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Innovation intermediaries in service industry: the role of consultancies

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Abstract. Much of the existing literature on innovation intermediaries is focused on manufacturing, and limited scientific knowledge has been developed about the role of intermediaries in services. This paper aims to expand and test an existing framework on the roles and functions of intermediaries in services, focusing specifically on consultancies. Furthermore, it is investigated to what extent services and manufacturing are perceived as different clients, and what represents the added-value of consultancies. Using a case study approach, consultancies´ activities are analysed and compared within services and manufacturing contexts. Findings indicate that while consultancies do not consider manufacturing companies different from service companies, during the collaboration process several differences do exist in terms of their role in these two types of companies, mainly due to different degrees of development of the corresponding innovation strategies and to different perspectives regarding the use of technology.

Keywords. Consultancies, innovation intermediaries, service innovation, technological and non-technological innovation.

1 Introduction

According to Howells (2006), intermediaries act as agents or brokers in innovation, which emphasizes their brokering role (brokering-based definition). Dalziel (2010) proposes an alternative definition, focusing on the intermediaries´ purpose, describing them as organizations or groups within organizations that work to enable innovation (purpose-based definition).

There is a great diversity of innovation intermediaries, namely technology brokers, university liaison departments, regional technology centres, innovation agencies, cross-national networks. Consultancies are included in this group, due to their extensive services, and their flexibility in modes of operation and interaction (Bessant & Rush, 1995). In an open innovation model, consultancies are considered to play an important role as source of ideas and knowledge (Tether and Tajar, 2008).

Innovation intermediaries strengthen the innovative capacity of companies, industries, regions and nations. They reduce the gap between internal and external knowledge, decrease the time to access know-how and market, increasing the firm´s innovation efficiency (Dalziel, 2010; Gassman et al., 2011).

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Most of the existing studies on innovation intermediaries are focused on primary and secondary sectors (namely agriculture and manufacturing), yet little is known about the role and significance of innovation intermediaries in the service industry. The growing importance of the service industry as well as its specificities underpins the importance of contributions to the current understanding of service innovation (den Hertog et al, 2010; Tether, 2005; Tether and Tajar, 2008).

Pinto et al (2016) introduced a conceptual framework focused on the role of intermediaries within service innovation, which is a useful contribution to that literature gap. In that work, consultancies emerged as key innovation intermediaries in the service industry, together with universities, due to their flexibility in modes of operation and interaction.

However, there were two key limitations of the conceptual framework developed by those authors. First, the framework had not been tested empirically. Second, the framework had been developed to be used in services, yet it was important to ensure that the specificities of services had been properly addressed.

These limitations lead to a future research path that is followed in this paper, namely the empirical testing of the proposed framework, using consultancies whose clients belong to service and manufacturing sectors, in order to perform the comparison and specificities related to services included in the framework.

Our main research questions are:

- To what extent consultancies perceive [innovation in] service (companies) as different from [innovation in] manufacturing (companies)?
- How do consultancies support the innovation processes of service industry?
- What is the added-value of consultancies to the innovation processes of service industry?

In line with the research questions and knowing that the framework had not been tested empirically, a qualitative methodology was adopted, namely a multiple case study, where compared cases are consultancy companies acting in service and manufacturing sectors.

In order to present the research undertaken, the paper is structured as follows. Section two includes a synthetic review of the existing literature on innovation intermediaries, with a specific focus on consultancies, which includes the framework proposed by Pinto et al (2016). Section three is dedicated to the methodological planning of the case study research. In the fourth section, results are presented, drawing on six analysis dimensions. Section five concludes the work and highlights the research contributions and section six asserts limitations of the study and future research directions.

2 Innovation Intermediaries

2.1 Functions

Innovation is critical to ensure the survival and growth of businesses. Knowledge is not consistently distributed among the market players, and companies have to move beyond their borders to manage innovation (Chesbrough, 2006). In an open innovation model, innovation intermediaries, as specialist entities, arise to provide information, access and funding to enable transactions to occur between parties (Chesbrough, 2006).

Intermediaries in innovation can be traced back to the "middlemen" in the agricultural, wool and textile industries of 16th, 17th and 18th century Britain. These middlemen had commercial functions and disseminated technical knowledge (Howells, 2006). Intermediaries have gained importance ever since and, currently, their functions are extensive and vary from one organization to another. With the rise of the Open Innovation concept, innovation intermediaries received a wider, more recognized role. Intermediaries work directly with their clients on a one-to-one basis, seeking for lasting collaborations, but are increasingly involved in more complex relationships in the context of innovation networks (Howells, 2006).

Intermediaries may act as architects of collective exploration and creation of knowledge in the fuzzy front end of innovation, where technologies, knowledge, market and network of relevant actors are not known or do not yet exist (Agogué, 2013).

In what concerns the functions of innovation intermediaries, Howells´ (2006) contribution highlights the following functions: Foresight and diagnostics; Scanning and information processing; Knowledge processing and combination/recombination; Gate keeping and brokering; Testing and validation; Accreditation; Validation and regulation; Protecting the results; Commercialization; and Evaluation of outcomes.

In Howells' (2006) perspective, innovation intermediaries support new technology development by their clients, working as a brokering agents between two or more parties (Klerkx and Leeuwis, 2008; Dalziel, 2010).

Pinto et al (2016) proposed a new tool for service industry, arguing that Howells´ (2006) framework was limited to technological innovations, and could not be directly applied to service industry, due to services peculiarities[1]. According to the OECD (2005), innovation in services can differ substantially from many manufacturing-oriented sectors. It is often less formally organized, more incremental in nature and less technological.

Therefore, in contrast with Howells' (2006) framework, Pinto et al (2016) identified 12 functions of innovation intermediaries which may apply to service industries (see Table 1).

[1] A service provision is about organizing a solution, placing a package of capabilities and competences (human, technological, organizational) at the disposal of a client (Gadrey et al, 1995), and services are often characterized by its intangibility, inseparability, variability, and perishability.

Table 1. Functions of innovation intermediaries proposed by Pinto et al (2016): Critical analysis

Function	Comments
1. Analysis and definition of innovation needs	Pinto et al (2016) ´s model, drawing on an enlarged view of innovation, proposes a more holistic diagnostic, beyond technology, as well as the identification of the user needs and trends alongside with the analysis of the technological options. In Howells´ model the foresight and diagnostic are essentially related with technology forecasting and technology road mapping.
2. Identification of user needs and major trends	
3. Signalization of technological options	
4. Conceptualization of new service offerings	This approach proposes a wider role for the intermediaries, as a result of an enlarged understanding of the innovation concept, which includes technological (product and process) and non-technological (organizational and marketing) innovations. The support of intermediaries in the development of marketing and organizational innovations is placed alongside with their support in the conceptualization of product (service or goods) innovations.
5. Conceptualization of new organizational methods	
6. Conceptualization of new marketing strategies	
7. Identification of potential partners	The brokering function, associated with matchmaking and brokering collaborative deals for the intermediary´s client, which is crucial in Howells´ proposal since innovation is mostly associated with new technologies, appears somewhat redefined in this new framework. An intermediary in services supports the identification of the client´s potential innovation partners, which can be suppliers and knowledge centres but also other players such as clients and competitors.
8. Testing and scaling	The testing and scaling of innovations gain new dimensions in this model, challenging the intermediary´s competences. Tangible products can be tried out in a laboratory while the peculiar nature of services makes almost impossible to test them there. Services are also difficult to reproduce consistently and exactly, what jeopardizes the introduction of standardized services on a large-scale.
9. Selection and training of specialised workforce	People are of utmost importance in services. Consequently, the selection and training of human resources is critical. Services are a result of co-production, involving the provider and the client. The service staff, namely frontline staff, has a major role in “customer education”, drives customer satisfaction and loyalty, and influences the company´s productivity.
10. Protection of innovation assets	The protection of innovations in services is more challenging due to the difficulty of using tools such as patents. Service companies favour other forms of intellectual protection (IP), namely trademarks and trade secrets, what demands a wide approach to IP issues.

Function	Comments
11. Accreditation / certification	Unlike product certification, the certification of services is a relatively recent activity and there are some problems in implementing it because there are still insufficient standards covering most services. Another difficulty faced in the implementation of service certification has to do with the fact that some standards do not establish measurable criteria from which quality of service should not be accepted. These standards are developed for a set of similar services and only establish guidelines on the indicators that should be evaluated.
12. Investment appraisal	The evaluation of innovation investments as well as the funding opportunities is an important function of intermediaries that can gains new specificities in services due to the soft nature of service innovations.

This framework, drawing on Howells´ proposal, 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 (Author, 2016). In this sense, it advanced a synthesized approach to innovation in services, emphasizing features of innovation that have been overlooked in studies taking a technology-focused manufacturing approach to innovation.

2.2 Consultancies

Consultancies can be classified as KIBS - Knowledge-Intensive Business Services (Lemus-Aguilar et al, 2015). KIBS industries are private companies or organizations, relying heavily on professional knowledge i.e. knowledge or expertise related to a specific (technical) discipline or (technical) functional domain, and supplying intermediate products and services that are knowledge-based.

KIBS are seen to act as facilitators - when supporting a client in its innovation process, but not creating nor transferring innovation from others; carriers - when transferring existing innovations; sources – when triggering and developing innovations in the client; and also as co-producers of innovation - working closely and interactively with the client, in a two-way learning process (Muller and Doloreux, 2009; Winch and Courtney, 2007; Den Hertog et al, 2010; Miles et al, 1995; Bilderbeek and Den Hertog, 1998). According to Klerkx and Leeuwis, (2008), the intermediaries that have a broker role as their core function are facilitators of innovation while those also develop non-third-party activities are either sources or carriers of innovation.

KIBS are fundamental partners of SMEs, as their innovation capacities depend strongly on the access to external informational resources (Muller and Zenker, 2001). Among external knowledge providers, KIBS, and specially consultancies, are service firms´ (with the exception of technical service firms) favoured partners as they are more easily reached than other knowledge providers (Authors, 2016; Tether and Tajar, 2008). Significant knowledge is produced in the science-base and spread to ‘end-user’ companies by consultancies (Tether and Tajar, 2008).

3 Methodology

We adopt an exploratory research design, more specifically a multiple case study approach (Yin, 2003, Eisenhardt, 1989), which allows a more profound understanding of consultancies´ involvement in the innovation processes of their clients, when their portfolio included both services and manufacturing companies. The geographical focus was Portugal, a country with many consultancy companies, which was also compatible with logistical and financial restraints of the research team.

Case selection followed a specific procedure. There were a large number of consultancies operating in Portugal, yet only a small number of those companies had as main organizational purpose to enable innovation. We reached to Portuguese innovation experts in order to identify compatible cases and 20 companies were shortlisted.

From this group, four companies were selected based on their relevance (type of services, type of clients, size) and accessibility (see Table 2). All offered a significant diversity of services to clients belonging to both manufacturing and service industries, and promoted themselves as "*innovation enablers*". Note that the names of the consultancies have been withheld due to confidentiality reasons.

Table 2. Cases overview

Name	Size (number of employees)	Main Clients	Age (years)	Main Markets
Case 1	89	Banking, Retail, Tourism, Manufacturing Industry	6	Portugal, Spain, UK, Italy, and Angola
Case 2	75	Biotechnology, Pharmaceutical, ICT, Moulds, Food & Beverages	21	Portugal, Spain, P. R. China, Singapore, and USA
Case 3	40	ICT, Manufacturing Industry, Logistics	22	Portugal and Mozambique
Case 4	3	Retail, Manufacturing Industry	7	Portugal

Source: Own formulation

Empirical data sources were collected from interviews with CEOs or innovation department managers, as they were responsible for defining the mission and strategy of the company/department, and had a broader perspective over company activities.

The data collection took place between January and March of 2016. The four interviews, of about 90 minutes each, followed semi-structured, open-ended guidelines and were oriented around three main blocks: Business Model, Collaboration Process and Value Added (see Fig.1 and Appendix 1).

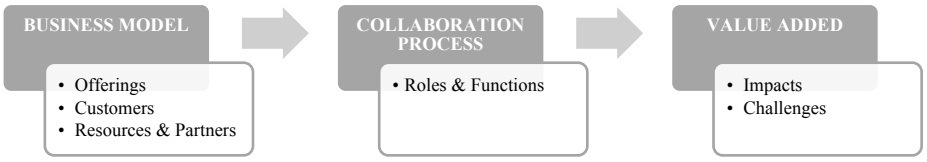

Fig. 1. Components analysed in the interviews

We asked managers to describe their business model (namely their services, types of clients, main resources, and partnerships[2]), the collaboration process with clients (main roles and functions), and immediate impacts on clients and challenges faced, concerning services and manufacturing clients.

Other sources of evidence were explored such as internal documents provided by the consultancies, information from websites and media (press and social media) as well as direct observation.

Data analysis followed a content analysis approach, with initial coding developed based on the components analysed in the interview, allowing, as well, the identification of new categories (Yin, 2003). After the initial coding all categories were double-checked for consistency and categories have been reviewed.

4 Multiple Case Studies: Results

4.1 Cases presentation

Case 1

Case 1 is a company/firm focused on consulting and management training, more specifically on scientific methodologies widely accepted to boost clients´ competitiveness. It has a research centre that develops scientific knowledge, relying on academic partnerships, and has a training academy.

Its team has high academic qualifications (PhD and post-graduate courses in management, professional and international certifications of reference) and specific expertise in the fields of construction, energy, health, telecommunications, retail, and services industry.

Initially, the company was focused on project management services. Nowadays, the company is organized in five main service areas: Innovation management (innovation assessments, and opportunities identification); Benefits management (evaluation of projects); Business analysis (identification of gaps, development of strategies and management tools); Project management; Dynamic capabilities (identification of gaps, advisory, and development and implementation of leadership and talent management programs).

[2] In order to further detail the Business Model component, Canvas model is used (Osterwalder and Pigneur, 2010) for three areas which are key to consultants´ intermediation activities (offerings, customers and infrastructure).

Case 2

Case 2 is part of a wider group with subsidiaries in other markets. Its consultants are from different nationalities and have different professional and academic backgrounds.

It provides services in three areas: consulting, R&D, and training. The company focuses its activities in the area of innovation (innovation management, competence development, internationalization), science and technology (technology transfer, R&D), and territorial development (regional and sustainable development). The market differentiation relies on its specific expertise in the areas of science and technology.

Its main clients are private companies, professional and business associations, scientific and technological institutions, public administration entities, and international organizations (e.g. European Commission, World Bank).

Case 3

Case 3 offers consultancy services to business companies and business associations. Its main clients are companies from the information technologies industry and from the manufacturing industry. It has a subsidiary located in Africa.

It presents a technological profile, due to professional and academic background of its CEO. At the time of the research, it was diversifying its services to non-technological areas to satisfy clients´ increasing needs, in areas such as internationalization and marketing.

The company differentiation lies in technological areas. It identifies the source of a specific technology which satisfies a customer need, and supports its transfer to the client.

Its team is separated into two distinct groups: the first one is composed by a group of engineers (fields of physics, industrial management, information technologies and biotechnology); the second one, a much more eclectic group, has academic background in economy, management, marketing, accounting, international relations.

Case 3 services are in the fields of Business management – services regarding projects of expansion, investment and fiscal optimization; Strategy and development – services to support company strategic decision making; Research & technological development – technical consultancy in the areas of information technologies, electronic, health, manufacturing and new materials; Certifications (quality, environment innovation, social responsibility); Project management – technical, administrative and financial management of ongoing investment projects.

Case 4

Case 4 is a consulting and training company in the areas of business strategy and innovation management. It works alongside its clients to provide tailor made solutions for each organization, fostering the development of its clients´ innovative capacities. The company relies on a net of external consultants, for consulting or training services, with specific expertise in different fields. Its clients´ portfolio is composed mainly by local companies, which belong to manufacturing industry (namely fashion) and retail industries. Around half of its clients belong to service industry.

Case 4 supports the company's innovation processes through consulting services. Under this remit, it offers business diagnosis and specific audits (marketing area), marketing strategic plans and studies. It typically acts at strategic level, focusing in the

diagnostic and strategy definition. It provides information regarding market trends and best practices as well as technological options and main players in the industry (companies, research centres, universities, suppliers …). It also can offer strategic advice regarding the definition of new products and processes. The operationalization of the strategic plan can be done by the company, eventually with the support of other players, which can be recommended by Case 4.

Additionally, Case 4 promotes customized training programs and also thematic workshops, emphasizing the development of new competencies that will allow participants to respond in a creative and quick manner to the changing business environment. It positions as the link between academia and business, focusing on the transmission of state of the art knowledge along with evidence of best practices.

4.2 Results

Business Model: Offerings

The consultancies provide services in the areas of information and access to other players in the innovation system independently of the clients´ industries. None of the four consultancies considers being a specialist in innovation funding, even though one of the companies of the Case 2´s Group provides business support in the area of venture capital. Case 2 and Case 3 prepare companies´ applications to EU funded programs in the area of innovation, R&D and fiscal incentives.

Case 1´s value proposition is based on the transmission of scientific knowledge to enhance its clients´ innovation process. Its expertise is supported by best practices and procedures, namely the ROI Methodology, BABOK Guide, PMBOK Guide and HCI (Human Capital Institute). It has a research centre and a training academy, to foster knowledge creation and transmission.

Case 2 CEO highlights: "*We are a knowledge management company, with an emphasis on science and technology areas, which aims to manage projects that foster innovation. We boost the connectedness of the innovation system, functioning as an interface between private companies, universities and other knowledge centres, and national and international public organizations*". It has a large network of contacts, which continually and proactively increases. Case 2 also helps private companies to structuring their innovations activities, identifying and defining processes and procedures, and creating innovation centres or groups, in order to enhance their innovation outputs.

Case 3 value proposition relies on providing information and access to players (namely the universities) on the innovation system. Depending on the type/dimension of client, Case 3 can help clients to articulate its innovation needs and search for the technology among the possible sources and make the matchmaking or, instead, Case 3 can just locate the technology and do the matchmaking. Case 3 CEO states: "*We are perceived as a trustworthy intermediary in ICT industries*".

Case 4 provides services in the areas of consultancy and training. It supports the client innovation processes acting at diagnostic and strategic reflection level as wells as at the innovation implementation level. The consultancy works closely with the universities and research centres, to keep track regarding the state-of-the-art research, which "*(…) allows us to have a strong reputation as a reliable information provider*", states Case 4

CEO. Case 4 is specialized in non-technological innovation, especially in the areas of marketing.

Business Model: Customers

All four consultancies provide services to manufacturing and service companies. They claim they do not do market segmentation according to the client´s industry (services or manufacturing) as they consider service and manufacturing companies' needs to be similar.

Case 1 points out that traditionally innovation services were requested essentially by manufacturing companies, as a result of the (reduced) dimension and (not complex) organizational structure of service companies. Nowadays, things are different, and service industry gained significant importance. Case 1 manager refers that *"service companies became interested in innovation topics more recently and, today, both service and manufacturing companies are key clients".* Likewise, Case 2 refers that both type of clients are equally important. Its CEO comments "*We do not target any special industry. Our clients belong to different industries, such as agro-food, pharmaceuticals, biotechnology, (…)".*

There is some industry specialization in the case of Case 3 and Case 4. Case 3's main targets are ICT and manufacturing companies, mainly as a result of its CEO's academic and professional background. Case 3 acknowledges that these industries offer (more) cross-selling opportunities, what makes them more interesting clients. The consultancy is specialized in technological innovation. The main clients of Case 4 belong to retail and fashion industries, even though the consultancy mentions that all industries have innovation needs, and are potential clients. Case 4 considers that its location influences the type of clients, as companies usually look for local suppliers. "Our headquarters are located in the North of Portugal; our main clients are companies from the local clusters, namely from fashion cluster".

The consultancies point out that the main interlocutors of service and manufacturing companies are usually different. Due to its dimension and structure, typically service companies do not have an R&D department, and usually marketing departments lead the innovation process. In the case of manufacturing, some companies have an R&D department or the interaction is done with production department.

Most part of the consultancies considers the needs of service companies to be somewhat different from manufacturing. For Case 1, *"Manufacturing companies are concentrated on the obsolescence of their products, efficiency of their production processes and on their next products while service companies' main concern is market differentiation".* Case 2 enhances that the manufacturing companies, when compared to service companies, have larger dimensions and resources. They define specific innovation strategies, with dedicated resources, and are more concerned with internationalization issues. Collaboration with manufacturing companies endures longer. Nevertheless, Case 2 CEO points out *"The needs of manufacturing and services are quite similar".*

Case 3 claims that manufacturing companies have a larger spectrum of needs than service companies. They need a holistic support, including several areas such as product development, products and processes accreditation, definition and implementation of organizational and marketing strategies. This allows Case 3 to have long-term relationships with manufacturing clients. From this perspective, services are

not considered an interesting client, since they only ensure occasional sales, from time to time. Case 3 CEO highlights: *"We seek to select industries where we can do effective cross-selling, to sell different products to satisfy diverse needs. And this is not possible in service industry".*

For Case 4, usually, manufacturing companies have a "technological strategy" and define a technological roadmap, namely regarding the sources of technology (internal or external); whereas service industry strategy values non-technological areas.

Regarding technology, Case 4 states that, on one hand, the needs of manufacturing companies are usually quite distinct, as they have a wide range of distinct products. On the other hand, Case 4 CEO points out: *"Services do not consider technology so strategically, and their technological needs are mainly related with service delivery and client interface. Moreover, the technological solutions that these companies look for are very identical".*

The four consultancies typically provide services directly to their clients on a one-to-one basis (dyadic relationships), and on a 'one-to-one-to-one' basis (triadic relationships). Services such as diagnosis, definition of marketing and organizational strategies, and investment appraisal are provided without the intervention of third parties; the identification of trends and technologies, and the definition of new products can combine the intervention of other entities. Case 2 and Case 3 highlight that consultancies can also be involved in more complex relationships, namely in the case of mobilizing projects, aiming to develop new technologies. In this particular case, consultancies support the creation and management of innovation networks composed by companies and knowledge centres.

Business Model: Resources & Partners

All consultancies agree that their staff and organizational knowledge are their most valuable assets. Partnerships, namely with universities and other knowledge centres, are also considered fundamental to fulfil the consultancies´ mission.

Case 1 created its own research unit that develops knowledge and science, namely through academic partnerships, and it has a training academy. Case 1 managers have a strong liaison to universities, and they combine professional experience with academic experience.

Case 2 establishes partnerships with entities in science and technology system in different markets, namely with knowledge centres and business innovation centres (living labs, incubators, clusters) as well as with public organizations in the areas of innovation support and funding.

Case 3 has a partnership with a global network of internationalization consultancies, which provides business support services in accessing international markets to Case 3´s clients. The consulting work in the target market is carried out by local consultancies. They also have other partnerships with consultancies specialized in venture capital, financial issues accountings, and management software. As regards technological issues, they have strong liaisons with knowledge and research centres.

Case 4 pursues a close connection with knowledge centres, especially the universities. The universities develop state-of-the-art research, and Case 4 aims to diffuse this important knowledge through businesses to boost their innovation processes.

Consultancies value human resources with different academic and professional backgrounds to ensure a high-quality service. The staff recruitment and training is considered critical to increase the organizational knowledge.

The organizational structure of the four consultancies is not aligned with their clients´ industry (services or manufacturing). Collaborators´ expertise in specific industries is welcomed by the consultancies.

Case 1 is internally organized in five main areas along the innovation value-chain, namely: innovation management, benefits management, business analysis, project management and dynamic capabilities. Each area has its own specific group of collaborators, and there are consultants with specific industry expertise. Case 1 CEO comments *"Our innovation services are industry agnostic, even though it we consider important to create teams with collaborators with specific expertise within the client´s industry"*. And he adds *"We do not have an organizational structure aligned by clients´ industry; there are only departments with complementary activities, who satisfy clients´ needs independently of the industry"*.

The Case 2 team is composed by highly qualified professionals, with valuable knowledge in various fields, namely agro-industrial industry, environment & energies, biotechnology, health, ITC, industrial technology, transport & mobility and tourism. Case 2 CEO comments: *"Our team is made of individuals from various nationalities, with different backgrounds, skills and expertise, which collaborate in different offices nationally and internationally, and allow us to maintain a stable presence in strategic locations"*. The collaborators are involved in different projects, according to their expertise.

Case 3 is structured in two differentiated teams: there is a team working the R&D, composed mainly by engineers, working at product or process engineering level; there is another team, which integrates collaborators with diverse qualifications, that acts in the areas of business management strategy and development, certifications and project management.

Case 4´s structure is much reduced and it relies, when necessary, on external specialists. The CEO clarifies *"We do not consider important to have dedicated teams to manufacturing and services, however, when working with a client, we seek for involving external partners with specific industry expertise"*.

Collaboration Process: Roles & Functions

All consultancies see themselves as innovation facilitators, providing support to their clients in order to improve their innovation outputs. They identify knowledge gaps, search for information and knowledge, and identify opportunities. Case 3 CEO points out *"Consultancies are mostly carriers of knowledge; they are not producers"*.

Two of the consultancies stress its brokering role, acting as a bridge between the users and the sources of knowledge, such as other private companies, universities and other entities from the S&T system, and international organizations. They also consider being carriers of innovation, supporting the knowledge transfer. Case 2 claims to be a unique catalyst for connections among scientific and technological institutions, companies, business associations and clusters, public and private national organizations, and international institutions. Case 3 points out its bridging role between ICT companies and centres of knowledge what, according to its CEO *"(…) makes us a unique provider*

in this area (…)". Case 3 offers integrated and customized services: defining clients´ needs, identifying possible sources of technologies, and supporting the technology transfer process. Case 3 considers that the universities are important sources of knowledge regarding technological innovation. In the case of small clients, Case 3 acts as a carrier of innovation, identifying the source of knowledge and being responsible for the technology transfer; in the case of medium-large companies, Case 3 just identifies the source of the technology (broker function), following the client´s requirements.

The two other consultancies (Case 1 and Case 4) do not emphasize the brokering role, pointing out that they just act as bridges when specifically requested by clients. Case 4 manager points out that *"When it is possible, if the target player makes part of our network, we facilitate the contact".*

The majority of the consultancies' do not see themselves as sources or co-producers of innovation, as they mainly operate as interfaces, providing information and/or access to relevant players in the market. Case 2 CEO states *"We do not produce innovation together with our clients. We mostly work as an interface between private and public companies, universities, research centres and international organizations".* The exception is Case 4, which claims to be a co-producer of innovation, as it works together with the client, searching and defining innovative solutions in partnership. It helps its clients to design and implement (new) services, to (re)adjust organizational structure and to (re)design market strategy. Also, Case 3 points out its role as innovation co-producer specifically in the case of mobilizing projects, focused on technological innovations. The CEO refers: *"These projects, which are subsidized by public funding, aim to create new technological products".* Case 3 takes a leading role in these projects, selecting the participating companies and coordinating all the works. In the case of non-technological innovation, Case 3 CEO claims that the company is an innovation transporter, as *"We only apply existing theoretical models, defined by other players".*

The functions developed by the four consultancies are more or less identical (please see Appendix 2). Among the consultancies, Case 4 has the wider spectrum of functions. The functions provided in services and in manufacturing are not perceived as different. All consultancies provide services in the areas of innovation diagnostic, identification of market trends and technology road mapping, as an important part of their corporate mission. The innovation manager of Case 1 states *"(…) Our work with a client typically starts by a diagnostic. It is critical to evaluate well all departments´ needs to do a holistic and detailed analysis (…)".*

Only half of the consultancies interviewed support their clients in the definition of new products/services: Case 1 gives support in the general definition of the new offering; Case 4 supports specifically the conceptualization and design of new services, applying tools such as the blueprinting. CEO of Case 4 gives an example *"A big retailer contacted us to create a new service, and we sought to involve international specialists to help us defining how to operationalize a service with these characteristics. The retailer benefited from our and our partners state-of-the-art know-how. And it was designed a totally customised solution".* All consultancies work alongside with their clients to define new marketing and organizational strategies. They help customers to enter new markets, providing them marketing information regarding the market environment (customers, competitors, distribution and communication channels,

business laws and procedures) as well as analysing and selecting entry modes. They support their clients in the definition and implementation of new processes and procedures, namely related with quality or innovation topics.

The function of identification of potential partners as well as the partners´ matchmaking is critical for the consultancies that work mostly in technological areas (Case 2 and Case 3). Only one of the consultancies (Case 4) can provide services in area of testing and scaling. The majority of the consultancies are involved in the training of the company´s staff, even though they don´t act at recruitment level. None of the consultancies works directly in the area of innovation protection due to the knowledge requirements, even though they consider it a fundamental issue. Most consultancies also give support in the certification processes of companies according to quality standards. The identification of investment needs also makes part of the consultancies services, and two of the consultancies prepare applications to UE funding.

Value-added: Impacts

All consultancies consider that their main contributions as innovations intermediaries are information and advice, assets that are equally important to service and manufacturing industries. The CEO of Case 4 stresses *"We function as a decipherer for businesses, with a helicopter vision. We are aware of what is happening in certain industries in several countries, through studies that are published and that give a reliable picture of reality. We actively collect business data, engaging with other international players. We share information about industries and trends"*.

Some consultancies highlight their industry specialization, what makes their contribution more valuable in some industries/areas: Case 3 concentrates on ICT and electronics industries; Case 4 is focused in the fashion and retail industries. Also two consultancies emphasize its expertise in specific knowledge areas: Case 4 considers being a specialist in marketing domain; Case 2 stresses its expertise in the areas of science and technology. Case 2 and Case 3 point out the importance of their information and advice regarding the entrance in new markets. Both companies have dedicated structures or partnerships with local consultancies in target markets that allow them to participate actively in the definition of its clients´ internationalization strategies. Case 2 and Case 3 also highlight their contributions in terms of advice concerning the innovation funding.

Another impact of the consultancies´ support can be the access to other players in the innovation system. Case 2 positions itself as a *"unique catalyst for links among companies, scientific and technological institutions, public administration, and other international organizations"*. Case 3 points out its added-value in IT industries: *"We are an interface, connecting the users and sources of technology"*. These two consultancies also mention the importance of their contribution in facilitating the access to funding sources. Case 4 and Case 1 refer that they can facilitate it customers´ access to other players if necessary, even though this is not envisaged as a core service.

Case 1 and Case 4 consider that impacts at executive education level are also of utmost importance for companies. Case 4 offers tailor made training services as well as workshops of short duration. Due to its linkages to the academic world, Case 4 proposes to offer a superior training service, drawing on state-of-art knowledge and best practices. Case 1 manager refers: *"We have our own training academy, highly*

specialized in management training, with a special focus on business cases, business analysis, project management and high-performance competencies".

Regarding innovation outputs, Case 3 stresses the importance of its support regarding technological innovation. For this consultancy, the support in non-technological innovation is envisaged as secondary and they just recently introduced services in this area. The CEO clarifies: *"We have been working in the non-technological areas more recently. Initially, our team only used to prepare applications for financial support, and then there was an evolution to less technological areas due to customers´ needs".* Case 2 highlights its expertise in technological areas, helping the clients to structure its innovation processes, to identify, design and manage external partners in the areas of technology. Nevertheless, it also provides support regarding the clients´ internationalization strategy. For Case 2 CEO the projects that involve manufacturing clients are *"(…) more complex, including several areas of intervention, and endure longer. As a consequence, the results obtained can be more interesting and the value-added is more significant. Services, due to their dimension and absence of innovation strategy, require less involvement from the service provider and, although the results appear faster, they are not so visible".* Case 1 gives support to companies´ technological and non-technological innovation needs. It highlights that manufacturing companies usually look for support in technological areas while service companies have a more enlarged view of innovation. Case 4´s contribution is more centred in non-technological innovation, specifically in the definition of new marketing strategies.

Value-added: Challenges

Case 1, Case 2 and Case 3 point out that manufacturing companies, when compared to service companies, are more professional, with clearly identified and verbalized needs and expectations. Projects that involve manufacturing are more challenging, including several areas of intervention, while service projects tend to be less complex.

Furthermore, Case 4 considers that a consultancy when fulfilling the needs of manufacturing companies *"(…) needs to deal with an array of technologies and products".* In the case of services, *"(…) the technology innovation is mainly related with information technologies, and the needs of companies are usually similar, so the solutions are identical. Technologies in services aim essentially to manage the clients´ interaction and the service delivery".*

Case 2 highlights that usually manufacturing companies have an innovation or R&D department, or are taking in consideration to develop one. Their innovation processes are normally more structured, when comparing to service companies, what facilitates the consultant-client collaboration.

Case 4 considers services´ unique characteristics (intangibility, inseparability, heterogeneity and perishability) makes working with services *"more demanding"* than with manufacturing, since in service innovation *"(…) it is necessary to manage more variables, not only the service offering itself but also the clients, employees, as well as the physical environment. The moments of truth, when client and provider meet, ought to be carefully designed and managed. As a result, human resources´ training and clients´ management and education are of utmost importance. Similarly the management of the physical environment surrounding the service provision is a key element in services".*

A synthesis of main empirical findings is provided in Appendix 3.

5 Discussion and conclusions

Compared to manufacturing companies, service companies are more recent consultancy clients. Nevertheless, the value proposition of consultancies is not specifically directed to service industry, as these innovation intermediaries do not customize their offerings and organizational structures to adapt to this type of client. For consultancies, service clients and manufacturing clients are similar, so one may conclude that they have is a broad perspective of innovation. But, in reality, service innovation is analysed using the same lenses of manufacturing innovation, and innovation is mostly understood as new technologies.

The technological facet of innovation is considered of utmost importance and the consultancies that are specialized in technological innovation offer services along the innovation value chain, from diagnosis to searching for funding opportunities (namely through the preparation of applications to EU funding). This is not necessarily unexplained, as innovation in manufacturing industry was given focus for more years, in an explicit way, and it was only recently that service industry gained importance and started to focus on innovation. Naturally, and as a consequence, consultancies´ business models have been developed to target manufacturing industry.

Additionally, even though the majority of the consultancies claim that service clients are not distinct from manufacturing clients, in reality they perceived them different to some extent.

Firstly, service companies compared to manufacturing companies are perceived as being smaller, with fewer resources and innovation processes less structured. Secondly, according to the consultancies, services needs are focused in non-technological areas and market issues and the main interlocutor in service companies is typically the marketing department, while manufacturing needs are centred in technologies and the key interlocutor of manufacturing is the R&D or the innovation department. Thirdly, technology is not understood as so strategic in services as in manufacturing, as services technologies seem quite similar, and mostly focused in ICT. Fourthly, manufacturing projects are perceived as more ambitious, sophisticated, integrated along the innovation value chain and more challenging than services projects. Nevertheless, service projects are considered complex due to the services unique characteristics and the large number of variables to manage in a service provision.

Overall, while supporting the innovation processes of their clients, consultancies see themselves as innovation facilitators, offering valuable information and advice to their clients. Consultancies who are specialised in technological areas envisage themselves as innovation brokers or carriers, providing access to sources of ideas and knowledge, yet not being involved in the process of new product development alongside with their clients. They do not feel they have the necessary expertise. The (only) consultancy that was specialised in non-technological innovation highlighted its role as a co-producer of innovation, either when designing new products or when defining new strategies (marketing or organizational ones).

This raises two new research questions.

Firstly, **are consultancies mostly innovation facilitators or is their supporting role as innovation intermediaries more complex than anticipated?** Contrary to consultancies´ perspective, the evidence points out that consultancies support can go beyond the role of facilitator since they design new strategies alongside with is clients. In the case of new technologies, consultancies act as brokers or carriers, facilitating the processes of technology identification and transfer. They work mostly as interfaces between their clients and the knowledge sources (such as research centres, universities, and other players of the innovation system). But, when they design new internationalization strategies or new organizational processes and procedures together with their clients, they seem to act as co-producers of innovation. Then, even though they can help to identify non-technological innovation and good practices, organizational and marketing innovations are designed alongside with the clients and customised to their needs and characteristics.

Secondly, **why do consultancies not envisage themselves as co-creators of innovation?** It seems that consultancies when (auto) evaluating their role as innovation intermediaries they only take as reference the technological side of innovation. It may be that the non-technological dimension of their support is not associated with innovation or is less important. Even though they are involved in the design of non-technological innovations, they see themselves as facilitators because they act mostly as brokers for technological innovation. This supports the understanding of innovation has resulted from studies of manufacturing and that service innovation has been neglected (Tether, 2005).

Regarding the framework proposed by Pinto et al (2016), consultancies highlighted the relevance of the functions of diagnostic and search for information and knowledge. This is explainable since consultancies have been perceived as "company´s physicians", assisting companies to articulate and define their needs. The functions of conceptualization of new offerings, and of testing and scaling of innovation are not provided by most of the consultancies, which associate innovation with new technologies. Since they are not experts in technology development, they cannot develop, test and scale new technological offerings. Intriguingly however, only one of the consultancies, specialized in non-technological innovation and service industry, offers all those functions. Concerning service offerings, they can support their clients in the definition of new or improved services, as well as in their testing and scaling. The functions of conceptualization of new marketing and organizational strategies are provided by all consultancies, even though the majority does not envisage them as strategic. This may indicate that consultancies´ functions could be enriched if they enlarge their perspective of the innovation concept to provide customized services to manufacturing and service companies. Non-technological innovation can be a competitive mechanism for service and manufacturing companies.

Because of the type of support provided, all consultancies highlighted that information and advice are their most significant contribution to the innovation processes of companies, independently of their industry (services or manufacturing). Allowing access to other players in the innovation system is considered critical but only by the consultancies specialised in technological areas, who act as bridges between users and sources of knowledge. The brokering function is of paramount importance in the

manufacturing industry but seems to lose some relevance in service context. Another area where their contribution is perceived as important is training, since learning helps to configure the right environment for the innovation. The education and training of company´s workers is provided by most consultancies, relying either on dedicated structures, or on online channels or external partners.

Arguably, consultancies roles as innovation intermediaries may go beyond the role of facilitator. In this context, a brokering-based definition of innovation intermediaries (Howells, 2006) might undermine their potential concerning non-technological innovation. Taking in account that service innovation comparatively to manufacturing focuses more strongly on non-technological innovation (Tether, 2005), it seems important to review the concept of innovation intermediary. In this context, the use of a definition of an innovation intermediary that is purpose-based, describing an intermediary as an entity that acts to boot innovation, and that considers an enlarged view of innovation, could be more appropriate.

The research reinforces the importance of a synthesis approach to innovation and of a more enlarged vision of innovation, which includes both technological and non-technological facets, extending the innovation intermediaries and service innovation literatures by addressing a literature gap. It tests an existing theoretical framework on the functions of intermediaries in services and provides insights into the business models, roles and functions of consultancies as innovation intermediaries. Drawing on this study, consultancies can profit from other experiences and adjust their business models to provide more efficient solutions to their clients.

6 Limitations and future research directions

Our research provided insights on consultancies business models, roles and functions in services and manufacturing and contrasted them, supporting the recognition that studies of services have the potential to highlight aspects of the innovation process that have been neglected in manufacturing studies (Drejer, 2004).

Nevertheless, as a qualitative study, this research does not allow generalization of findings. It brings new insights and more detailed information about innovation intermediation performed by consultancies in service industry.

Our sample included only Portuguese consultancies, whose main clients were local companies, and therefore reflects the specificities of the local consultancy market. The analysis of this phenomenon in other realities could certainly enrich our knowledge.

In this study, only one consultancy was specialized in non-technological innovation, and half of its clients are from service industry. All the others have clients from both sectors, and are more focused on technological innovation. A future study including other consultancies, especially those involved in organizational and marketing issues, may be desirable.

The analysis was based on the perspective of the service provider. The findings should be complemented by the viewpoint of the service companies regarding consultancies´ engagement to support their innovation efforts.

The research concluded that the framework proposed by Pinto et al (2016) is adequate

to deal with intermediation in services and in manufacturing, contributing to the synthesis approach of innovation. It may be interesting to validate it empirically, developing an adequate scale for questionnaire-based survey.

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Appendix 1: Main dimensions of the analysis: Definitions

Dimension	Description
Business Model: Offerings	The offerings/value proposition is about the company´s products/services that meet the needs of its customers. Chesbrough (2005) classifies intermediaries´ offerings in three main areas: information, access, and funding.
Business Model: Customers	Business customers can be macro-segmented according to their industry (manufacturing or service industry). Different customer segments require specific products, channels, and relationships.
Business Model: Resources & Partners	Resources can be categorized as human, financial, physical and intellectual. Due to the nature of the intermediaries´ activities, people and knowledge constitute key resources. Key partnerships include the network of suppliers and other partners who help the intermediary creating its value proposition.
Collaboration process: Roles & Functions	The companies´ activities support the production of its value proposition (Osterwalder and Pigneur, 2010). According to the literature (Howells, 2006; Den Hertog, 2000; Miles et al, 1995), intermediaries can act as facilitators of innovation, carriers, sources or co-producers of innovation. Pinto et al (2016) made an analysis of the main functions of intermediaries, which comprises 12 functions. This tool provides an enlarged view of innovation, strengthening the synthesis approach.

Dimension	Description
Value-added: Impacts	Dalziel and Parjanen (2012) present a general-purpose methodology for measuring the impact of innovation intermediaries. The immediate impact can be analysed at three levels: information and advice (strategic information and advice, feedback on products and services, and information and advice on selling in new markets, operating in new markets, and on raising capital), business linkages (linkages with service providers), and business services (business planning services and executive education). The intermediate impact on firm performance can be measured at four levels: revenues (change in revenues, export sales), employment (change in employment, market share - new customers, and investment - financing). The measurement of the immediate impact was found more interesting to our analysis as it is straightforward. The measurement of the intermediate impact was not used in our analysis, since requires isolating the impact of intermediary activities from the other factors that may affect firm´s performance (Dalziel and Parjanen, 2012). The Oslo Manual (2005) adopts an enlarged view of the innovation activities outputs, considering four types of innovations: product (new or significantly improved good or service), process (new or significantly improved process), marketing (new marketing strategy) and organizational innovations (new organizational strategy).
Value-added: Challenges	The unique nature of services, characterized by perishability, variability, intangibility, and inseparability, affects its management. Services tend to have an orientation to innovation that differs from that of manufacturers: manufacturers tend to place greater emphasis on ‘‘hard’’ strengths and sources of technology, such as R&D, acquisition of equipment, and collaborations with universities and research institutes, whereas services emphasize ‘‘soft’’ advantages and attributes, such as staff skills and inter-organizational cooperation practices (Tether, 2005). The “soft side” of service innovation (non-technological innovations) is easily overlooked by traditional indicators such as R&D expenditures and patents. The “continuous change” mode of innovation (by opposition to the “staircase innovation”) is more common in services than in manufacturing.

Appendix 2. Consultancies´ functions.

Functions	Case 1	Case 2
1. Analysis and definition of innovation needs	It provides a holistic innovation diagnosis, including all the company´s departments, to understand the company´s approach to innovation and its needs and expectations. Complementarily, it does its own market research (analyses the technological options, market needs and trends, and best practices), relying on its own research unit. It organizes idea generation workshops in the company, to identify and rank the several opportunities. A very small number of opportunities are selected and a strategic plan is defined.	It offers a great diversity of services to private companies, including the diagnosis of R&D and innovation activities, identification of trends, technology surveillance and the definition of strategic and innovation plans.
2. Identification of user needs and major trends		
3. Signalisation of technological options		
4. Conceptualising new service offers	It can assist its clients doing a general definition of the new products/services. It supports the clients´ introduction of new and scientific organizational models, as well as and new marketing strategies, to boost the client´s competitiveness.	Not provided
5. Conceptualising new organisational methods		It helps in the process of creation of development of R&D and innovation structures.
6. Definition of new marketing strategies		It assists companies in the definition and implementation of internationalization strategies (to the markets of Brazil, USA, China, and Southeast Asia).
7. Identification of potential partners	It can collaborate on the identification and (if necessary) contact with company´s innovation potential partners.	It is specialized in the design and implementation of partnerships between companies, science and technology institutions, and international institutions. It is a privileged interface between private companies, universities and other knowledges centres, and national and international public organizations.
8. Testing and scaling	Not provided	Not provided
9. Selection and training of specialised workforce	It 1 has its own training academy, which provides training in the areas of innovation and business management.	It acts at training level, identifying needs and structuring the training plan. It applies pedagogical tools such as e-Learning.

10. Protection of innovation assets	Not provided	Not provided
11. Accreditation/ certification	It supports the implementation and certification of innovation standards and frameworks, such as NP 4457:2007; IMBOK; ISO/TC 279.	It offers support in the implementation and certification of RDI Management Systems according to NP 4457: 2007.
12. Investment appraisal	It can help the clients to assess their innovation investments, even though it does not work in the areas of funding and preparation of applications to EU funding	It identifies funding opportunities and prepares and makes the follow-up of funding applications. It promotes companies´ participation in national and international projects of R&D (UE funding).

Functions	**Case 3**	**Case 4**
1. Analysis and definition of innovation needs	It does the company diagnosis, with a special focus in technological areas. Some companies, due to their dimension, do their own diagnosis and look for consulting support to define the possible solutions. It searches for information about market needs and new technologies. It helps clients to define the overall innovation strategy.	Its services include an innovation diagnosis, analysis of emerging trends and customer needs as well technological options, and the definition of the client overall strategy.
2. Identification of user needs and major trends		
3. Signalisation of technological options		
4. Conceptualising new service offers	Not provided	It helps clients defining new offerings (core and supplementary services, using tools such as blueprinting and flowcharting). Its support in marketing areas is regarded as very important. The company prepares marketing plans as well as studies and does specific marketing audits. The support to its clients regarding organizational strategies is done too, usually grouped with the support provided in developing new services and new marketing strategies (complex innovations).
5. Conceptualising new organisational methods	It supports companies in the identification and implementation of new management tools.	
6. Definition of new marketing strategies	The company supports its clients in their internationalization processes, acting mostly at strategic level. Typically, they do not prepare marketing plans.	

7. Identification of potential partners	It helps to define and establish (technological) partnerships between companies and entities of the S&T system. In some technological projects that involve an array of players, it acts as architects in the fuzzy front of innovation.	It can also identify possible partners and, in some cases, to provide access. It urges its clients´ to identify their main innovation partners at 4 levels (clients, collaborators, suppliers and investors) and to incorporate their contributions in company´s innovation.
8. Testing and scaling	Not provided	It also is prepared to help its clients testing and scaling service innovations.
9. Selection and training of specialised workforce	Not provided	The company´s training services, especially in the areas of marketing, are considered strategic.
10. Protection of innovation assets	Not provided	Not provided
11.Accreditation	It offers services regarding management systems accreditation.	Not provided
12. Investment appraisal	It can help in the identification of necessary investments and, often, prepares and manages the applications for EU funds.	Concerning investment appraisal, it helps clients to identify the necessary investments, costs and possible capital sources.

Source: Own formulation

Appendix 3. Empirical perspective over consultancies as innovation intermediaries.

Dimension	Characterization	Comments
Business Model: Offerings	Information and access to other players	Consultancies act mostly at information level.
		The provision of access to other players is mostly done by consultancies specialized in technological innovation.
		The funding level is essentially focused on the elaboration of companies´ applications to EU funded programs.
Business Model: Customers	Inexistent market segmentation according to industry	Consultancies do not perceive manufacturing companies different from service companies.

Dimension	Characterization	Comments
	Services and manufacturing have different dimensions/resources	Manufacturing is a traditional and more important client.
	Service and manufacturing interlocutors are different	Typically, service companies vis-à-vis to manufacturing companies are smaller, with fewer resources, and don't have a well-defined innovation strategy.
		In services, marketing department is the main company's interface regarding innovation issues; in manufacturing, the interlocutor is the R&D or the production department.
	Service and manufacturing needs are distinct	Manufacturing companies are concentrated on production matters, while services focus on market differentiation.
		Manufacturing innovation needs are more clearly defined, comparing to services. Typically, only manufacturing companies have a "technological strategy", and their spectra of technological innovations can be quite diverse.
		Manufacturing needs a more holistic support (technological and non-technological), allowing cross-selling. Service industry relies largely on non-technological innovation, even though technological innovation can be a concern.
	Relationships with manufacturing can last longer	The relation with manufacturing companies can endure longer, due to the dimension/complexity of these companies. Normally, they require a wide range of the consultancies´ services.
	Dyadic and triadic relationships	Typically, consultancies provide services directly to their clients (in the case of non-technological innovations) or involve a third party or more players (in the case of technological innovations).
		Mobilizing projects usually involve more complex relationships.
Business Model: Resources & Partners	Importance of partnerships	Universities and other knowledge centres are considered fundamental sources of scientific knowledge.
		Partnerships with other consultancies are also important to ensure a better service quality.
	Staff is a critical resource	Consultants with different academic and professional backgrounds are strategic assets.

Dimension	Characterization	Comments
	Organizational structure is not aligned by client´s industry	Innovation services are industry agnostic, even though collaborators with specific industry expertise are very valuable.
Collaboration Process: Role& Functions	Innovation facilitators and carriers	All consultancies work to identify knowledge gaps and search for information and knowledge to facilitate clients´ innovation.
		Two of the consultancies, specialized in technological issues, stress the importance of its brokering role, where they act proactively as bridges between the users and the sources of technology. They also support the technology transfer, acting as carriers.
	Innovation co-producers	The co-production role is emphasized by one of the consultancies, specialized in marketing areas. The design of new offerings and new marketing strategies involves co-production.
		In the case of projects aiming to develop state-of-art technology and involving several actors, the consultancy envisages itself as a co-producer (Agogué, 2013).
	Similar functions	Consultancies' main functions as innovation intermediaries are rather similar. Functions provided in services and in manufacturing are not perceived as different.
	Focus on diagnostic, identification of user needs/trends and technological options, and strategy definition	The most essential functions are related with the company´s diagnostic, the search for information, and the definition of the clients´ overall strategy.
		The conceptualization of new services offerings is not the domain of consultancies specialized in technological innovation.
		None of the consultancies provides support in the protection of innovation assets.
		The testing and scaling is only offered by one consultancy and it is specifically related with service offerings.
		Consultancies are less present in the innovation implementation phase, due to the specificities of the tasks.

Dimension	Characterization	Comments
	Specificities of support at non-technological level	The support given by most of the consultancies in terms of marketing strategy is much related with the internationalization process of the clients.
		The assistance regarding organizational innovation is mostly concentrated in the definition of internal innovation structures and procedures as well as the implementation of quality standards in several areas.
		The provision of training services in the areas of innovation, marketing and business management is considered crucial. It is perceived as a trigger of future innovations.
Value-added: Impacts	Importance of information/advice	The immediate results are mostly information and advice, assets that are equally important to service and manufacturing industries. Consultancies are warehouses of knowledge (scientific knowledge, best practices), with guidance function.
		The access to other players (business linkages) is two-fold: access to sources of knowledge and access to funding sources.
		The access to knowledge sources is mostly associated with technological innovation and manufacturing companies. Clients want access to possible technology suppliers (universities, research centres, …).
		The provision of business services (executive education) is mostly connected with non-technological innovation. Training increases organizational knowledge, facilitating innovation.
	Priority of technological innovation and manufacturing projects	The support in technological areas is considered of utmost importance by two consultancies. The support in non-technological areas is seen as a complement and a way to potentiate the support given in technological areas. The services provided regarding non-technological innovations are considered in a second level, less interesting as a source of profit, having a punctual nature and always related to the main support provided regarding technological issues. Therefore, manufacturing projects comparing to service projects are more complex, of greater dimension, usually apply to external funding,

Dimension	Characterization	Comments
		and the results are more impressive and tangible.
Value-added: Challenges	Consultant-client interaction in manufacturing is easier	Manufacturing companies, due to its dimension and dedicated resources to innovation, have well-defined expectations, and seek for a precise and focused intervention, while service companies are constrained by their dimension/size.
	Manufacturing projects are more complex	Manufacturing companies deal with an array of technologies and products. Services technological innovation is mainly related with information technologies, and the solutions adopted by companies are quite similar.
	Service innovation is more challenging to deal with	Innovation in services, due to services peculiar characteristics, can be more difficult to manage, measure and protect as it involves more variables/players (clients, employees, suppliers) and it is intangible.