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Innovation in knowledge-based professional service firms. An integrated conceptual model*

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ABSTRACT

The current paper offers a new conceptual model to understanding innovation processes in professional service firms, to make hidden relationships more explicit and to find out what are the issues still unexplored. The paper employs a systematic literature review, and draws upon original categorizations of extant literature, to identify main processes for each category of PSFs. It unveils connections among a wide range of factors setting a conceptual model for innovation pathways and highlighting neglected questions relevant from both the theoretical and the practical perspectives.

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1. Introduction

Over the last years, the literature on professional service firms (PSF) has been flourishing (Mors 2010; Morrar 2014; Witell et al. 2016) but has left their value creation processes unexplored (Fischer 2011; Kühn et al. 2016). Thus, although specific factors are predicted to influence innovation in PSF, systemic effects have been overlooked. On this basis, the aim of this paper is to realise a conceptual model to understanding innovation processes in PSFs, to make hidden relationships more explicit and to find out what are the issues still unexplored.

To this aim, we employed a systematic literature review and drew upon categorizations of extant contributions, to identify what the factors impacting innovation processes in PSFs are. The paper acknowledges the multiple definitions of PSF (Hinings, Brown, and Greenwood 1991; Greenwood, Suddaby, and McDougald 2006) either as constrained by laws and standards or less conditioned and more innovation-oriented. Von Nordenflycht (2010) proposed the following taxonomy: classic PSFs (e.g. law and accounting firms); professional campuses (e.g. hospitals); neo-PSFs (e.g. management consultants); technology developers (e.g. R&D firms, biotechnology companies). This taxonomy has been deepened by Reihlen and Werr (2012) who highlight the clash between standardised and creative PSFs. Although such a duality is crucial in this paper we look at the common attributes that feature PSFs, that is the provision of intangible services based on knowledge to solve clients' needs (Empson et al. 2015).

The paper has interesting implications and provides an original contribution to the literature on innovation and PSFs firms.

Indeed, on the grounds of the review, we propose a new conceptual model to understanding innovation processes in PSFs, thus deepening issues such as innovation, strategies and managerial practices in PSFs (Kühn et al. 2016). In doing so, we unfold previously neglected relationships or

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connections among the variables analysed in literature. Also, by encompassing all types of PSFs, we provide an updated state-of-the-art on innovation in PSFs, revealing trends in literature and opening room for further research. Moreover, our model supersedes the jeopardised contributions available, offering a systemic view.

The paper proceeds as follows: the second section reviews prior literature and sets out the theoretical background; the third section explains the research method; the fourth section shows results and discussions. The fifth section puts forward conclusions and future directions.

2. Theoretical background

The paper embraces Sundbo's (1997) conceptualisation of innovation. Sundbo (1997) clarifies that the process of innovation does not need to be extremely radical and results in a step-by-step evolution from 'individual acts of learning' to 'radical innovations' that involves different organisational levels. The author points out that innovation and acts of learning should not be confused. Innovation can be improved by learning how to organise the innovation process, but this does not transform innovations into a sum of small individual acts. Innovation is a large-scale activity, which is reproduced, as the case when a process or an organisational innovation is implemented. Each innovation is widely diffused and has an overall effect on the market or the organisation, even incremental innovations. The single learning act has a limited distribution and effect: while the act of learning does not need to be new, an innovation must be new (either an entirely new element or a new combination of old elements). Sundbo's model potential resides in its systemic view of innovation, which apparently is still lacking in PSFs literature.

Extant contributions can be divided into four streams that have devoted attention to the issues of *change, customer, offer* and *firm* (Morrar 2014; Witell et al. 2016).

As for *change processes*, they are at the heart of innovation (Cerne, Jaklic, and Škerlavaj 2013) and are influenced by external pressures. Customers, competitors, dealers, and regulators define and shape the social norms and the culture of the context in which a PSF operates (Greenwood, Suddaby, and McDougald 2006). Firms often manage these external pressures through the establishment of networks, cooptation and lobbying (Greenwood, Suddaby, and Hinings 2002; Greenwood and Suddaby, 2006; Reihlen and Werr 2012; Empson, Cleaver, and Allen 2013).

As for *customers*, bearing in mind that the choice of the firm to interact or not with the customer has repercussions on the service provision (Hakanen and Jaakkola 2012; Janssen, Castaldi, and Alexiev 2018), Gallouj and Weinstein (1997) explain that customers' understanding helps the firm in formalising and sharing the innovation process.

Focusing on the *service offer*, it may depend on the choice of the firm to standardise or customise the service, and on the its strategic positioning on the market (Wagner, Hoisl, and Thoma 2013). These choices impact on innovation by influencing processes or organisational models.

Looking at the *features of the firm*, prominent aspects are related to human resources and technologies (Sharif 2002). PSFs have to find the right balance between mandatory standardised characteristics of the service, a certain degree of service customisation, and other specific skills (Sharif 2002; Reihlen and Werr 2012). They have to carefully consider organisational aspects (Sharif 2002; Greenwood et al. 2010; Noordegraaf 2011; Reihlen and Werr 2012). They have to manage the critical issue of human resources (HR) (Kaiser et al. 2015), considering factors such professionals' autonomy (e.g. Robertson, Scarbrough, and Swan 2003; Young, Charns, and Heeren 2004) and highly educated employees (Leiponen 2010). Yet, information and communication technologies are at the core of innovation in PSFs (Kushwaha 2011) and require combination between technical and professional expertise.

In brief, literature contends that there are several factors that play a prominent role in innovation processes in PSFs. What the research does not offer us is a comprehensive understanding of the effects of the above-cited factors in innovation processes of PSFs, and whether and how they interact and shape each other. The following sections provide a systemic literature review to realise a conceptual model, overcoming this limitation and sticking on Sundbo (1997).

3. Research method

The systematic literature review follows Khan et al. (2003) and Dubickis and Gaile-Sarkane (2015). The search through keywords was carried out on Scopus and ISI Web of Knowledge engines. A further search was done using the internal engines of the journals resulted from the first research and coherent with the aim of the paper (56 journals in total). The review process was structured into five steps:

- (1) Framing questions for a review, by establishing useful keywords;
- (2) Eliminating duplicates and identifying relevant studies by selecting titles and abstracts;
- (3) Assessing the quality of studies, by analysing full papers;
- (4) Summarizing the evidence; and
- (5) Interpreting the findings.

Keywords adopted were ‘innovation’ AND ‘professional service firms’. The research was conducted without setting a specific period in the research engine in order to verify the entire production on the analysed issue. In total, 665 articles emerged from the first step: 34 from Scopus, 64 from ISI Web of Knowledge and 567 from single journal search engines.

After eliminating duplicates, we selected relevant studies by searching for keywords (‘innovation’ or ‘professional’ or ‘service’ or ‘change’) within titles and then abstracts (e.g. even including professional service firms when they are cited as ‘knowledge-intensive firms’). This step provided 87 articles. The full-text analysis in step 3 has looked for the coherence of the articles by searching for the effective focus on innovation within PSFs. Following full-text analysis, we obtained a final database of 50 relevant articles. Figure 1 resumes the review process’ steps 1–3.

Then, we summarised the results (Step 4 – see Table 2) and interpreted the findings (step 5), elaborating some considerations (Figure 2 and Table 3).

4. Results and discussion

This section provides a descriptive picture of the articles extracted, then focusing on the innovation processes per type of PSF. Then, it discusses the systemic conceptual model emerging from a cross-reading of extant contributions, highlighting hidden relationships and unexplored questions.

4.1. A descriptive picture of innovation processes in PSFs

The analysis carried out reveals interesting issues regarding the studies on innovation processes in PSFs overtimes. The results show that most of the papers resulting from the research have been published after 2010 with only two articles published in the period 2000–2010, demonstrating the growing interest in the theme.

The distribution on the journals is intriguing. Overall, 33 journals were analysed (Table 1). The journals with most results were: Academy of Management Journal (4), Journal of Management Studies (4) and Strategic Management Journal (4).

Table 2 summarises the results, by reporting the kind of PSF, the stream of reference (section 2) the article topic, the kind of innovation, the source of innovation, and whether the focus is set inside or outside the firm.

4.1.1. Kinds of PSFs and research streams

Table 2 shows that great attention has been devoted to law (10), accounting (9) and management consulting firms (9). Other firms are those of Information Technology (8); Construction (7); Engineering consulting (6); Advertising (3); Business Services (3); Science consulting (3); Marketing consulting (2); Financial Services (2); Hospitals (1). In some cases, authors have not focused on specific types of

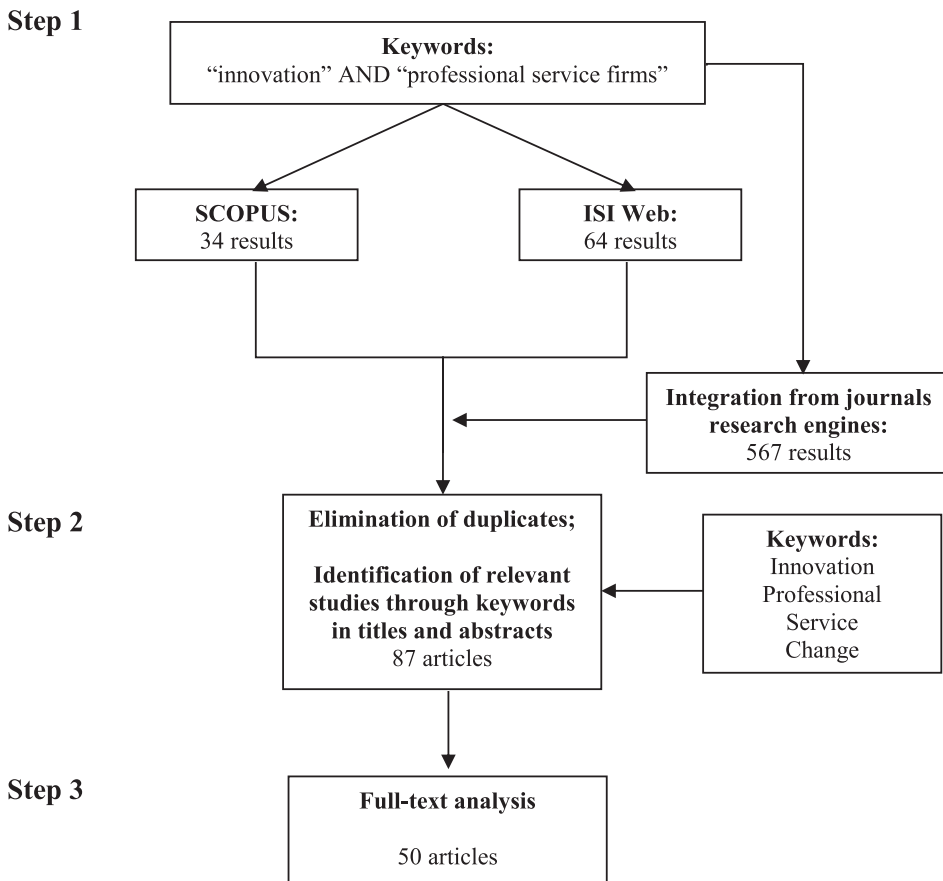


Figure 1. Literature review process from step 1 to step 3.

PSF, while in one case authors looked at different PSFs without specifying the stratification of the sample analysed.

The majority of the papers fall within the domain of the studies on *firms' characteristics* (21) and *change* (13). Although not explicit, these streams are often intertwined. For the streams *offer* and *customer* data show only 6 and 4 articles, respectively. The remaining papers have hybrid characteristics. The study by Heirati et al. (2016) encompasses all the streams. The papers by Leiponen (2008), Mors (2010), and Ross (2016) look at the interplay between the firms' characteristics and customers. The articles by Wagner, Hoisl, and Thoma (2013) and Jensen, Poufelt, and Kraus (2010) concentrate on the interplay between the firms' characteristics and offer.

4.1.2. *Kinds of innovation and source of innovation*

As Table 2 shows, 29 papers refer to organisational innovation, while 17 cases are about strategic innovation. Only 9 and 3 cases are on technological innovation and social innovation, respectively. The emphasis over organisational and strategic aspects confirms that, in PSFs, innovation may derive from a better internal organisation and the establishment of external strategic relationships. Results do not show specific kinds of innovation associated with a particular type of PSF even if there is emphasis on organisational issues for innovation. Only for construction firms in six out of seven cases there is a tendency to rely upon external sources of innovation (Barrett and Sexton 2006; Kissi, Dainty, and Liu 2012; Bonham 2013; Daudigeos 2013).

Table 1. Final selection per journal.

Academy Of Management Journal	4
Australasian Marketing Journal	1
British Journal Of Management	1
Building Research And Information	1
Business Horizons	1
Conference Proceedings – IAMOT 2015	1
Construction Innovation	1
Construction Management And Economics	1
Employee Relations	1
German Journal Of Human Resource Management-Zeitschrift Fur Personalforschung	1
Human Relations	2
Human Resource Management	1
Industrial Marketing Management	2
International Journal Of Innovation Mgmt	2
Journal Of Business Research	3
Journal Of Economic Geography	1
Journal Of Internet Banking And Commerce	1
Journal Of Knowledge Management	1
Journal Of Management Studies	4
Journal Of Organizational Behavior	1
Journal Of Organizational Computing And Electronic Commerce	1
Journal Of Product Innovation Management	2
Journal Of Professions And Organizations	2
Journal Of World Business	1
Knowledge Management Research & Practice	1
MIS Quarterly	1
Organization	1
Organization Studies	1
Service Science	1
Strategic Management Journal	4
Strategic Organization	1
Technovation	1
The Service Industries Journal	2

4.1.3. Main topics and focus

As per the focus, it was mainly internal to the firm (30 articles out of 50). Aspects analysed, in these cases, were related to knowledge management (Morris 2001; Dougherty 2004; Faulconbridge 2006; Leiponen 2006; Fischer 2011; Ariwa and Syvertsen 2013; Fu et al. 2015; Amara et al. 2016); human resource practices (Jensen, Poufelt, and Kraus 2010; Donate and Guadamillas 2015; Fu et al. 2015; Fu et al., 2017; Fu, Flood, and Morris 2016; Kühn et al. 2016); the role of organisational culture (Hogan and Coote 2014; Maroofi 2016); the use of technologies (McCole and Ramsey 2005; Gray, Salvatore, and Iyer 2011; Chin, Evans, and Choo 2015); the degree of professionals' autonomy and the distribution of authority (Hinings, Brown, and Greenwood 1991; Robertson and Swan 2003; Robertson, Scarbrough, and Swan 2003; Young, Charns, and Heeren 2004), the ability of balancing exploration (technological aspects) and exploitation (organisational aspects) (Lu and Sexton 2006; Fu, Flood, and Morris 2016).

Authors focusing on the external dimension of the firm (11) highlighted the importance of establishing external networks (Bagchi-Sen and Küchler 2000; Semadeni 2006; Daudigeos 2013; Wagner, Hoisl, and Thoma 2013); value co-creation approaches with customers (Sturdy et al. 2009; Breidbach, Smith, and Callagher 2013; Schaarschmidt et al. 2015; Heirati et al. 2016); institutional actions and responses to the external context pressures (Bonham 2013; Malsch and Gendron 2013).

In 9 papers the focus is on both dimensions, and the analysis considers organisational aspects (Sherer and Lee 2002; Kvålshaugen, Hyde, and Brehmer 2015; Bello et al. 2016; Ross 2016), strategic aspects (Kissi, Dainty, and Liu 2012) and social aspects (Mors 2010). These results confirm that the role of the external context is important for PSFs.

Adopted theoretical frameworks range among institutional, resource dependence, and resource-based theories.

Table 2. Literature review – summary of the results.

Authors	PSFs observed	Stream	Article main topic	Kind of innovation	Sources of innovation	Focus internal or external to the firm
Amara et al. (2016)	business services	Change	Threats to innovation	technological and organisational	- Technology - Knowledge	internal
Anand, Gardner, and Morris (2007)	management consulting	Offer	New knowledge-based practice areas	organisational	- Relationships - Individual skills - Accumulated experience - Management support - New practice areas	internal
Ariwa and Syvertsen (2013)	generic focus on PSFs	Change	Growth strategies	technological	- Technology - Knowledge	internal
Bagchi-Sen and Küchler (2000)	accounting	Offer	Competition and services promotion	strategic	- Relationships	external
Barrett and Sexton (2006)	construction	Change	Innovation and project management	organisational and technological	- Individual skills - Service design - Technology	internal
Bello et al. (2016)	different types of PSFs	Firm	Performance in emerging markets	organisational	- Resource recombination (under a resource-based view)	both
Blindenbach-Driessen and van den Ende (2010)	IT, engineering and construction	Firm	Innovation and project management	organisational	- Individual skills - Management support	internal
Bonham (2013)	construction	Offer	New practice areas	strategic	- Relationships - Technology - Management support	external
Breidbach, Smith, and Callagher (2013)	engineering consulting	Customer	Innovation and customer orientation	strategic	- Relationships	external
Candi (2016)	IT	Offer	Service design	process innovation	- Service design	internal
Chin, Evans, and Choo (2015)	management consulting	Change	Communication and technological tools	technological	- Technology - Knowledge	internal

(Continued)

Table 2. Continued.

Authors	PSFs observed	Stream	Article main topic	Kind of innovation	Sources of innovation	Focus internal or external to the firm
Daudigeos (2013)	construction	Change	Influence	social	- Relationships	external
Donate and Guadamillas (2015)	information technology	Firm	Knowledge management and HR	organisational	- HR practices	internal
Dougherty (2004)	engineering, IT and training	Firm	Practice-based knowledge	organisational	- Knowledge - Accumulated experience	internal
Faulconbridge (2006)	advertising	Firm	Knowledge management and learning	organisational	- Knowledge - Learning	internal
Fischer (2011)	accounting	Firm	Individual skills and innovation	organisational and strategic	- Accumulated experience	internal
Fu et al. (2015)	generic focus on PSFs	Firm	HR and innovation	organisational	- Knowledge - HR practices	internal
Fu et al. (2017)	accounting	Firm	Relational resources	social	- Relationships	internal
Fu (2015)	accounting	Firm	HR and innovation	organisational	- Knowledge - HR practices	internal
Fu, Flood, and Morris (2016)	accounting	Change	Organisational ambidexterity	technological and organisational	- Service design - Resource re-combination	internal
Gardner, Anand, and Morris (2008)	consulting and law	Offer	diversification strategies	strategic	- Knowledge - Learning - Accumulated experience	internal
Gray, Salvatore, and Iyer (2011)	information technology	Change	Technology and innovation	technological	- Technology - Relationships	internal
Heirati et al. (2016)	engineering consulting, management consulting, marketing consulting, IT services, and financial services	All 4	Innovation and customer orientation	strategic	- Relationships	external
Hinings, Brown, and Greenwood (1991)	accounting	Change	Change processes	Mixed (technical and administrative innovation)	- Management support - Relationships - Culture, values, and norms	internal

(Continued)

Table 2. Continued.

Authors	PSFs observed	Stream	Article main topic	Kind of innovation	Sources of innovation	Focus internal or external to the firm
Hogan and Coote (2014)	law	Firm	Culture and innovation	organisational	- Culture, values, and norms	internal
Hogan et al. (2011)	law, accounting, engineering, management consulting	Customer	Individual skills and customer orientation	organisational/strategic/ technological	- Technology - Relationships - Individual skills	both
Ibarra (1993)	advertising and PR	Firm	Individual skills, network and innovation	organisational	- Relationships - Individual skills	internal
Jensen, Poufelt, and Kraus (2010)	law, architecture and IT	Firm and Offer	Routinisation	organisational	- HR practices - Accumulated experience	internal
Kissi, Dainty, and Liu (2012)	construction	Firm	Enablers of innovation	organisational and strategic	- Management support - Relationships - Culture, values, and norms	both
Kühn et al. (2016)	accounting and law	Firm	Entrepreneurship	organisational	- HR practices - Individual skills	internal
Kvålshaugen, Hydle, and Brehmer (2015)	Engineering	Firm	Service provision and innovation	organisational and strategic	- Learning - Knowledge Accumulated experience - Technology - Relationships - Service design	both
Leiponen (2006)	business services	Firm	Knowledge management and innovation	organisational	- Knowledge - Service design - Individual skills	internal
Leiponen (2008)	business services	Firm and Customer	Knowledge and control	strategic	- Knowledge - Relationships - Learning	external
Lemus Aguilar and Hidalgo Nuchera (2015)	Not specific	Firm	Innovation in PSFs vs innovation in other firms	all	- Resources - Service design - Knowledge - Relationships - Management support	both

(Continued)

Table 2. Continued.

Authors	PSFs observed	Stream	Article main topic	Kind of innovation	Sources of innovation	Focus internal or external to the firm
Lu and Sexton (2006)	construction	Change	Innovation processes in small PSFs	technological and organisational	- New practice areas - Service design	internal
Malsch and Gendron (2013)	accounting	Change	Innovation and jurisdictional legitimacy	strategic	- Culture, values and norms - Relationships	external
Maroofi (2016)	law	Firm	Culture and innovation	organisational	- Culture, values and norms - Relationships	internal
McCole and Ramsey (2005)	management consulting, financial services, construction, advertising, telecom, travel, marketing consulting, engineering, information technology, science consulting, law	Change	Adoption of E-Commerce	technological	- Technology	internal
Morris (2001)	management consulting	Firm	Knowledge management and innovation	organisational	- Knowledge - Accumulated experience	internal
Mors (2010)	management consulting	Firm and Customer	Relational knowledge management	social	- Relationships	both
Robertson and Swan (2003)	science consulting	Firm	Culture and innovation	organisational	- Culture, values and norms - Relationships - Knowledge - Technology	internal
Robertson, Scarbrough, and Swan (2003)	science consulting and law	Firm	Institutional effects on knowledge creation	organisational	- Culture, values and norms - Relationships - Resources - Knowledge - Technology	internal
Ross (2016)	Not specific	Firm and Customer	Innovation processes in PSFs	organisational	- Relationships - Culture, values and norms - Management support	both

(Continued)

Table 2. Continued.

Authors	PSFs observed	Stream	Article main topic	Kind of innovation	Sources of innovation	Focus internal or external to the firm
Salunke, Weerawardena, and McColl-Kennedy (2013)	Not specific – project oriented PSF	Change	strategic resources combination	organisational	- Resource re-combination	internal
Schaarschmidt et al. (2015)	information technology	Customer	Innovation and customer orientation	strategic	- Relationships	external
Semadeni (2006)	management consulting	Offer	Dyadic dynamic positioning of firms	strategic	- Relationships	external
Sherer and Lee (2002)	law	Change	Change through a resource dependence and institutional approach	organisational and strategic	- Resource re-combination - HR practices	both
Sturdy et al. (2009)	management consulting	Customer	Consultants as innovators	strategic	- Relationships	external
Wagner, Hoisl, and Thoma (2013)	law	Firm and Offer	Knowledge management	strategic	- Knowledge - Learning - Technology - Relationships	external
Young, Charns, and Heeren (2004)	hospitals	Firm	Service design	organisational	- Relationships - HR practices - Knowledge - Technology	internal

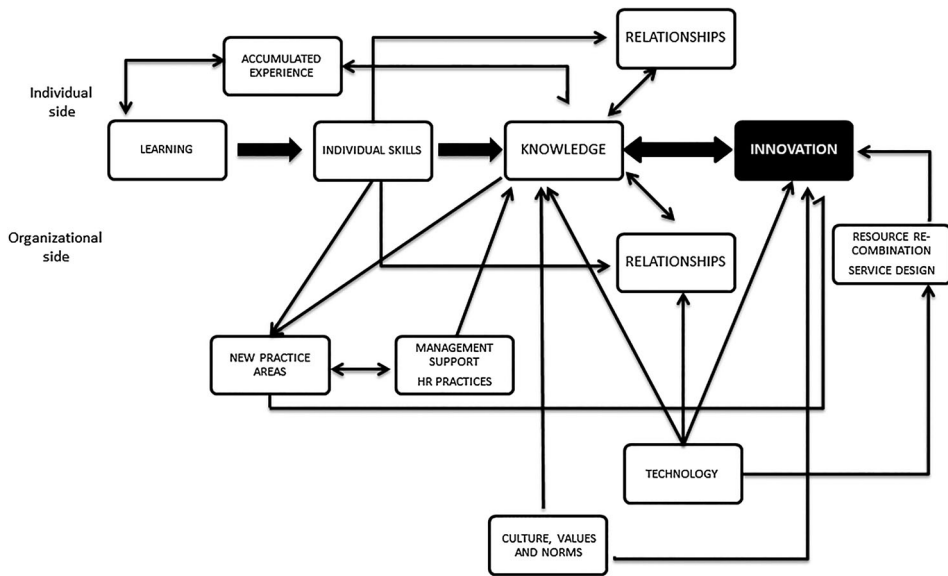


Figure 2. An integrated model to conceptualise the innovation process in PSFs.

4.2. Innovation processes per type of PSF

The literature examined shows mixed results about the type of PSF, related to the following issues. Changing managerial practices, or adopting innovation oriented practices, (especially HR practices) to foster knowledge creation and sharing (Falconbridge 2006; Leiponen 2006; Jensen, Poulfelt, and Kraus 2010; Wagner, Hoisl, and Thoma 2013; Donate and Guadamillas 2015; Fu 2015; Fu et al. 2015; Amara et al. 2016; Kühn et al. 2016) and leaving a certain degree of autonomy to professionals (Robertson and Swan 2003; Robertson, Scarbrough, and Swan 2003; Young, Charns, and Heeren 2004); resource re-combination or ‘bricolage’ (Sherer and Lee 2002; Salunke, Weerawardena, and McColl-Kennedy 2013; Bello et al. 2016); the co-creation and collaboration with customers and suppliers (Sturdy et al. 2009; Breidbach, Smith, and Callagher 2013; Schaarschmidt et al. 2015; Heirati et al. 2016); the establishment of networks (Bagchi-Sen and Küchler, 2000; Semadeni 2006; Daudigeos 2013); balancing exploitation and exploration, since there is a need for professionals to consider both external resources acquisition and internal organisational issues (Lu and Sexton 2006; Fu, Flood, and Morris 2016); managing knowledge control rights allocation, as some authors (e.g. Leiponen 2008) highlight that the control of intellectual assets is crucial to innovate and to bargain power with the client; the establishment of new practice areas, since several authors (e.g. Gardner, Anand, and Morris 2008; Kvålshaugen, Hydle, and Brehmer 2015) link this approach to the development of internal skills and knowledge; the use of technologies to facilitate knowledge creation, sharing and dissemination (e.g. Gray, Salvatore, and Iyer 2011; Chin, Evans, and Choo 2015).

The processes presented mobilise various agents, both internal and external to the firm with intertwined relationships. The findings show that across PSFs the most recurring innovation processes are related to managerial practices.

Table 3 summarises the types of innovation process per type of PSF (including only the papers where the type(s) of PSFs were detectable).

Unsurprisingly, and in line with Empson et al. (2015) Table 3 reveals some similarities among the types of PSFs included in the analysis. This confirms that the old tendency to stick on the boundaries between PSFs needs to be overcome towards more general models, looking at common features and connections. The following sub-section elaborates a conceptual model useful for all types of PSFs, to make these connections explicit.

Table 3. Main variables impacting on innovation process per type of professional service firm.

Type of PSF	Learning	Individual skills	Accumulated experience	Knowledge	New Practice Area	Management support	HR practices	Culture, values, and norms	Technology	Relationships	Service design	Resource re-combination
accounting		X	X	X		X	X	X	X	X	X	X
business services	X	X		X					X	X	X	
construction, engineering, architecture	X	X	X	X	X	X	X	X	X	X	X	
hospitals				X			X		X	X		
information technology		X	X	X			X		X	X	X	
law	X	X	X	X			X	X	X	X		X
management consulting		X	X	X	X	X			X	X		
marketing and advertising	X	X		X					X	X		
science consulting firms				X				X	X	X		X

4.3. A model for understanding innovation in PSFs

We illustrate the possible connections among the factors identified, offering a holistic model to understanding how innovation stems out in PSFs. The model includes all analysed aspects (Figure 2) and acknowledges possible limitations due to any different conceptualizations given by the cited authors.

4.3.1. Main innovation process

The model considers the sequence suggested by Sundbo (1997) from learning to individual skills, then to knowledge and innovation. In our model, we consider the jump highlighted by Sundbo (1997) from 'general acts of learning' to 'small incremental innovations' in the two steps from learning to individual skills improvement and the creation of new knowledge. This is because learning and knowledge are recognised as two core dynamic capabilities driving innovation (Kvålshaugen, Hydle, and Brehmer 2015). The literature highlights the prominent role of individual skills. Individuals are a key for innovation because they learn through participation in work, and their ongoing engagement leads to accumulated knowledge and innovation (Anand, Gardner, and Morris 2007). Thus, individual skills represent distinctive resources for the firm to gain competitive advantage (Hogan et al. 2011), and skilled people represent the necessary premise for success and value creation (Barrett and Sexton 2006) for firms in general and for PSFs in particular.

Accordingly, our analysis shows that such a process can be observed by focusing on the individual side and the organisational side.

4.3.2. Factors affecting innovation on the individual side and organisational side

At the individual side, in addition to what Sundbo explains, extant literature clarifies that two more factors influence the innovation process. First, there are accumulated experiences (Kvålshaugen, Hydle, and Brehmer 2015) that impact on learning and knowledge, shaping and re-shaping in a dynamic effort the individual skills, and in turn, continuously although indirectly, impact on PSF innovation. Accumulated experience impact on learning and new knowledge creation by developing specialised expertise, reputation and legitimacy (Kvålshaugen, Hydle, and Brehmer 2015), all factors extremely focal to support value-creation. Second, there is the constant interplay between internal and external relationships and knowledge that foster innovation (Bagchi-Sen and Kuchler 2000; Mors 2010; Daudigeos 2013; Fu et al. 2015; Heirati et al. 2016). Information exchange creates new knowledge, further improves and enriches individual skills, facilitates employees' commitment and involvement in innovative behaviours and, in turn, enables the firm to develop an innovation capability (Fu et al. 2015).

Focusing on the organisational side there is the additional indirect effect played by the interplay between relationships and knowledge.

Besides, factors such as new practice areas, service design, resource re-combination and technology play a direct role in fostering PSF innovation. Gardner, Anand, and Morris (2008) and Kvålshaugen, Hydle, and Brehmer (2015) found that novel individual skills and knowledge may facilitate the establishment of new practice areas and this, in turn, has an impact on firm's innovation and value-creation by broadening market access chances.

The role of technology, within this model, is twofold. On the one hand, it represents a support to create and share knowledge (Ariwa and Syvertsen 2013; Chin, Evans, and Choo 2015). For instance, Barrett and Sexton (2006) highlight the supporting role of databases in recording and tracking processes and procedures, thus signalling the key role of technology in supporting the transformation of tacit knowledge into explicit knowledge. On the other hand, technology impacts directly on the firm's degree of innovation (McCole and Ramsey 2005; Gray, Salvatore, and Iyer 2011) thanks to its relational and connecting potential. Ariwa and Syvertsen (2013) describe technology as a tool to initiate knowledge creation and innovation, and highlight its role in stimulating the constant transformations of activities. Yet, Chin, Evans, and Choo (2015) highlight the role of social networks (ESN)

in improving communication and collaboration, as well as enhancing knowledge sharing and innovation among employees, while Gray, Salvatore, and Iyer (2011), show how the use of social network impacts on firm's innovation by creating connections among employees and bridging structural holes.

Other ways for innovating may result from resource re-combination (Salunke, Weerawardena, and McColl-Kennedy 2013; Bello et al. 2016) and service design (Candi 2016). The importance of resource re-combination is seen under a resource-based view by Bello et al. (2016), with reference to dynamic capabilities and their enabling role. Salunke, Weerawardena, and McColl-Kennedy (2013) highlight the role of bricolage as strategic recombination and show that service entrepreneurship and bricolage influence two forms of service innovation (interactive and supportive), which in turn is associated with sustained competitive advantage.

Finally, factors such as HR practices (Jensen, Poufelt, and Kraus 2010; Donate and Guadamillas 2015; Fu 2015; Fu et al. 2015; Kühn et al. 2016) and culture, value and norms, (Hogan and Coote 2014; Maroofi 2016), as well as management support (Kissi, Dainty, and Liu 2012) inform innovation processes through the mediating role of knowledge. In particular, HR and managerial support are often related to the need of balancing formal responsibilities with the need to leave a certain degree of autonomy to professionals (e.g. Robertson and Swan 2003; Robertson, Scarbrough, and Swan 2003; Kissi, Dainty, and Liu 2012). This is because freedom represents one of the most important conditions to improve creativity and innovation and impact on new practices formation (Anand, Gardner, and Morris 2007). The same importance is given to culture, values and norms, in being a guide toward innovation-oriented behaviour.

4.3.3. New directions in PSFs innovation research

Despite the interesting insights derivable from extant contributions, as depicted in model 1 (see Figure 2), research so far has left some issues still unexplored. Figure 3 below offers a graphic representation of the systemic model realised, attempting to show also these neglected paths (reported through dashed arrows).

Research to date has given prominence to the role played by accumulated experience only at the individual side. It has left unexpressed the processes of accumulated experience through

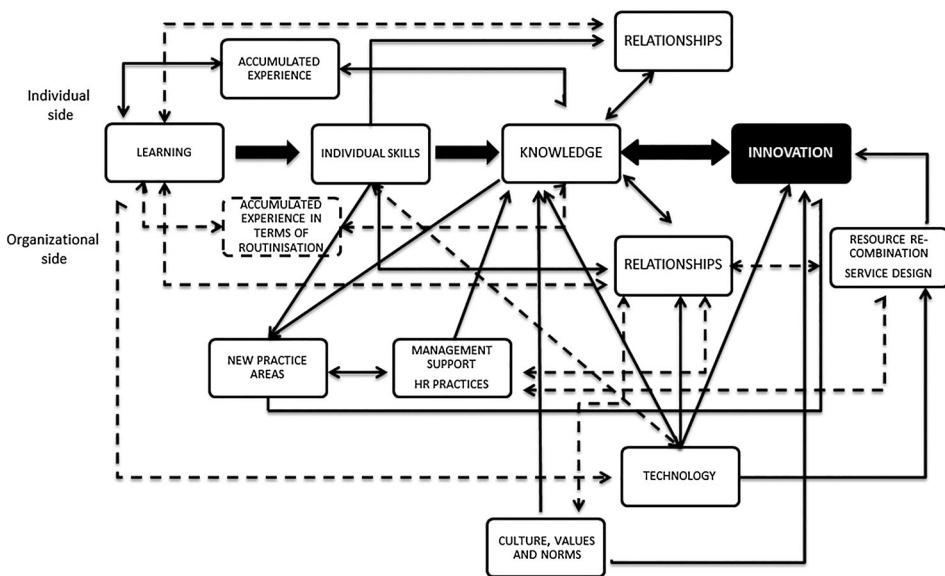


Figure 3. An integration of the model for understanding innovation in PSFs.

routinisation that take place at the organisational level and can impact on, and being shaped by, individual learning and knowledge (e.g. Zollo and Singh 2004). Moreover, research on PSFs has not considered the bidirectional relationships that can take place at both the individual and the organisational level between learning and relationships (e.g. Fiondella et al. 2016).

Also, the impacts of technology on learning, individual skills, and vice-versa are not explicit in the literature revised (e.g. Ruiz-Mercader, MeroñO-Cerdan, and Sabater-Sánchez 2006). The relationship between individual skills and technology, especially due to the increasing pervasiveness of technology (Barrett and Sexton 2006), may represent a key driver for innovation and success of the firm. On the one hand, individual skills improve the use of technology. On the other hand, technology enhance individual skills (e.g. through the use of internal databases) toward accumulated knowledge and innovation.

Other lacking explorations refer to the factors of management support and HR practices and their mutual exchange with relationships (e.g. Broadbent and Laughlin 2013; Fiondella et al. 2016), and resource re-combination and service design (Chuang and Liao 2010).

Finally, the interplay between relationships and resource re-combination and service design (e.g. Davis and Eisenhardt 2011), and culture, value and norms (e.g. Broadbent and Laughlin 2013), remains obscure.

The issues signalled here are only examples derived from connected literature (e.g. on healthcare or innovative firms) that can or cannot be relevant to PSFs, but that can be an interesting starting point for future investigation and debate. They are not intended to be a comprehensive closed list of issues to explore, but instead are meant to prompting reflections on innovation processes in PSFs.

5. Conclusions and direction for future research

This paper aimed to realise a conceptual model to understanding innovation processes in professional service firms, to make hidden relationships more explicit and to find out what are the issues still unexplored. Our analysis encompassed all types of PSFs and employed Sundbo (1997) view that innovation processes are improvement of small acts that step-by-step involve different organisational levels and actors. We developed a systematic literature review to identify what the factors impacting innovation processes in PSFs are. The results revealed some possible connections among the various variables characterising the innovation processes analysed. On this ground, we crafted an integrated model to conceptualise the innovation process in PSFs, also signalling possible relevant and unexplored issues.

The paper has interesting theoretical and practical implications.

First, we deepen issues such as innovation, strategies and managerial practices in PSFs (Kühn et al. 2016) unfolding previously neglected relationships or connections among the variables analysed in literature. In so doing, we provide an updated state-of-the-art on innovation in PSFs, revealing trends in literature and opening room for further research. Moreover, our model supersedes the jeopardised contributions available, offering a systemic view.

From the practical perspective, the paper supports practitioners and policymakers interested in understanding the specific innovation processes in the different types of PSFs, showing how factors interact and shape each other towards innovation. In this way, it can be a potential tool to identify possible levers for PSFs interested in engaging innovation pathways.

This work may suffer from the typical limitations of a literature review, such the selection of journals, the choice of number and type of keywords and the resulting selection of studies, the choice of relevant outcomes and the interpretation, generalisation and application of results.

Also, despite the effort to provide an integrated model in Figure 3 for future research directions, another limitation can be found in a possible oversimplification of different conceptual definitions of variables, given that probably the studies analysed in this work may have taken for granted some hidden relationships.

Future research should consider testing the proposed model empirically, analysing the theme within specific professional categories, or examining specific issues such as the characteristics of the professional-entrepreneur; the influence of customers, in terms of technological equipment and procedures required to deliver particular services; the influence of laws and professional standards, not only in terms of equipment required, but also the type and volume of services provided; the role of professional associations in postgraduate education and mandatory professional education; and a more in-depth analysis of internal relationships to understand the processes of knowledge creation and sharing.

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