AGRICULTURAL KNOWLEDGE: LINKING FARMERS, ADVISORS AND RESEARCHERS TO BOOST INNOVATION

AGRILINK’S MULTI-LEVEL CONCEPTUAL FRAMEWORK

THEORY PRIMER: 14) KNOWLEDGE-INTENSIVE BUSINESS SERVICES

Coordinated by The James Hutton Institute
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AgriLink

Agricultural Knowledge: Linking farmers, advisors and researchers to boost innovation.

AgriLink’s multi-level conceptual framework

Theory primer: 14) Knowledge-intensive business services

The elaboration of this Conceptual Framework has been coordinated by The James Hutton Institute, leader of AgriLink’s WP2.

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This document presents the multi-level conceptual framework of the research and innovation project AgriLink. It is a living document.

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It has gone through a transdisciplinary process, with implication of both practitioners and researchers in writing, editing or reviewing the manuscript. This participation has been organised within AgriLink’s consortium and beyond, with the involvement of members of the International Advisory Board of the project, including members of the Working Group on Agricultural Knowledge and Innovation System of the Standing Committee on Agricultural Research of the European Commission.
Theory Primers

The purpose of the primers is to provide AgriLink consortium members with an introduction to each topic, which outlines the key points and identifies options for further reading. The primers have also served to demonstrate the wide range of expertise in the consortium, and to highlight the specific research interests of consortium members. Primers are intended to act as a foundation for academic journal articles, and an early opportunity for collaboration between consortium members.

14) Knowledge-intensive business services
Authors: Carla Susana Marques, Pierre Labarthe

1.0 General Overview of the Theory or Approach

1.1 Summary of the Theory, Approach or Topic

Knowledge Intensive business services as a topic or concept is covered in many different disciplines, ranging from business and economics, strategy, operation research and management studies, geography and environmental studies, engineering and information and library science. The main theoretical and empirical advances relevant for the analysis of agricultural advisory services are the following:

- Definitions of KIBS as services activities which main input and output is knowledge,
- Empirically grounded typologies of KIBS organisations,
- Models to analyse the relations between supply and demand for KIBS,
- Concepts to describe the specific innovation dynamics of advisory services,
- Qualitative frameworks and methods to assess the performance rationale of advisory organisations.

1.2 Major authors and their disciplines

The literature on Knowledge Intensive Business Services is a relatively new field of research that has spread remarkably in the past 20 years. Knowledge Intensive Business Services research has flourished in 1994, mainly in Europe and USA. The earlier published paper found in WoS was written by Simone (Strambach, 1994), from University of Stuttgart, Germany, and it was published in Tijdschrift Voor Economische en Sociale Geografie, a journal published by Wiley-Blackwell (USA), which web of science categories are economics and geography. Most of researches about KIBS are embedded in economics or management sciences. A strong emphasis of these researches is on the specificities of innovation dynamics within KIBS. It is embedded in a broader research track that work on the specificities of services in economics (Gadrey 2000, Hill 1999, Gallouj and Weinstein 1997) and management sciences (Vargo et Lusch 2008).

Miles et al. (1995), focus on highlighting the contributions of KIBS to innovation; provide the agenda for coherent analyses of KIBS innovation processes; and, draw recommendations for a consideration of KIBS in policy-making. R&D becomes increasingly the basis of new techniques, and networks of innovators become increasingly the basis of accumulation of the knowledge that results in innovation. They provided a typology of KIBS organisations.

Den Hertog (2000) makes an analysis of the role played by KIBS in innovation. It presents a four-dimensional model of (services) innovation that point to the significance of such non-technological factors in innovation as new service concepts, client interfaces and service
delivery system. The various roles of service firms in innovation processes are mapped out by identifying five basic service innovation patterns. KIBS are seen to function as facilitator, carrier or source of innovation, and through their almost symbiotic relationship with client firms, some KIBS function as co-producers of innovation. In addition to discrete and tangible forms of knowledge exchange, process-oriented and intangible forms of knowledge flows are crucial in such relationships.

Muller and Zenker (2001)’s work focus on innovation interactions between manufacturing small- and medium-sized enterprises (SMEs) and KIBS, the empirical analyses grasps KIBS position in five regional contexts. The paper gives an overview of the role and function of KIBS in innovation systems and their knowledge production, transformation and diffusion activities. The analysis leads to the conclusion that innovation activities link SMEs and KIBS through the process of knowledge generation and diffusion.

Bettencourt et al. (2002) developed a co-production management model. The co-production model illustrates the importance of considering clients as “partial employees” of the service provider firms and applying traditional employee management practices to developing effective client partnerships. The paper also proposes a definition of KIBS.

The focus of the study of Hipp and Grupp (2005) was support the conceptual findings and to identify potential improvements on innovation within KIBS. They introduce a new typology with a view to obtain a better understanding of innovation in services. Special attention is directed towards the inclusion of KIBS that are of particular importance for innovation processes.

Miles (2005) examined KIBS in the European Union, highlighting key similarities and differences in their development across Member States. KIBS are one of the fastest growing areas of the European economy, and are increasingly important contributors to the performance of the sectors who are their clients. KIBS are continuing to grow at rapid rates, and are experiencing qualitative change. The growth is associated with outsourcing, the internationalization of services, and the growth in demand for certain forms of knowledge. Many KIBS sectors are becoming more concentrated (though most KIBS sectors feature a higher share of small firms than does the economy as a whole).

Simmie and Strambach (2006) develop a theoretical position for understanding the role of services in innovation in post-industrial societies. The paper suggests a systematic theoretical approach to understanding the currently under-theorized role of services in general and KIBS in particular in innovation. It also points to the importance of the geography of specialized services. The paper argues that the role of KIBS in innovation may be understood theoretically in terms of evolutionary and institutional economics. Urban economies are path dependent interactive learning systems that develop individually through time. They are increasingly characterized by networked production systems in which KIBS play a key role in the transfer of bespoke knowledge between actors both within and from outside individual cities. As a result, KIBS make a significant and place specific contribution to innovation in the cities where they are located.

Amara et al. (2009) developed indicators to capture forms or types of innovation in KIBS and proposed a conceptual framework inspired by the knowledge-based theory using different categories of knowledge assets as explanatory variables.

According to Zhu and Guan (2013), some hot topics were focused on for a long time, such as customer orientation and telecommunication, and others were changeable with years, market or information process over the period 2004-2005, globalization and collaboration over the period 2006-2007, then the focus were to innovation process and service innovation model over the period 2008-2009, and shifted into internet and network effects over the period 2010-2011. The study of Braga and Marques (2016) analyse the research situation, and found the research focus of the field of innovation, knowledge and collaboration between KIBS and other firms brings recognized benefits to the latter as well as for the whole economy.
1.3 Key references


1.5 Basic concepts

Knowledge-intensive business services (KIBS) over the last 20 years become an important field of both theoretical (e.g., (Bettiol et al., 2012; Chae, 2012; Gimzauskiene and Staliuniene, 2010; Murray et al., 2009)) and empirical study (e.g., Miozzo and Grimshaw, 2005; (Carmona-Lavado et al., 2013; Miozzo and Grimshaw, 2005; Palacios-Marques et al., 2011; Santos-Vijande et al., 2013a; Yam et al., 2011). (Santos-Vijande et al., 2013a) argue that as the dynamism of the KIBS sector has an impact on the whole economy, it is also necessary to understand the most advisable management practices in KIBS to foster innovation activities across the whole economy and improved performance (e.g., (Abreu et al., 2010; Hu et al., 2013; Mas-Verdú et al., 2011; Miles et al., 2000; Shi et al., 2014; Viljamaa et al., 2010; Wood, 2005).

1.5.1 Defining KIBS

Although the term “knowledge-intensive business services” has been used since the early nineties, only recently it has become a major theme of investigation and empirical research (Mas-Verdú et al., 2011). Despite this relatively recent concern of the academia in studying KIBS, the literature has already provided many definitions of KIBS firms that, in many cases, do not differ significantly, but rather display different nuances. The different definitions of KIBS found in the literature can be explained by the purpose of the studies, in which a definition serves a specific target.

Bettencourt et al. (2002, p.100), describe KIBS firms as those aiming to generate value-added service activities, and that these activities consist in “the accumulation, creation, or dissemination of knowledge for the purpose of developing a customised service or product solution to satisfy the client’s needs”. The knowledge that serves as the basis for their business can, according to (Miozzo and Grimshaw, 2005), be social and institutional knowledge (e.g., accountancy, management consultancy) or technical knowledge (computer R&D, engineering services).

According to (Borodako et al., 2014), most definitions in the literature stress the following key aspects of KIBS: they are offered by private business to other business (e.g., den (Hertog, 2000); they are based on knowledge or expertise – mostly highly advanced and related to a
specific field; and the consumption of the service usually improves the client company’s intellectual capital. When focusing on the role of KIBS services in client innovation, three different aspects can be perceived: KIBS act as (1) facilitators (if it supports a client firm in its innovation process); (2) carriers (if it plays a role in transferring existing innovations from one firm or industry to the client firm or industry); or (3) sources of innovation (if it plays a major role in initiating and developing innovations in client firms, mostly in close interaction with the client firm) (Hauknes, 1998).

A strong characteristic of KIBS firms, given the nature of their business and the importance of knowledge on the society, is the impact they have on the economic tissue. (Wong and He, 2005), with this respect, refer that KIBS firms are “group of services which are very actively integrated into innovation systems by joint knowledge development with their clients, and which consequently create considerable positive externalities and possibly accelerate knowledge intensification across the economy”.

In the academia, KIBS literature has addressed the concept from several different perspectives. The topic of KIBS can be interpreted in different ways and types of study. Table 1 provides some examples of how the literature has dealt with KIBS concept.

Table 1 KIBS: some concepts from the Literature

<table>
<thead>
<tr>
<th>Reference</th>
<th>Definitions of KIBS</th>
</tr>
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<tbody>
<tr>
<td>Miles et al. (1995)</td>
<td>KIBS are services involving economic activities which are intended to result in the creation, accumulation or dissemination of knowledge.</td>
</tr>
<tr>
<td>Gallouj et al. (200)</td>
<td>KIBS are services firms which main input and output is knowledge</td>
</tr>
<tr>
<td>Muller and Zenker (2001)</td>
<td>KIBS do not only “transmit” knowledge, in fact they play a crucial role in terms of “knowledge re-engineering”. KIBS has potentially as receptors, interfaces and “catalysators” in terms of knowledge creation and diffusion. KIBS can be described as services offered by firms, usually to other firms, incorporating ‘a high intellectual value-added’.</td>
</tr>
<tr>
<td>Wong and He (2005, p. 27)</td>
<td>“KIBS firms’ innovation efforts extend far beyond their internal organisation to the service relationship and directly into the domain of service clients by providing competence enhancing knowledge services to their clients”.</td>
</tr>
<tr>
<td>Bettiol et al. (2011)</td>
<td>The KIBS sector constitutes a service subsector that includes establishments whose primary activities are mainly concerned with providing knowledge-intensive inputs to the business processes of other organisations, including private and public sector clients</td>
</tr>
<tr>
<td>Santos-Vijande et al. (2013)</td>
<td>KIBS are private companies or organizations which have a high degree of professional knowledge</td>
</tr>
<tr>
<td>Corrocher and Cusmano (2014)</td>
<td>KIBS are key players in innovation systems, particularly in advanced regions where manufacturing competitiveness largely depends on knowledge contents provided by highly specialized suppliers.</td>
</tr>
<tr>
<td>Shi et al. (2014)</td>
<td>KIBS are becoming a major force in promoting innovation and that effect is highly related to the average level of human capital.</td>
</tr>
<tr>
<td>Doloreux and Laperriere (2014)</td>
<td>The KIBS firm has developed a core portfolio of services, methods or solutions and achieves growth through the penetration of new markets and/or client groups that demonstrate similar needs.</td>
</tr>
</tbody>
</table>

Overall, two key elements should be stressed in the definition of KIBS: the importance of the relation between clients and providers during the process of service production; and the fact that KIBS providers can be represented as knowledge processors. These two points have strong implications on how KIBS can be analysed.
1.5.2 Typology of KIBS

Many authors (e.g., (Borodako et al., 2014; Fernandes and Ferreira, 2013; Hakanen, 2014; Huang and Ji, 2013; Muller and Zenker, 2001) refer to the concept presented by (Miles et al., 1995), who have distinguished KIBS as traditional professional KIBS (P-KIBS) and new technology-based services (T-KIBS). P-KIBS help their clients to navigate or negotiate complex systems such as social, physical, psychological, and biological systems (for example, marketing or consultancy services). T-KIBS are services that rely heavily on professional knowledge (e.g., IT services, communication, and computer services), thus, their employment structures are heavily weighted toward engineers and scientists.

In light with this consideration, (Wong and He, 2005) include three major KIBS sectors in their study: IT and related services, business and management consulting, and engineering and technical services. Based on (Borodako et al., 2014), the third type of division is made according to the relationship of the KIBS to the (client) company and the market. Here, three groups of KIBS are identified: market KIBS (key services: market research; advertising; and research and experimental development in social sciences and humanities); enterprise KIBS (IT and programming services; legal services; accounting and tax advisory services; management advisory and PR services; temporary employment agencies; and other recruitment services); and technical KIBS (multilevel KIBS – connecting both the above groups of market and enterprise services: architectural activities; technical testing and analysis; research and experimental development in natural sciences and engineering; engineering activities).

1.5.3 Relations between supply and demand for KIBS

There is an agreement that a specificity of KIBS is the importance of the relations between clients and providers. These relation are not marketing relations only. They are part of the very process of producing the service. Moreover, there are strong asymmetries of knowledge to the detriment of the clients: it is very hard for them to assess beforehand the outcomes of purchasing services.

As a result, “KIBS markets” are regulated by very specific rules and institutions, where trust and peer networks play a key role. The question of access to services is not a question of prices only, it depends also on the belonging of clients to specific networks or social groups, where some values are shared.

As a consequence, it is not possible to describe the relations between supply and demand for a purely rational homo economicus. Various clients will have potentially different needs, networks and conditions to access and use of services. Some authors have built models to integrate this idea by adopting a Lancastrian conception of service markets (Windrum and Tomlison 1999, Windrum and Garcia-Goni 2008, Gallouj 2004). This enables to account i) for the fact that the product of services are complex products that can be described through vectors of variables and ii) for the fact that clients could have various needs regarding these variables.

1.5.4 KIBS and innovation

Most of researches about KIBS have focused on the question of innovation. Some authors have argued that studies that tried to apply typologies designed for industry (the “assimilation” approach) have failed to grasp the innovation dynamics in services (Gallouj 2010). They plead for the need to develop typologies specific to services and KIBS (“differentiation” approach) or even to analyse the effect of KIBS on innovation in industries rather than the opposite (“inversion” approach).
Such an idea has led to many fruitful debates and empirical studies about innovation in services, with typologies proposed in many sectors, including KIBS. One key result is to show the importance of “non technological” innovation in KIBS. This includes innovation in the types of relations between clients and providers. Organisational and social innovations play a key role in the dynamics of innovation within KIBS sector.

1.5.5 Measuring the performance of KIBS and understanding their rationale

There have also been many debates about how to measure the performance of services. Many authors have advocate for the fact that traditional indicators (such as labor productivity) fail to grasp the performance of services.

This is true at different scale.

At a macro scale, there have been some debates about Baumol’s idea of the cost disease od services (Baumol 1982), i.e. the fact that service growth is trapped by the low productivity of the sector and rising salary cost, which prevent prices to decrease. Other authors have argued that such an idea result from a poor measurement of services productivity. Many authors (even accountants, cf. Hill 1979= have stemmed that it is very hard to measure the product of services, and thus to assess their productivity. Therefore, they plead for more complex and comprehensive measurements of the product and performance of services.

At the meso scale, this has led to the development and test of various analytical grid, inspired by the work of Boltanski et Thévenot (2008), where the performance of services is assessed according to various register: technical, relational, innovative, civic, and financial (Gallouj et al. 1999). Such an idea has been applied to various sectors: health, post, trade, etc.

2.0 Application to the analysing the role of farm advisory services in innovation

2.1 Relevance to AgriLink Objectives

<table>
<thead>
<tr>
<th>[tick relevant]</th>
<th>AgriLink Objectives</th>
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<tr>
<td>x</td>
<td>Develop a theoretical framework utilising a multi-level perspective to integrate sociological and economic theories with inputs from psychology and learning studies; and assess the functions played by advisory organisations in innovation dynamics at multiple levels (micro-, meso-, macro-levels) [WP1];</td>
</tr>
<tr>
<td>x</td>
<td>Assess the diversity of farmers’ use of knowledge and services from both formal and informal sources (micro-AKIS), and how they translate this into changes on their own farms [WP2];</td>
</tr>
<tr>
<td>x</td>
<td>Develop and utilise cutting edge research methods to assess new advisory service models and their innovation potential [WP2];</td>
</tr>
<tr>
<td>x</td>
<td>Identify thoroughly the roles of the R-FAS (regional FAS) in innovation development, evaluation, adoption and dissemination in various EU rural and agricultural contexts [WP2];</td>
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<tr>
<td></td>
<td>Test how various forms of (national and regional) governance and funding schemes of farm advice i) support (or not) farmers’ micro-AKIS, ii) sustain the relation between research, advice, farmers and facilitate knowledge assemblage iii) enable evaluation of the (positive and negative) effects of innovation for sustainable development of agriculture [WP4];</td>
</tr>
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</table>
Assess the effectiveness of formal support to agricultural advisory organisations forming the R-FAS by combining quantitative and qualitative methods, with a focus on the EU-FAS policy instrument (the first and second version of the regulation) and by relating them to other findings of AgriLink. [WP4].

At the applied level, the objectives of AgriLink are to:

- Develop recommendations to enhance farm advisory systems from a multi-level perspective, from the viewpoint of farmers’ access to knowledge and services (micro-AKIS) up to the question of governance, also recommending supports to encourage advisors to utilise specific tools, methods to better link science and practice, encourage life-long learning and interactivity between advisors [WP5];

- Build socio-technical transition scenarios for improving the performance of advisory systems and achieving more sustainable systems - through interactive sessions with policy makers and advisory organisations; explore the practical relevance of AgriLink’s recommendations in this process [WP5];

- Test and validate innovative advisory tools and services to better connect research and practice [WP3];

- Develop new learning and interaction methods for fruitful exchanges between farmers, researchers and advisors, with a focus on advisors’ needs for new skills and new roles [WP3];

- Guarantee the quality of practitioners’ involvement throughout the project to support the identification of best fit practices for various types of farm advisory services (use of new technologies, methods, tools) in different European contexts, and for the governance of their public supports [WP6].

2.2 How this can be applied/developed in AgriLink

2.2.1 Using KIBS concepts to better understand the diversity of KIBS suppliers and of their business models

An important issue for the analysis of KIBS is to be able to describe the complex landscapes of advisory systems at national or regional levels, in a context of growing pluralism of suppliers (Birner et al. 2009).

Using typologies derived from KIBS could help having more accurate typologies; by specifying the nature of service delivered (by differentiating P-KIBS and T-KIBS for instance). There are already some attempts in this direction (Dhiab et al. 2014).

Moreover, some authors propose multicriteria analytical frameworks to describe the performance rationale of KIBS providers. It makes it possible to analyse what is the conception of performance for different registers: relational, technical, financial, innovative, and civic (see table below). The combination of these different performance rationale gives an idea of the business models of the suppliers, and of its organisation (e.g. distribution of resources between front- and back-office activities).
Some of these indicators can be also used in more quantitative studies to describe the diversity of advisory organisations, and the quality of the services that they provide (see for instance Prager et al. 2016, Knierim et al. 2017). One example of such analysis is provided below.

### Table 2 – Analysis framework for advisory service performance

<table>
<thead>
<tr>
<th>Registers</th>
<th>Indicators</th>
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<tbody>
<tr>
<td>Financial</td>
<td>*Profitability of the advisory service</td>
</tr>
<tr>
<td>Technical</td>
<td>*Productivity of the advisory service:</td>
</tr>
<tr>
<td></td>
<td>- Ratio farmers/advisor</td>
</tr>
<tr>
<td></td>
<td>- Surface areas under crops/advisor</td>
</tr>
<tr>
<td></td>
<td>- Quantity of ased potatoes sold/advisor</td>
</tr>
<tr>
<td></td>
<td><strong>Level of standardization</strong></td>
</tr>
<tr>
<td></td>
<td>- Is there a standardization of advisory services?</td>
</tr>
<tr>
<td></td>
<td><strong>Rate of dysfunctions</strong></td>
</tr>
<tr>
<td></td>
<td>- Are there indicators of the advisory services’ success?</td>
</tr>
<tr>
<td>Relational</td>
<td><strong>Personalization</strong></td>
</tr>
<tr>
<td></td>
<td>- Frequency of visits</td>
</tr>
<tr>
<td></td>
<td>- Duration of visits</td>
</tr>
<tr>
<td></td>
<td><strong>Client loyalty</strong></td>
</tr>
<tr>
<td></td>
<td>- Turnover of producers</td>
</tr>
<tr>
<td></td>
<td>- Turnover of advisors</td>
</tr>
<tr>
<td>Innovation</td>
<td><strong>Share of the total budget devoted to the back-office</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Number of back-office staff</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Back-office activities</strong></td>
</tr>
<tr>
<td></td>
<td>- Experiments</td>
</tr>
<tr>
<td></td>
<td>- Databases</td>
</tr>
<tr>
<td></td>
<td>- Scientific monitoring</td>
</tr>
<tr>
<td></td>
<td>- Training</td>
</tr>
<tr>
<td>Civic</td>
<td><strong>Taking into account controversies over the use of pesticides</strong></td>
</tr>
<tr>
<td></td>
<td>- Environment</td>
</tr>
<tr>
<td></td>
<td>- Occupational health</td>
</tr>
<tr>
<td></td>
<td>- Consumer health</td>
</tr>
</tbody>
</table>

Fig. 6. Percentage of individual extension by non-private and private organisations.

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2.2.2 KIBS and microAKIS

The concept of service relationship could be used to describe microAKIS.

2.2.3 Using KIBS concepts to better understand the relations between farm advisory services and innovation

Many studies analyse the relevance of KIBS to innovation (e.g., He and Wong, 2009; Santos-Vijande et al., 2013b; (Alvarez-Gonzalez and Gonzalez-Morales, 2014; Doloreux and Laperriere, 2014; He and Wong, 2009; Mas-Tur and Soriano, 2014; Santos-Vijande et al., 2013b; Shi et al., 2014) and it is increasingly recognized that KIBS are key to innovation systems (e.g., (Corrocher and Cusmano, 2014; Hu et al., 2013; Mas-Verdú et al., 2011) and are vectors of knowledge transmission (e.g.,(Larsen, 2001; Muller and Zenker, 2001; Skjølsvik et al., 2007).

Over the last 20 years, some authors (e.g., Abecassis-Moedas et al, 2012; Muller & Doloreux, 2009; Simmie & Strambach, 2006) focused their research on understanding the potential implications of KIBS on innovation processes and on the competitiveness of both firms and economies. Pina and Tether (2016) argument that KIBS are increasingly recognized as being among the most dynamic sectors of advanced economies, not only achieving high rates of innovation but also helping their clients to innovate.

According to (Di Maria et al., 2012), the literature so far pointed out that the spatial proximity is necessary for sustaining the interaction between KIBS and the client. Nevertheless, there are few theoretical or empirical analysis focusing on the role of the relationship with the local context (Aslesen and Isaksen, 2007; Doloreux and Shearmur, 2012; Huggins and Johnston, 2012; Koch and Strotmann, 2006; Peiker et al., 2012), which may be vital for KIBS development (Koch and Strotmann, 2006) and facilitating innovation by interfacing between the generic knowledge available in the economy and the tacit knowledge located within firms.

KIBS act as transmitters of knowledge, contributing in different ways to the innovation processes of related organizations (Haukness, 1998; Miles et al., 1995). Several researchers go further and underline the role of KIBS as co-producers of innovation by creating or sharing knowledge with its clients (Bettencourt et al., 2002; den Hertog, 2000; Wong & He, 2005).

According to Flikkema et al. (2007), innovations can be classified as technological when they apply to products/services or processes or as non-technological innovations when referring to organisational and marketing aspects. Johnson et al. (2003) point out that, traditionally, studies of innovation have focused much more on technological rather than non-technological innovation, and service and organisational innovation has been relatively neglected. Technological innovation, as an integral part of innovation activities, was one of the first approaches used in innovation activities.

The production of services is often, according to den Hertog (2000), the result of a joint effort of the service provider and client. In this co-production process, the quality of the resulting service product largely depends on the quality of interactions and communication between the service provider and client. This author suggests that analyses of the role of KIBS in innovation processes bring into focus the ways in which knowledge is produced and used in the economy, as well as the role of KIBS in these processes. The cited author further argues that, in addition to discrete and tangible forms of knowledge exchange, process-oriented and intangible forms of knowledge flows are crucial in these relationships.

According to several authors (e.g., den Hertog, 2000; Santos & Spring, 2015), when focusing on the role of KIBS services in client innovation, KIBS are seen to function as facilitator, carrier or source of innovation, and through their, almost symbiotic, relationship with client firms - some KIBS function as co-producers of innovation, not only through the cooperation with their clients but also with higher education institutions (HEI) and other organizations. Often KIBS
act as transmitters of knowledge, contributing in different ways to the innovation processes of associated organizations.

According to Lanza (2005), when firms cooperate, they can share and/or create knowledge. These results in a favourable output for the firms involved, either in the form of technology or new products/services, in other words, some form of innovation.

According to Hipp et al. (2012), service activities are characterised by pronounced cooperation with external agents in the development of innovative activities. KIBS are more likely to introduce organisational innovations within their production systems, and these services tend to require collaboration with external agents in innovation processes to a greater extent than most sectors do. This is particularly true when considering cooperation with clients, customers, competitors or higher education institutions (HEIs).

Networks can assume a large variety of forms. These differences can be seen from contrasting perspectives and can be related to different issues. The first distinction centres on the relationships of firms to other organisations in their value chain, resulting in vertical or horizontal networks (Nalebuff and Brandenburger, 1996). In other ways, firms’ involvement with each other may also be different in terms of the formality of ties. Within this dimension, relationships can be informal agreements or co-operative arrangements. Regarding the types of relationships between actors, Conway (2000) proposes two different forms of networks: (1) informal or social networks are those based on social relations created within businesses; and, (2) formal networks are those that happen between firms as formal organisations. Blundel and Smith (2001) also studied business networking and found four different approaches: (1) industrial districts and spatial clusters; (2) supply chain networks; (3) entrepreneurial networks; and (3) innovation networks.

Space has a particular role to play in co-operative relationships. Networks can be developed between firms that are geographically concentrated or distant from each other. When KIBS and its clients share the same geographical location, face-to-face interaction is easier, so more trust is to be expected. It is also more likely that business relationships, because of more frequent face-to-face interaction, become personal relationships and those weak ties become strong ties.

Some authors have proposed some operational typologies of innovation that could be applied to farm advisory services. One example is the MIKR model by Gallouj et al. They propose to analyse the different operations within the service relationship: material operations, operations related to information management, to knowledge management, and relational operations. Any of these operations could lead to specific service innovations.
References (to documents referenced in this template only)


