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Innovation in services: exploring the role of innovation intermediaries

Keywords: Innovation intermediaries, Service innovation, Open innovation, Non-technological innovation

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Abstract

Innovation intermediaries play a direct and important role in firm´s innovation processes, facilitating the access to external knowledge of other players. Yet, little is known about the role and importance of innovation intermediaries in service industry. Based on the analysis of the diverse and recent developments in the literature, this paper provides a conceptual tool for analyzing the role of intermediaries within service innovation, developing and extending existing theory on services innovation and innovation intermediaries and contributing to a synthesis approach.

1. Introduction

Due to the increasing competitiveness of markets, companies are forced to innovate[1]. Cooperation activities with other players allows them to access complementary technological resources, which may contribute to faster development of innovations, improved market access, scale and scope economies, cost and risk sharing (Faria et al., 2010).

Innovation intermediaries emerged so as to facilitate the access to external knowledge of other players, acting like agents or brokers in the innovation process. Howells (2006) emphasizes the systemic value that innovation intermediaries may play in policy terms in an innovation system, improving connectedness within a system and creating new opportunities.

Regarding this topic, academic scholars have only recently started to analyse innovation intermediaries and further research is needed (Lichtenthaler and Ernest, 2008; Howells, 2006; Chesbrough, 2006). The existing research lacks focus on the service industry, and there is limited research concerning the role of intermediaries in services. This does not come as a surprise however, as much of our current understanding of innovation has been derived from manufacturing studies (Tether, 2005).

Services represent around 62.5% of world GDP (source: World Factbook of CIA), contribute in a very significant way for employment creation, and are an important source of inputs in manufacturing. In the EU economy, services account for over 70%

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[1] Innovation can be broadly defined as the commercial application of new knowledge and is considered one of the key drivers of growth and productivity (Love et al., 2011).

of the GDP and employment. Service innovation promotes directly services' growth and productivity, and has indirect benefits in other industries and in the public sector (Love at al., 2011).

As services do matter (Den Hertog, 2000) and service innovation has direct benefits and indirect benefits in all the economy (Love at al., 2011) and external partnerships are of fundamental importance in service innovation (Love at al., 2011; Wagner, 2013; Trigo and Vence, 2012), it is thus important to understand the role of intermediaries in service industry. We still know far less about services and their innovation activities than we do about manufacturing (Tether, 2005), and the studies of service innovation as distinctive activities have the potential of contributing to the development of such a synthesis approach to innovation by pointing to features of innovation that have been largely ignored in studies taking a traditional, technology-focused manufacturing approach to innovation (Drejer, 2004).

The objective of this research is to understand the role of innovation intermediaries in service industry. To our knowledge, it is the first time that this topic has been studied. This is an exploratory study that aims to synthesize the main functions of intermediaries. Our argument is that service innovation has some particularities that have not been highlighted in intermediation literature and demands for a specific framework of analysis. To achieve our objective, we will draw on intermediation literature and service innovation literature and develop a theoretical framework to present the key insights.

2. Innovation intermediaries

The role of intermediary in innovation can be traced back to "middlemen" in the agricultural, wool and textile industries of 16th, 17th and 18th century Britain. These middlemen, not only had commercial functions, but also disseminate technical knowledge (Howells, 2006). Intermediaries have gained dimension and importance and, currently, their functions are extensive and vary from one organization to another.

Howells (2006) defines an intermediary "as an organization or body that acts an agent or broker in any aspect of the innovation process between two or more parties", whose activities comprehend providing information about potential partners; brokering a transaction; acting as a mediator; finding advice, funding and support for the innovation outcomes of collaborations. Dalziel (2010, 2011) presents an alternative definition, stating that *"innovation intermediaries as organizations or groups within organizations that work to enable innovation".* This definition emphasises the organizational purpose of intermediaries.

Arguably, intermediaries bridge the gap between internal and external know-how, reduce the time to market and the time to know-how, increase firm´s efficiency in product development and the efficiency of its external service providers (Gassman et al., 2011). They help to reinforce the innovative capacity of companies, industries, regions and nations (Dalziel, 2010, 2011).

With the rise of the Open Innovation (OI) concept[2], innovation intermediaries received a wider, recognized role. In an OI model, firms can and should use internal and external ideas/paths, and intermediaries, as specialist firms, emerge to provide information, access and funding to enable transactions to occur between parties (Chesbrough, 2006).

In what concerns the functions of innovation intermediaries, Howells´s (2006) contribution, widely accepted, highlights the following functions:

1. foresight and diagnostics;
2. scanning and information processing;
3. knowledge processing and combination/recombination;
4. gate keeping and brokering;

[2] Although there is a discussion about whether open innovation (OI) really is a new paradigm or simply the repackaging of older concepts and findings, open innovation is in line with previous research which shows that knowledge relevant for industrial innovation is distributed among actors and organizations such as suppliers, users, universities and consultants (Clausen et al, 2013).

5. testing and validation;
6. accreditation;
7. validation and regulation;
8. protecting the results;
9. commercialisation;
10. evaluation of outcomes.

This framework, resulting from a synthesis of the existing literature and a case study focused on the UK reality, considers that the intermediaries provide a wide and holistic role for their clients in the innovation process. The intermediary functions are very diverse along the innovation value chain, going from foresight, forecasting and technology roadmapping to gatekeeping and brokering to technology assessment and evaluation.

A more detailed analysis of the proposed functions reveals that intermediaries are very focused on technological innovations, as their main tasks are helping clients in what concerns forecasting and technology roadmapping; processing, generating and combining technical knowledge; testing, validation and accreditation standards; training companies´ collaborators in the use of new technologies or laboratory techniques; protecting the outcomes of collaboration through patent licensing; and technology assessment and evaluation.

Furthermore, the intermediaries involved in the case study are mainly organizations that provide innovation services to manufacturing companies, with a strong focus on technological innovations. Most of these organizations help clients in traditional manufacturing industries, even though some of them have diversified into new industries or technologies such as defence, security, aerospace, nuclear and power generation, and healthcare (Howells, 2006).

Howells (2006) points out the difficulty to construct a complete population list of innovation intermediaries in the UK, due to the lack of an accepted definition of an 'innovation intermediary'; the complexity of organizations providing intermediary services in innovation processes, whose primary role may often not be as an intermediary; and the absence of a formal identification of the sector by government or statistical entities.

In what concerns the **main roles** of intermediaries, Howell (2006) claims that the provision of intermediation functions may be less central to the intermediaries as they can offer services which involve no interaction with third-parties, even though the brokering role is central. Den Hertog (2000) differentiates the intermediaries that have a broker role, the innovation brokers, as their core function (facilitators of innovation), from those other intermediaries that also pursue traditional, non-third-party activities (sources or carriers of innovation). Likewise Winch and Courtney (2007) separate the knowledge-intensive business service firms and research and technology development organizations, which act as intermediaries as a by-product of their principal activities, apart from the innovation brokers, that are set up specifically to be the middlemen between the sources and users of new ideas in innovation networks.

Regarding **client-industries** of innovation intermediaries, some authors, like Winch and Courtney (2007) and (Klerkx & Leeuwis, 2009), study the innovation brokers which perform a broker role in an industry-specific innovation. Other authors, like Gassmann et al. (2011), refer that intermediaries as technical service providers, consultants and universities do not focus on one industry. They investigate intermediaries that work in the cross-industry innovation processes and transfer existing solutions from one industry to another by using analogies, identifying three types of intermediaries (the innovation broadener, the innovation leverager, and the innovation multiplier). Furthermore, Hargadon (1998) analyses the role of knowledge brokers bridging knowledge between disparate industries. Hargadon & Sutton (1997) present a technology brokering model, grounded on the argument that "*ideas from one group might solve the problems of another, but only if connections between existing solutions and problems can be made across the boundaries between them*".

Analysing **intermediary-client(s) relationships**, Howells (2006) points out that even though much of the analysis of intermediaries assumes that they operate in a simple triadic 'one-to-one-to-one' basis, intermediaries can supply services direct to their clients, on a one-to-one basis, that doesn´t involve any other organizations. They can also be involved in much more complex relationships, which functions at system or network level. These systemic intermediaries play an important role in the formation and maintenance of innovation networks and systems (Van Lente et al, 2003; Klerkx & Leeuwis, 2009). Agogue et al. (2013) consider that they can act as architects which design prerequisites and offer leadership in cases of innovation in the fuzzy front end, where networks and brokered knowledge and ideas still have to be designed.

Table 1. Innovation Intermediaries typologies

Main Roles	1. Innovation broker, facilitator of innovation (intermediary with a specific liaison role) 2. Knowledge broker, carrier or source of innovation (intermediation as a result of the main activities of the intermediary)
Client-Industries	1. Single-industry 2. Cross-industry
Type of Relationships	1. Basic (reduced number of actors, in dyadic or triadic relationships) 2. Complex (collaborative innovation process, focused on innovation networks)

Source: own formulation

There are a significant number of studies about innovation intermediaries from different research fields. Nevertheless, there is not a consistent and integrated literature, due to the low level of cross-referencing between authors (Howells, 2006). There are only a few studies focused on the holistic role of intermediaries, namely the one from Howells (2006). The literature recognizes the need to develop more and better conceptual frameworks to gain in-depth knowledge about the wide and complex structures that operate as innovation intermediaries (Dalziel, 2010; Howells, 2006).

Much of the existing studies are focused on manufacturing and also on agricultural industry, and little is known about the role of innovation intermediaries in service industry. The growing importance of the service industry, as well as its specificities differing from those found in manufacturing settings, emphasise the importance of contributions to the current understanding of service innovation (den Hertog et al, 2010, Tether, 2005; Tether and Tajar, 2008).

A search made in September 2015 on Thomson ISI Current Contents database (Social and Behavioural Sciences subdatabase) on "innovation intermediaries" + "service firms" in Topic did not lead to any relevant results. Some of the papers obtained are focused on service firms (knowledge intensive business services) that play the role of innovation intermediaries. We found no study examining the role of the innovation intermediaries in the case of the client "service industry".

3. Innovation in Services

Traditionally, services have been defined in a rather negative sense; once manufacturing industries are defined, everything else is assigned to the service industries. The heterogeneity of services has increased the difficulty of understanding its innovative nature.

Service innovation literature typically falls into one of the three main schools of thought (Coombs and Miles, 2000; Droege, H. et al., 2009):

1. The technologist or assimilation approach that reduces innovation to the adoption and use of technology (services are supplier-dominated, not true innovator). This approach attempts to assimilate services within the consolidated framework used for manufacturing sectors.

2. The service-oriented or differentiation approach that develops a specific framework for service innovation, highlighting their specificities (namely immateriality, perishability, heterogeneity and inseparability).
3. The integrative or synthesizing approach, which proposes a common conceptual framework, in an enlarged view of innovation which is applicable to any tangible or intangible product. It proposes a new definition of product.

The integrative approach is considered the most promising one, because the boundaries between goods and services become more blurred. As Tether (2005, pp. 182-183) states: *"(…) these approaches to innovation are not peculiar to services. Although more prominent amongst services they are also found amongst manufacturers and other economic agents*". Castro at al. (2011) support that claim, when stating that innovation ought to be defined in a broad sense[3] and innovation typologies should include all types of innovation, in order to be applied in any business.

The integrative approach brings together the analysis of innovation in services and manufacturing. This school of thought considers that studies on service innovation clarify important elements which have been neglected when researching product innovation in manufacturing. So it is central to investigate service peculiarities to have a more complete understanding of innovation:

Continuous mode of innovation

Services are more like to engage in a continuous mode of innovation, rather than a staircase mode, because of its intangible and interactive nature (Tether, 2005). A new service is more of a set of activities, not a well-defined service, which is difficult to replicate exactly with each performance. Furthermore, the firms 'capabilities evolve over time, namely in response to customer needs, through internal ''learning by doing'' and recruitment of new personnel. In this context, the identification of particular innovations is difficult.

Non-technological innovations

Castro at al. (2011) point out that the manufacturing companies have a greater tendency to carry out technological innovations (product and process innovations), while service companies are more inclined to implement non-technological innovations (organizational and marketing innovations). According to Evangelista and Vezzani (2010), pure technological innovations (product or process) are more relevant in the manufacturing sector than they are in services, and the organizational innovations are more significant in services.

Impact of innovation

Innovation affects the economic performance of companies (measured by the rate of sales growth). In manufacturing firms the impact of pure product or process innovations and of the organizational innovations is higher than in service firms (Evangelista and Vezzani, 2010). Services firms should adopt a more holistic approach to innovation, combining technological and non-technological innovations (Evangelista and Vezzani, 2010). In this line, Mothe and Nguyen Thi (2012) emphasize that organizational and marketing innovation in service firms led to a higher propensity to introduce new or improved products.

Soft sources and strengths at innovation

Tether (2005) refers that manufacturers tend to place greater emphasis on ''hard'' sources of technology (R&D and the acquisition of advanced equipment) whereas services emphasize ''soft'' sources (cooperation with suppliers and customers). Strengths at innovation of service firms lie in ''soft'' attributes, namely the skills of their workforce and their cooperation practices with customers and suppliers.

[3] Castro at al. (2011), in line with Tether (2005), state that integrating models, irrespective of the sector of the firm, should include the three basic types of innovation: technological (product, process); organizational (innovation in management systems, work organization, relations with other companies) and commercial (significant product design and packaging modifications, and significant modifications in sales and distribution methods).

Leiponen (2005) emphasizes that external sourcing of knowledge, especially from customers and competitors, positively affects both the probability and extent of innovation, while in-house R&D intensity had no discernible effect.

Innovation indicators

A service innovation often involves the combination of one or more of four dimensions: the service concept, the client interface, the service delivery system and organization, and technological options (Den Hertog, 2000). It requires structurally new technological, organisational, or human capabilities of the service organisation. Due to the multiple forms of the service innovations, and the "soft side" of services innovation (focus on non-technological innovations), it is easily overlooked by traditional indicators such as R&D expenditures, and patents (Gotsch and Hipp, 2012; Tether, 2005; Djellal and Gallouj (2000)). The propensity to patent of a service company is one third of the likelihood of a manufacturing company (Blind et al, 2003). Miles (2003) highlights that R&D or R&D-like activities are not acknowledged as such by services managers as well as by statisticians and policymakers.

Partners

In what concerns innovation service partnerships, the role of external "openness'" through partners and linkages is of particular importance in service sector innovation (Love at al., 2011). Trigo and Vence (2012) conclude that the relationship between cooperation behaviour and innovation performance is directly linked - the higher the innovative level of a service firm, the higher cooperative level and vice versa.

According to some authors, the preferred innovations partners in services are customers, suppliers, competitors (Tether, 2005; Leiponen, 2005; Love et al, 2013). Also, specialist knowledge providers (universities, public and private research organizations and consultants) can be valuable associates (Theter and Tajar, 2008; Trigo and Vence, 2012; Love et al, 2011), especially the consultants.

To sum up, service innovation is rather different than manufacturing innovation due namely to the significance of a "softer" mode of innovation among service firms.

4. Towards a theoretical framework

The functions of intermediaries in service innovation are constrained by the idiosyncratic nature of services. It is important to draw on service specificities (Tether, 2005; Den Hertog, 2000) to propose a theoretical framework that enables the understanding of the role of innovation intermediaries in service industry.

The nature of services demands a wide definition of innovation, which encompasses technological and non-technological innovations (Djellal and Gallouj, 2000). If we only focus on technological innovations, the brokering function of intermediaries is central in their activities, as Howell (2006) proposed. But, arguably, intermediaries are not necessarily brokers between two or more parties, and can be involved in bilateral and unilateral activities. The soft nature of services requires that intermediaries should be often involved in one-to-one relationships. The introduction of non-technological innovations, by instance the definition of a new organizational structure or a new distribution policy, does not require the intervention of a third party. In this context, an innovation intermediary in services is not only a facilitator (a broker) but a carrier, a source of innovation (Den Hertog, 2000). As so, service intermediaries should be identified based on their purpose, as organizations that work to enable innovation as suggested by Dalziel (2010).

Service companies favour organisational innovation (Howells et al, 2004) and demand the adoption of a more systemic approach to innovation as pure technological strategies do not have a clear impact in firms´ performance. The existing literature is focused on technological innovations, and in technological markets (Agogue et al., 2013; Gassmann et al, 2012; Lichtenthaler and Ernest, 2008; Howell, 2006). The framework suggested by Howells (2006) places centrally the technological innovations, and its impact on

organisational performance, and can be applied in the manufacturing industry. But, in the case of service industry, where the non-technological innovations are fundamental and strengths at innovation lie in ''soft'' attributes, its application is arguably more limited.

Our proposal highlights the role of intermediaries on both technological and non-technological innovations. In what concerns technological innovation, we focus on product innovation because of the difficulty of distinguishing product from process innovation in service industry and process from organizational innovation in all industries (Tether, 2005; Mansury and Love, 2008). Product innovation is defined as the introduction of goods or services that are new or significantly improved with respect to their specifications or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness and/or other functional characteristics (OECD, 2005).

Regarding non-technological innovations, we consider the two major types of non-technological innovation, organisational and marketing innovations, according to 2005 OECD Oslo Manual definition of innovation. An organisational innovation is "the implementation of a new organisational method in the firm's business practices (including knowledge management), workplace organisation or external relations that has not been previously used by the firm. It must be the result of strategic decisions taken by management" (OECD, 2005). Marketing innovation is defined as "the implementation of a new marketing concept or strategy that differs significantly from the enterprise's existing marketing methods and which has not been used before. It entails significant changes in product design or packaging, product placement, product promotion or pricing" (OECD, 2005).

Service firms are more oriented to a continuous change mode of innovation, where there is an absence of definite step changes in terms of what is produced, and they can be perceived as a bag of capabilities whose evolution is conditioned by customer needs. Service innovations are often intangible, difficult to assess and to measure. They are interactive, resulting of employee-customer interaction. They have a conceptual nature, namely due to the services´ intangibility, and encompass the mixing of new and existing service elements into an integrated service. As a result, innovation intermediaries' functions, regarding both tech and non-technological innovations, emphasize the conceptualisation of new service offers as well as the definition of new organisational methods and of new marketing strategies (functions 4, 5 and 6).

Service innovation can involve the combination of services from different providers, which can demand external support in network design and management (function 7). Accordingly to Agarwal and Selen (2009), innovations in services are increasingly brought to the market by networks of companies.

Technology, and particular information technologies, is important for service industry, providing opportunities to reformulate service propositions (Den Hertog et al, 2010), namely in terms of interaction with clients, and service firms need to be informed of the latest technologies to ensure competitiveness (function 3).

Services are also difficult to reproduce consistently and exactly, and, as a result, service innovations can be difficult to prototype and test in a laboratory setting and to scale it up. The protection of innovations gains also new specificities, as patents are not considered an interesting protection tool by service companies. Service companies favour other IPR tools, such as the trademarks and trade secrets. As result, some functions of intermediaries should be restructured (such as scaling, testing, accreditation, and protecting the results) to cope with these challenges (functions 8, 10, 11).

Due to the high involvement of customers in service definition and production, it is of critical to gain knowledge on trends and customer needs (function 2). Also, human resources are critical in service industry due to its soft nature, so the selection and training gain a particular relevance (function 9). Employees are the ''face of service firms,'' and enhance both innovation volume and radicalness, because of their proximity with customers and their knowledge gained through experience (Ordanini and Parasuraman,

2011). At the same time, the human component in services creates difficulties in the introduction of service innovations on a large-scale in a uniform way.

The diagnostic of the innovation needs of the service company (which includes the measurement of innovation activities) as well as the assessment of investment needs, costs, and support schemes) are activities were the support of a third party such as an intermediary is very relevant (functions 1, 12).

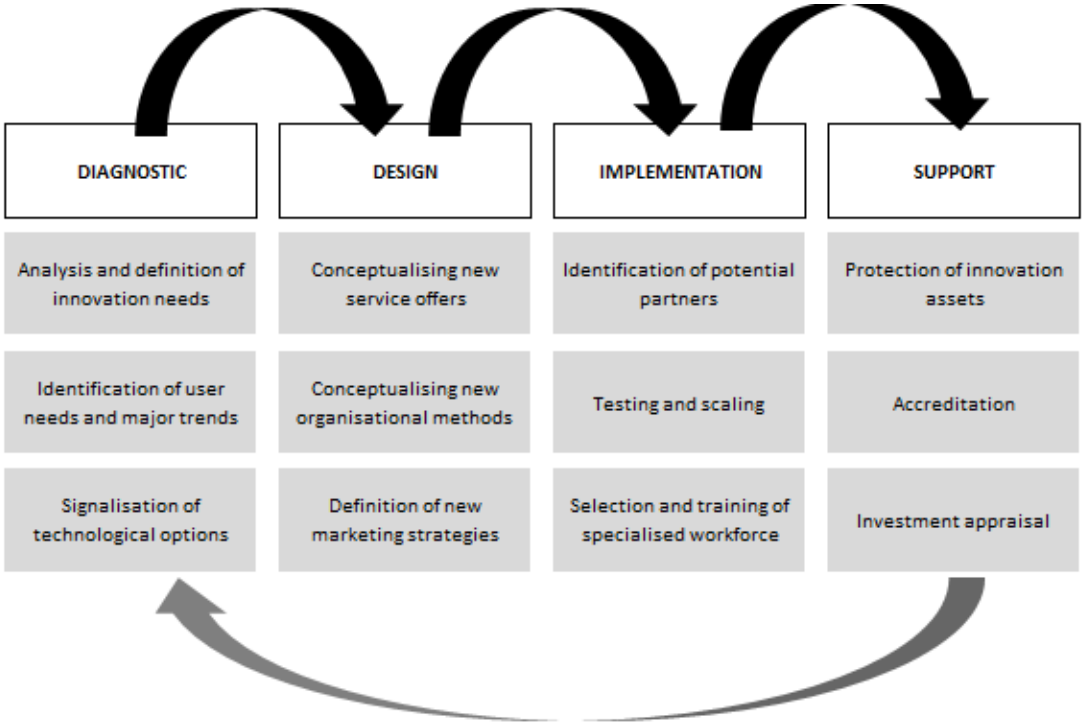
Table 2 synthesizes our proposition of the main functions of an intermediary in service industry, following (for pedagogic reasons) a linear and sequential perspective of the innovation process.

Table 2. Service intermediaries: main functions

Functions	Comments
1. Analysis and definition of innovation needs	The assessment of capabilities and needs in innovation can be a tool of large spectra (analysing and measuring technological and non-technological dimensions), dynamism (forecasting future needs) and proactivity (proposing actions).
2. Identification of user needs and major trends	It is of major importance of understanding users and forecasting (potential) needs and trends. According to Nambisan (2002), customers act as a co-creator of innovative products and services, as a source of innovative ideas, and as a user for prototype testing or helping other users in learning about the product or service. Carbonell et al (2009) emphasize that customer involvement in new service development affects operational outcomes (technical quality and innovation speed).
3. Signalisation of technological options	Technology (namely ICT) has enabled numerous services innovations. New service concepts, client interfaces and service delivery are a result of new technological capabilities, mostly ICT (Den Hertog et al, 2003).
4. Conceptualising new service offers	A service innovation cannot be developed in a similar way as physical goods, because of its conceptual nature which makes it difficult for a customer to assess previously what will be experienced and what will be delivered and because of its highly interactive or shared process character (Den Hertog et al, 2010).
5. Conceptualising new organisational methods	Service companies tend to implement non-technological, organizational innovations (Howells et al, 2004; Castro et al, 2011). They include changes in the way in which provision is organized within the firm and changes to the relationships between the firm and its partners.
6. Definition of new marketing strategies	Marketing innovations are changes in design or packaging, changes in sales or distribution methods, advertising or permanent exhibitions, which aim to increase appeal for the firms' products and/or to enter new markets (Mothe and Nguyen Thi, 2012).
7. Identification of potential partners (suppliers, customers and/or competitors)	Many service propositions are combinations of service elements from different providers (Den Hertog et al, 2010). Cooperation practices with suppliers, competitors and customers are fundamental in services (Tether, 2005; Leiponen, 2005).
8. Testing and scaling	New service concepts, unlike manufacturing products, cannot be tested and prototyped in a laboratory, they have to be tried out in practice. It is a challenge to introduce service innovations on a large-scale in a uniform way (Den Hertog et al, 2010).
9. Selection and training of specialised workforce	The human element, namely staff qualification, skills and professionalism, is strategic in service sectors (Howells and Tether, 2004). The ICT skills and commercial/advisory skills are very valuable in service industry (Den Hertog et al, 2003).
10. Protection of innovation assets	The protection of innovations in service industries is important and there mechanisms of protection like secrecy, market lead and the long-term commitment of personnel and also intellectual property rights (trademarks, copyright and patents). Nevertheless, transferring the patent system from the manufacturing sector to the service sector raises some issues, namely patents can be only applied for innovative technical solutions (Blind et al, 2003).
11. Accreditation	Several entities, private, non-profit or public, promote the development of innovation management (IM) capabilities of organisations for sustainable development. There are a lot of normative documents related to IM.
12. Investment appraisal	Definition of investments and related cost and also possible support schemes (loans, government incentives, venture capital).

Figure 1 groups the different functions of innovation intermediaries in four main stages (diagnostic, design, implementation and support).

Figure 1. Intermediaries´ Functions by Stages



5. Conclusion

This paper provides a conceptual tool for analysing the role of intermediaries within service innovation, developing and extending existing theory on services innovation and innovation intermediaries and contributing to a synthesis approach. It is, to our knowledge, the first time a conceptual framework is developed to approach the importance of innovation intermediaries in service industry. The paper attests the need for a conceptual strengthening of service innovation studies. By integrating several fields of research, our research provides a solid ground for academics, practitioners and consultants that seek to develop their work in this field.

The analysis presented in our research extends current understanding regarding innovation intermediaries, by highlighting the role of intermediaries in service industry regarding non-technological innovations, which is a key area of success in service innovation. Intermediation in service industry has some peculiarities that result from services firms' orientation to innovation, which somewhat differs from that of manufacturers:

- Importance of non-technological innovations –A more complete view of innovation, including technological and non-technological dimensions, demands a revision on intermediaries' roles in the different phases (especially in what is related to the conceptualization of innovations).
- Intangibility and conceptual nature of services – Many new service concepts, unlike manufacturing products, cannot be prototyped and tested in a laboratory; they have to be tested in practice, in collaboration with clients and workforce. Likewise, service innovation is difficult to measure and protect. These factors demand a different approach and support of innovation intermediaries;
- Importance of customer and of workforce involvement – A major part of services offers are co-created with the client (Den Hertog et al, 2010). Clients and front-employees are fundamental players in service innovation and innovation intermediaries have to integrate them in their service proposition.

The scrutiny of the idiosyncrasies of intermediation in service industry can contribute to a deeper knowledge of the innovation process as a whole. The framework can be used to clarify the concept of innovation intermediaries in service contexts and to get alert so as to the importance of such intermediaries for the success of integrated innovation in their organizations.

This study, drawing on the existing literature, envisages a wider role for the innovation intermediaries, suggesting some new and renewed functions that result from a more enlarged understanding of the innovation concept. Likewise this research reinforces the importance of a purpose-based definition of innovation intermediaries by opposition of a brokering-based definition.

Two key recommendations arise from our study, namely:

- Importance of promoting the involvement of players from (management) universities – Universities have the capability to offer specific services in what concerns non-technological innovations (organizational and marketing innovations). Nevertheless, service firms have weaker direct links with the public science-base than do manufacturers. Tether and Tajar (2008) alert that the allocation of science funds favours manufacturing firms relative to services. This suggests that it is important to review the interface service firms-universities to boost service innovation.
- Significance of consultants as innovation intermediaries – Service industry requires more complex strategies of innovation, a mix of technological and non-technological innovations (Evangelista and Vezzani, 2010). Consultants are considered facilitators, carriers and sources of innovation in service industry (Den Hertog, 2000). In the growing group of intermediaries, Bessant and Rush (1995) emphasize the role of consultants, tough the diversity of their functions and their flexibility in modes of operation and interaction.

One of the mains limitations of this framework it is that has never been tested empirically. We suggest that future research on the value and application of this tool should be undertaken, namely testing it among service innovation intermediaries and service companies.

Another limitation of this study is that it did not take in account the wide variety of service activities. In the future it is necessary to analyse the role of innovation intermediaries regarding the different types of services and distinct approaches to innovation.

Furthermore, this theoretical tool was conceived to be applied in service industry, bringing to the fore some neglected aspects in innovation. Now the challenge is to draw on the existing frameworks related to manufacturing industry and propose a new tool, encompassing service and manufacturing innovation.

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