Chile and Colombia. The Latin American countries mentioned above present problems related to their public policy in comparison with the emerging countries of the Asian region.

All countries with less advanced economies should be benchmarked against developed countries. For this to be possible, several processes should be carried out:

- Governments should encourage the development of KIBS and follow the successful path of countries such as the United States.
- Adaptation of the KIS to the sometimes limited conditions of human capital that each country can provide.
- Encouraging innovation and organizational capabilities.

3.5. Tendencies: where are the KIBs envolving to?

The significant need for highly qualified skills has generated the emergence of a variety of areas of a whole range of areas of activities for KIBS service providers. Most predictions on knowledge-intensive services are based on the assumption of continued strong growth.

Despite these future scenarios of runaway dynamism, there are a number of risks to growth. These risks could contribute in certain areas to a slowdown in the growth of KIBS (or even a regression). Many are concerned that companies will be "hollowed out" and lose their competencies, a fear that is a natural brake on the large-scale use of external services. Beyond the relocation of knowledge-intensive activities, the question of the re-internalisation of functions always comes back to the issue. The evaluation of the quality of knowledge-intensive services encounters considerable measurement problems, and the risk is not trivial.

Customers cannot know in advance exactly what the quality of service will be and, at the same time, do not have much leeway in the case of low-quality performance. Reports of "cowboy consultants" or exorbitantly priced IT systems are undermining confidence in KIBS providers (PREST 2005). The performance of management consultants, in particular, is already the subject of scepticism.

On the basis of observed trends, the following scenarios should make it possible to evaluate how the situation is likely to develop, but these are only hypotheses. The future of the KIBSTs is likely to be a mixture of different elements, according to a cautious

assessment (PREST 2005, p.18). In the different areas of KIBS, they can expect to continue to be in high demand.

In order to promote the sustainable development of the KIBS sector, the implementation of quality assurance measures, for example, is under consideration. In particular, internationally recognised quality standards and certificates are being considered (EFBRS 2005, p. 15). The objective is to increase market transparency and give (potential) customer companies confidence.

Table 6:The 20 largest providers of IT services and services to businesses to business.

Position	Provider	Origin
1	IBM Global Services	EE.UU
2	Accenture	EE.UU
3	HP Services	EE.UU
4	Capgemini	France
5	Atos Origin	France
6	EDS	EE.UU
7	BT Global Servicies	England
8	CSC	EE.UU
9	Siemens Business Services	Germany
10	T-Systems	Germany
11	Fujitsu	Japan
12	LogicaCMG	Engalnd
13	Getronics	Netherlands
14	Capita	England
15	Deloitte	EE.UU
16	TietoEnator	Finland
17	SAP	Germany
18	France Telecom	France
19	Dell	EE.UU
20	Unisys	EE.UU

Source: (IDC 2006, p.4; "Business Services": Consejos y BPO (externalización de procesos de empresa)

A look at the providers of IT services and business services with the highest volume of business in Europe shows that the traditional distribution of sectors is now changing. that the traditional breakdown of sectors is changing. At the top of KIBS' list of suppliers

includes many companies previously known only as manufacturers of technical equipment. Business services services are now an important business sector for IT and telecommunications companies.

3.6. KIBs as a drivers of growth

Some KIBS, e.g. legal consulting, which has existed since ancient times, or others, such as the advertising sector, have become firmly established since the 19th century in the economic landscape (Toivonen 2004, pp.137 ff.). Meanwhile, knowledge-intensive services have evolved into a high-level and highly diverse economic sector. In the face of overall growth, this sector is still seen as a driver of employment.

Its strong dynamic is based on a number of factors:

- Outsourcing

The outsourcing of activities previously performed internally is one of the main drivers of KBS development, and this development stems from a widespread tendency for companies to focus on their "core business" and entrust other activities to specialists. This strategy is primarily motivated by the desire to reduce costs and to exploit the scale effects obtained from external suppliers. In addition, outsourcing allows managers to organize the various activities flexibly or to reduce them, especially during short peak periods or for unusual activities. The unpredictability and rapidity of economic fluctuations have an incentive effect on outsourcing, which appears to be a form of flexible coordination insofar as it makes it possible to quickly organize the execution of a series of tasks, the completion of which terminates the employment relationship. But companies also demand quality of service and innovation-related advantages from the specialist in charge of carrying out complex activities. KIBS suppliers benefit from the offshoring of work entrusted to them by industrial and service companies. KIBS do not only owe their growth to the relocation of jobs from one company (or sector) to another. The expansion of services is highly dependent on the increase in the need for specialized expertise. An isolated company is often unable to provide itself internally with all the specialized skills it needs. This reality is explained by the various changes in the technical, economic and social environment.

- Technological change

The speed and complexity of technological innovations require an accumulation of knowledge that far exceeds the capabilities of the individual company. Computer services are a good example, recalling that this branch of the KIBS, although recent, has

an above-average growth rate. To fully exploit the potential of ICTs, many companies, especially SMEs, have to rely on external expertise. In this field, change is so rapid that specialists who are always up to date with the latest innovations must be called in. In particular, KIBS in the field of technology are seen as an important innovation vector for their customers.

- Competition and regulation

In order to evolve in saturated markets and sell highly differentiated products, companies are increasingly turning to KIBS providers, who provide them with consolidated knowledge of markets, consumer needs or innovation potentials. Many KIBS are also oriented towards internal company processes or the knowledge management of their client companies. Indeed, the internal structures of companies are becoming increasingly complex, the pace of restructuring is very high and the pressure to optimize processes is persistent. In addition, changes in the legal environment also offer important prospects for external service providers who are often highly specialized, e.g. in the field of environmental, labor or commercial law. Few companies are able to acquire in-house expertise in patent law, tax law or emissions regulations.

- Globalization

The need for expertise increases as companies expand their activities beyond national borders. "A modern company can hardly be competitive and successful in the global economy if it does not use business services," explains economist Rubalcaba. Globalization-related services play an important role as bridges between the company and its various local environments, e.g. through market research and knowledge of local product changes, or through legal or language services. KIBS then facilitate the company's adaptation to the environments in which its subsidiaries operate (Rubalcaba 2007).

Internalisation or outsourcing? Although the need for external expertise is increasing, the outsourcing of knowledge-intensive business services by doesn’t mean negates the internal employment of specialized "knowledge workers". Large production companies are increasingly employing highly skilled employees who perform tasks similar to those of KIBS companies (Toivonen 2004, p. 61). In many companies, there is a noteworthy internal capacity incubator that operates in parallel with KIBS providers. Moreover, far from presenting mutually exclusive solutions, external and internal activities are complementary. Indeed, to take full advantage of outsourced services, companies need a minimum of in-house expertise. Only then will they be able to clearly define the

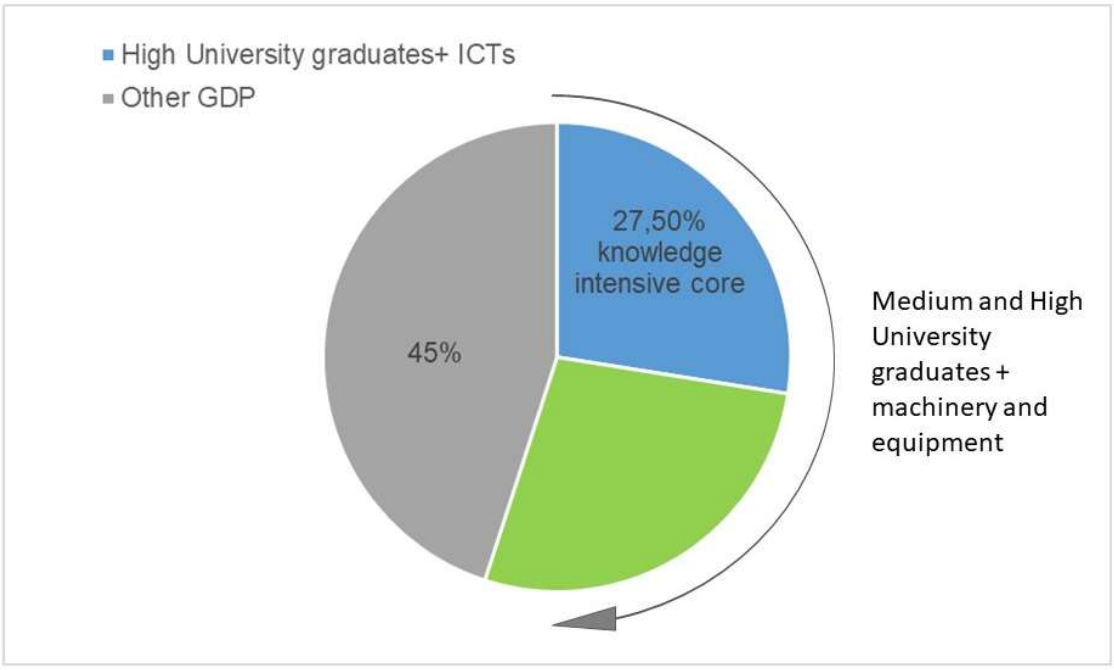
outsourced services, judge the quality and use the results effectively (absorptive capacity).

4. KIBS ANALYSIS IN SPAIN

4.1. How much knowledge does the Spanish economy use?

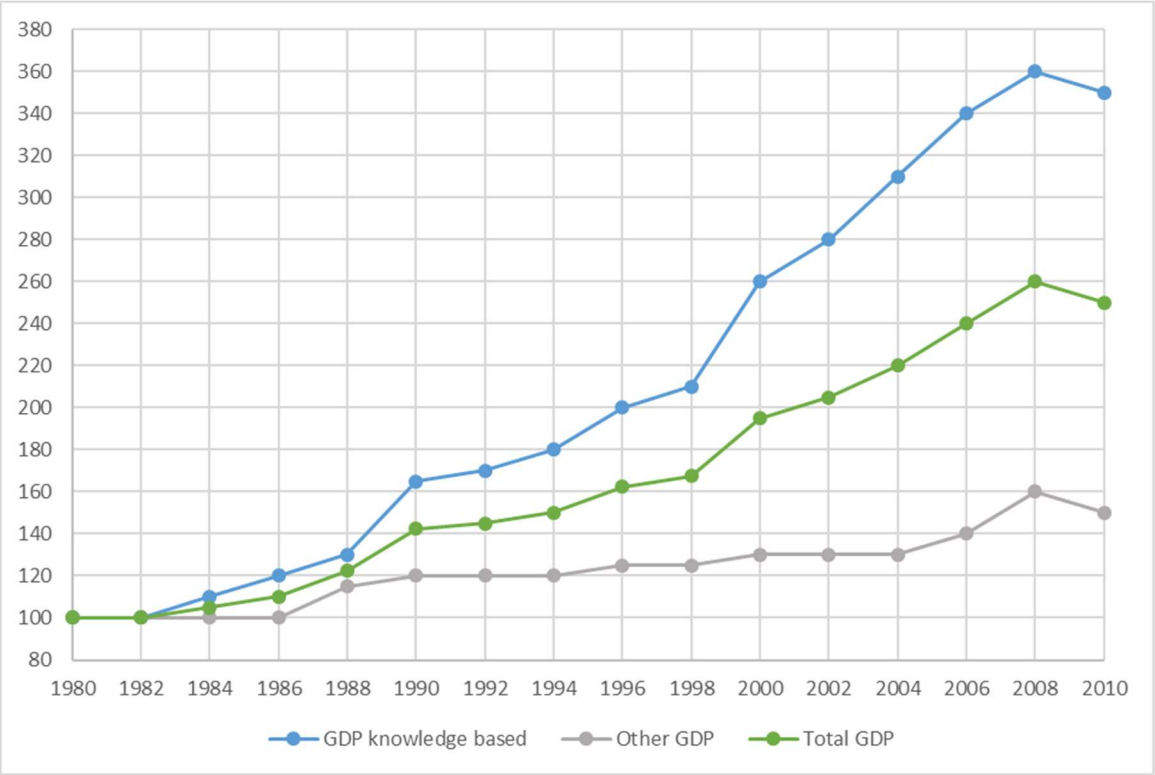
As we have seen in the development of this work, knowledge is an element that is increasingly present in world economies. According to the ABACO observatory, it represents between 2/3 and 3 /4 of the GDP's most developed countries. However, there is still a high degree of heterogeneity between countries and sectors of activity. South Korea leads in the intensity of knowledge use, followed by the UK and the US, and at the bottom are Australia, Spain and Portugal, with knowledge accounting for less than 60% of their value added.

Figure 4. GDP by knowledge content in Spain (2010)



Source: Informe ABACO

Figure 5. Evolution of knowledge-based GDP in Spain (1980-2010)



Source: Informe ABACO

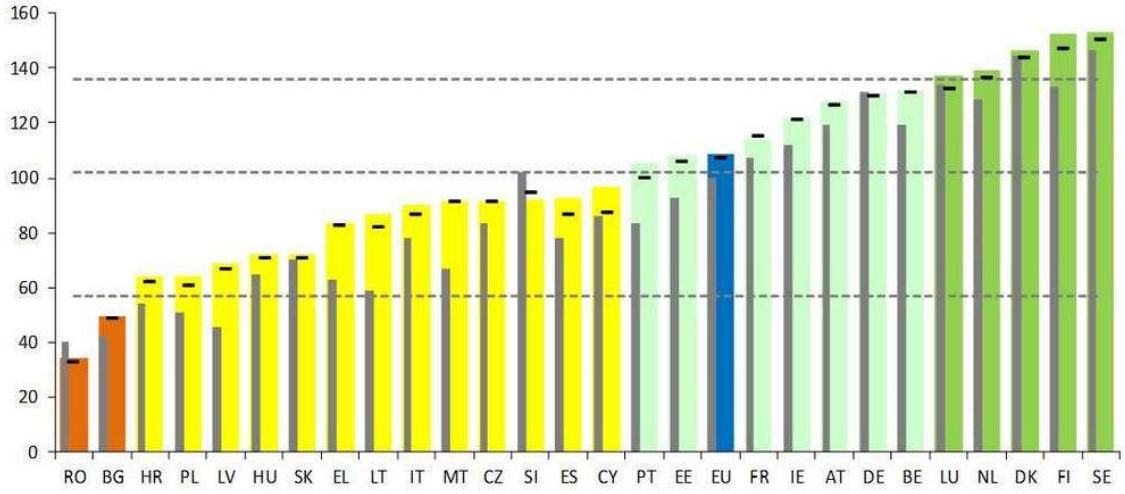
4.2. Innovation in Spain

One of the biggest debates in Spain's current political situation is how to guide our country towards innovation.

Investment in innovation is necessary, among other things, because the basis of a territory's economic growth is based on its productive capacities to produce a greater variety of goods and more sophisticated goods. This is what is known as economic complexity. This concept in Spain is decreasing in comparison with other European countries, especially due to the lack of innovation and the lack of productive capacities.

The European Innovation Scoreboard (EIS) refers to best practice in research in European countries and identifies those activities that can be improved in each country, in order to facilitate convergence between them.

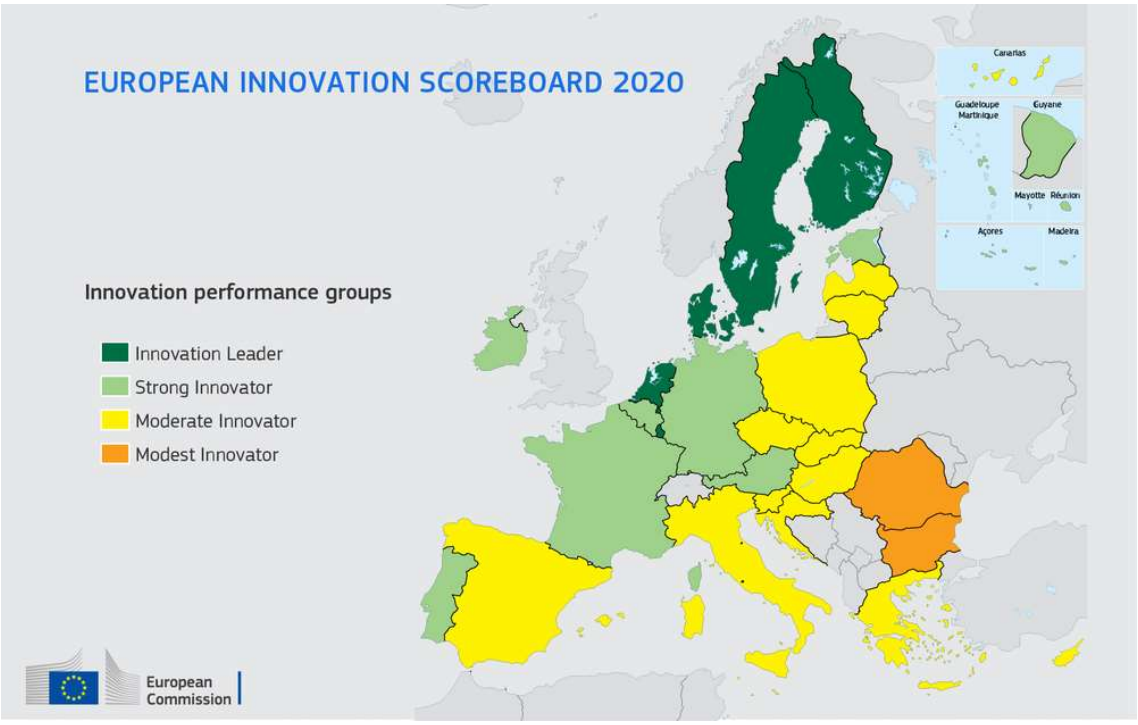
Figure 6: Innovation in Europe



Source: Innovación en la UE. Fuente: CE, EIS 2020

As can be seen in the graph, Spain forms part of the group of moderate innovators in the ranking and is far from the leading countries.

Figure 7:European innovation Scoreboard 2020



Source: CE, EIS 2020

The most significant dimensions of innovation in Spain are:

- Human resources
- A favourable environment for innovation
- Impact on employment

According to the EIS, Spain needs to improve the implementation of KIBS, internal innovation in SMEs, and increase private R&D investment in order to be competitive in Europe. Moreover, compared to the EU average, Spain is far below the number of large companies that invest in R&D and this is a consequence of the country's high dependence on energy imports and the strong cost competition in technology exports.

The European Commission indicates that out of the Spanish regions that invest in innovation, the Basque Country stands out for the volume of private R&D expenditure and Catalonia for the involvement of SMEs in product and process innovation.

However, as mentioned above, although Spain is on the right track, it still needs to make profound changes to enable it to follow the rhythm of the leading countries. One way to improve would be to make financing available to start-ups and to facilitate high-level technical training.

4.3. KIBS in Spain

The economic situation and the changing environment in which we live have forced European and Spanish companies to pay more attention to innovation. For this, in 1996 the European Commission launched its first Action Plan for Innovation in Europe whose functions are:

- To promote an innovative culture
- To orient research towards innovation
- To encourage the creation of innovative companies

It has been seen that historically, the economies of countries are tending more and more towards outsourcing. Among the causes that have provoked this constant increase in the service sector have been the progressive industrialization, the growth of cities and, to a great extent, tourism.

For this reasons, if we consider this growing share of services, it is to be expected that they play a very important role in our economy and have a great impact on labour, where opportunities in this sector range from semi-skilled to highly skilled jobs (Pauceanu,2015).
Companies often focus on metropolitan areas where innovation is easier to access and information necessary for its development can be more readily available, and where agents can be found to collect information and perform specialised tasks.

In particular, in Spain, the service sector represents more than 70% of the employed population and, as in many other countries, is concentrated in the main cities: Madrid and Barcelona.

In Madrid, in addition to the fact that it is the nation's capital, it is the main focus of demand, but it is observed that it does not have a high number of technological industries, except in sectors such as aeronautics and pharmaceuticals (OECD, 2007).
In the case of Barcelona, the services offered by the KIBs have changed from an industrial service to one more specialized in services, although the industrial service still maintains a lot of weight. (Méndez and Sánchez Moral, 2010).

As can be seen in the table below, apart from the capital cities, Andalucia, Zaragoza, Valencia and the País Vasco, and in particular the cities of Sevilla, Zaragoza, Valencia and Bilbao are the Spanish cities with the highest concentration of KIBs in Spain.

Table 7. Distribution of KIBS by autonomous communities

Region	Years	
	2000	2006
Andalucia	10,55%	11,29%
Aragón	2,05%	2,28%
Asturias	1,83%	1,56%
Baleares	2,41%	2,52%
Canarias	3,35%	3,54%
Cantabria	0,91%	0,83%
Castilla y León	3,66%	3,29%
Castilla- La Mancha	1,68%	2,01%
Cataluña	25,57%	23,16%
Comunidad Valenciana	9,69%	9,46%
Extemadura	0,92%	1,05%
Galicia	4,03%	4,05%
Madrid	25,97%	27,04%
Murcia	2,12%	2,27%
Navarra	1,32%	1,30%
Pais Vasco	3,28%	3,67%
La Rioja	0,57%	0,55%
TOTAL	100%	100%

Source: Rubiera, F. y Cañal, V. (2008): "Inversión directa en servicios: dónde y porqué. Comportamiento espacial y sectorial de la inversión directa en servicios en España", Revista de Economía*, 844, 58.*

These regions allow easier and faster access to other markets, whether regional or international, due to their good transport and communication networks. Companies that decide to locate in these places tend to have a high degree of specialised knowledge, benefiting from the advantages of the location and the proximity of companies that can offer complementary services.

Companies decide either to locate their facilities in a place where there is congestion from other companies or to locate elsewhere depending on the life cycle of the product they are marketing. In the case of knowledge-intensive services, they will tend to agglomerate and concentrate in a particular geographical location in order to enjoy the advantages mentioned above.

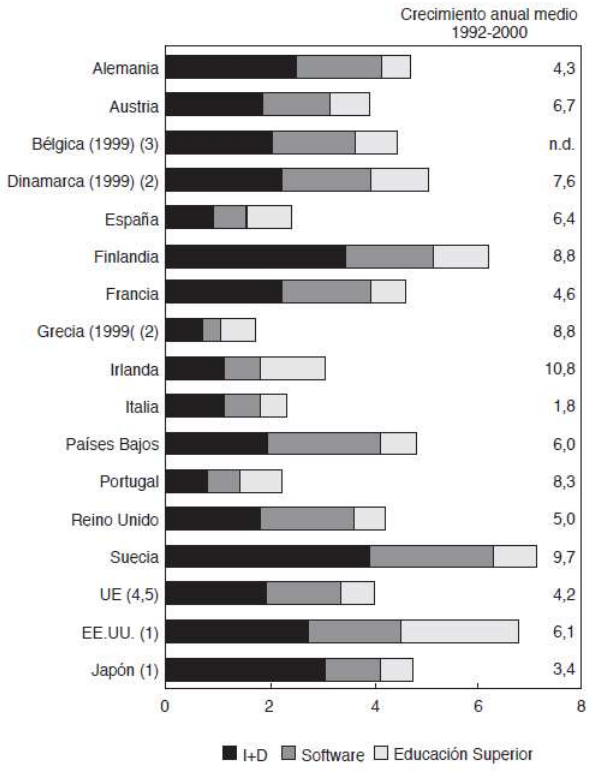
On the subject of employment, 39.8% of the total in Spain currently corresponds to knowledge-intensive services and high- and medium-technology manufacturing sectors. The figure in 2008 was five points lower (34.9%), so there has been growth but it is still below the EU average of 45.8%. Among the EU countries with the highest employment

in this sector are Sweden (57.6%), Denmark (53%), Belgium (52.7%), the United Kingdom (52.6%), Luxembourg (52.3%), France (50.4%) and Germany (50.2%).

The Spanish economic system is mostly composed of SMEs that need to compete constantly and therefore need to reinforce their innovation capacity to keep up with the times.

In Europe, according to Eurostat sources, the service sector represents 68% of employment and within this, knowledge-intensive services are those that have had greater expansion in recent years representing approximately 30% of employment in the EU, in the case of Spain, the KIBS are still below the European average although it has been the country where it has increased the most and currently occupy the 16th place in the European ranking.

Figure 8. Knowledge investment as a % of the world's GDP



Source: Eurostat(2000)

According to an article published in the Journal of technology management & innovation, KIBs in Spain tend to be located in the main cities: Madrid and Barcelona with a great leap with respect to the rest, this is due to the fact that the more peripheral or less developed regions have barriers in their development because they are far from the centres of demand. Martinelli (2002).

Consequently, KIBs play a very important role in the Spanish economy, as they contribute to its growth and allow Spanish companies to expand and compete with international markets, as well as fostering the absorption of new skills and technological capabilities.

4.4. Future scenarios

4.4.1. Swot analysis

This section is going to analyse the opportunities and threats and the weaknesses and strengths that KIBS industries will face in the future according to a study made by the Barcelona's city council.

Weaknesses:

- Some indicators show that the business services sector in Spain has acquired certain characteristics of a mature sector and, consequently, the sector is absorbing fewer business initiatives than it did some time ago.
- If we compare the amounts corresponding to the number of companies, the number of people employed in this sector in Spain, with the EU average, it can be seen that the relative weight of the KIBS service activities is lower than the European average, which could result in a future lag in the economy and have repercussions on the productivity levels of the sector as a whole.
- The sector is tending towards a lack of cooperation between companies. There is no tendency to create collaborations between companies that would allow for common guidelines and mutual knowledge.
- There is little penetration of this sector outside urban territories.

Threats:

The strong competition in prizes between companies in the sector may lead to a decrease in the quality of the services offered and, therefore, to an insufficient transfer of knowledge and services to companies in other sectors of the economy, which may result in a slowdown in the growth of the Spanish economy.

- The economic crisis and the lack of stable employment in the sector may lead to leave of qualified human capital prepared to work in the sector.
- The internationalization process in which the sector is immersed is causing foreign companies to come to operate in Spain, which means an increase in competition. Thus, Spanish companies have to increase their competitiveness in order to be able to face new competitors from abroad.

Strengths:

- Business services, especially knowledge-intensive business services, play a key role in innovation processes in developed economies. This sector's leading role in innovative capacity is due not only to the fact that these activities have a relevant and growing dimension in terms of employment, turnover and innovation, but also to the fact that they form a fairly significant part of the knowledge and innovation infrastructure of an advanced economy.
- Spain, likewise, has sufficiently qualified human resources which are, as we have seen, the main asset required by firms providing services to knowledge-intensive companies. The endowment of universities and higher education centres is very satisfactory for the training and preparation of this human capital.
- Investment in infrastructure, the presence of higher education and research centres, the consolidation of international events, the concentration of qualified human capital and the high number of companies in Barcelona, position it as a business hub with high potential for business growth.

Opportunities:

- The internationalization process that the sector is undergoing is increasing the potential market for Spanish companies. It should be borne in mind that although the demand for services in Spain is stagnating, there is an upward trend in many countries. In any case, internationalization will only be an opportunity when

Spanish companies are sufficiently competitive to be able to compete with companies from other countries

- Taking advantage of new technologies to offer new services at a more competitive price and without reducing quality is one of the challenges facing companies in the sector.
- For their part, traditional sectors are expected to resort in many cases to the services offered by business services companies in order to obtain a professionalization and competitive improvement that will help ensure their survival. In this sense, the business services sector can serve as a support for the modernization of traditional sectors.

5. IMPACT OF THE COVID'19 PANDEMIC ON KIBS AND INNOVATION

The COVID-19 pandemic and the confinement decreed to deal with it had an impact on the intensive innovation practice of companies and governments and on the interaction of these organisations with the rest of the actors in the environment.

This unprecedented situation forced companies and governments to implement other intervention strategies that guarantee interaction with the rest of the factors, in most cases, by trying to take existing ones into digital format.

The vast majority of companies are confident that they will be able to fulfil their annual planning and are optimistic about the future of their investments. The changes in social organisation brought about by the lock-in measures can be a potential source of opportunities by forcing change and generating new behaviours. The possibility of access to distributed knowledge, the centrality of the household and the need to design spaces and meeting points that are physically separate and socially together offer, in general, opportunities for business start-ups.

Open innovation initiatives are increasingly present in the public policy worldwide countries. It is another sure way to encourage start-ups and innovation, while seeking a relationship with larger companies. In an international context marked by the reduction of global value chains, certain instances of delocalisation and re-localisation of companies, open innovation is a concrete and valid tool for trying to insert oneself into global and regional value chains. The COVID-19 crisis and the difficulty most countries had in accessing inputs and technology boosted rapid innovation through agile links between companies, the scientific system, the maker community, local governments and other actors to guarantee the very successful prototyping, production and scaling up of

medical equipment. Governments played a central role as a platform, by convening and inviting to solve.

As far as KIBS are concerned, during the current pandemic and economic slowdown, it has been observed that some KIBS have opened up to all types of clients in order to keep their operations alive at all costs. Consultancy firms, law firms, accountancy services and IT companies have all been seen catering to clients they had never considered before. This has highlighted what (Lah, 2019) wrote in his book Building Professional Services: The Sirens' Song, which argues that the key strategies for the sustainability of a professional services firm are referrals, repeatability and margin, so constant analysis of the client portfolio by tracking changes in relationships over time enables them to make adjustments and to take corrective action before a relationship gets out of control.

6. CONCLUSIONS

KIBs play a very important role in innovation and contribute to economic development, as they are major drivers of employment, which in macroeconomic terms means an increase in consumption and, in general terms, a better economy. These companies, in addition to carrying out their own innovative activity, are also providers of skills and knowledge, thus positively influencing the competitiveness and innovation of organizations. (Kekezi & Klaesson, 2019)

Currently, as we have seen, they are becoming an essential resource to cope with changes in the environment and remain competitive in the market, playing a key role in the development of the economy.

They are industries that create, assimilate and disseminate knowledge and are open to receive information from external factors to expand their knowledge base (Berne 2014) But for this they need to have a business model that facilitates the necessary mechanisms to obtain, manage and increase it and it is necessary for governments to encourage this type of organizations and promote the use of knowledge.

On the other hand, Glande (2006) affirms that the capacity of companies to innovate are key resources for generating competitive advantages and therefore a source of differentiation from competitors.

The human factor in KIBs plays a very important role, since they consider employees as the main driving force and their level of qualification is their greatest asset, and technology is increasingly important. The implementation of this type of organizations has a positive impact on the labor factor as it creates many jobs and in general has an impact on a healthier economy.

In the case of Spain, although the number of KIBS is increasing, there is still a large gap with respect to other European countries. Most of them are located in large cities, as they are the main focus of demand, but they are not seen in peripheral environments.

The pandemic situation that the world is going through, has forced knowledge intensive companies to open their borders and to consider clients they would never have considered before and the fact of having considered knowledge has made these companies come out advantageous in the face of a bad conjuncture.

In future lines of research, it would be interesting to consider the differences between Spanish KIBS and KIBS in the rest of the world, since most KIBS in Spain are SMEs and it would be interesting to compare their characteristics with those of multinationals.

7. BIBLIOGRAPHY

- Strambach, S. (2008). Knowledge-Intensive Business Services (KIBS) as drivers of multilevel knowledge dynamics. International Journal of Services Technology and Management
- Muller, E., & Doloreux, D. (2007a). The key dimensions of knowledge intensive business services (KIBS) analysis: a decade of evolution
- Echevarría, J. (2008). El manual de Oslo y la innovación social. Arbor,184(732), 609-618.
- Weisz, J., & Schwartz, A. I. (2012). The role of innovation in increasing efficiency and competitiveness of enterprises. Anale. Seria Stiinte Economice. Timisoara, 18, 496-504.
- José Miguel Berné Martínez (2015) Análisis de la estrategia de innovación en los KIBS, 53-63
- Camacho, J. A (2000) Revista asturiana de economía: España ante la economía del conocimiento: el papel de las empresas a servicios intensivos en conocimiento.
- Anand, N., Gardner, H.K. & Morris, T. (2007). “Knowledge-based innovation:
- Emergence and embedding of new practice areas in management consulting firms.” Academy of Management Journal, 50, 2, 406-428.
- Braczyk, H.J., Cooke, P. Heindenreich, M. (eds) (1998). “Regional Innovation systems: the role of governance in a globalized world.” 321-358
- OCDE (2002): “Dynamiting National Innovation Systems”, OCDE, París.
- Del Corte Lora, V. (2015). Antecedentes y efectos de la creatividad y las redes en el clúster cerámico de Castellón. (Tesis doctoral). Universidad Jaume I. Castellón.
- Sisti, E & Zubiaurre, A. (2013) Análisis de datos de panel de la creación de nuevas KIBS en España: La importancia de la manufactura y el sistema de innovación.
- Bergal Miravent, J. (2020). ¿Cómo contribuyen las universidades a la creación de empresas intensivas en conocimiento? Universidad sí,8-10.
- Romero Amad, J. (2018). La innovación en el sector servicios: la contribución de los servicios empresariales intensivos en conocimiento. Innovaciones de negocios ,43-56.
- OCDE, 2001: Services Statistics on Value Added and Employment
- Eurostat, 2004: Business services – An analysis of structural, foreign affiliates and business demography statistics (Data 2001), 2004 edition