The Elements of Innovation Capabilities in Service Organizations

Abstract

The literature on innovation have been trying to answer the question of how to identify firms' innovative behavior using an evolutionary economics approach, and has developed the concept of "innovation capability" as an analysis model. Zawislak et al. (2012) propose and operationalize a model that is simple and addresses either technological and business aspects of firm innovation, particularly for manufacturing firms. However, the case of service organizations demand a slightly different approach on innovation because of its particular characteristics. Production and consumption simultaneity, strong relational character, and a process oriented value generation are all features that influence how service firms organize their innovation capabilities. Therefore, the objective of this study is to uncover the elements that comprise innovation capabilities in services. We conducted an explorative qualitative study, in which we interviewed top management executives of six service firms of multiple sizes and operating in varied industries. We have also gathered additional secondary data from multiple sources. The result is the four innovation capabilities (i.e. Development, Operations, Management, Transaction) proposed in Zawislak's et al. (2012) model adjusted to service organizations and depicted into 32 defining elements distributed through the innovation capabilities. The analysis also sheds light into the multiple overlaps between elements, exposing diffuse boundaries of those innovation capabilities.

Keywords: Innovation, Capabilities, Services.

INTRODUCTION

Services are increasingly relevant to modern societies and economies mainly for three reasons. On the one hand, there is an undeniable growth in the participation of so-called assistance services, in the provision of technical capacity, or in live performance. These sectors of activity correspond to roughly 70% of GDP and employment in developed economies (Gallouj, 2002; Ostrom et al., 2010). But, equally, other segments of the economy (notably manufacturing and agribusiness) are becoming more and more used as a way of adding value and creating experiences for their consumers (Lightfoot, Baines and Smart, 2013). If we add the ongoing digital revolution to this, we have the perfect recipe for studying services.

Innovation, thus, is key if firms in all industries aim to keep growth, profitability and competitive advantages on the market. In this sense, during the last twenty years the literature on innovation have been trying to answer the question of how to identify firms' innovative behavior using an evolutionary economics approach (Nelson & Winter, 1982; Dosi & Nelson, 1994), and has developed the concept of innovation capability as an analysis model (Amit & Schoemaker, 1993; Helfat & Peteraf, 2003). However, while industry has a view of the manufacturing product as an inert good, which value is manifested in an artifact (Shostack, 1977; Vargo & Lusch, 2004), services demand a slightly different perspective. On contrary, service innovation process is not necessarily strictly linear. In addition, traditional innovation measures, like R&D expenditure, number of doctors, or patents, work well for some specific manufacturing industries, but limits the perception of innovation in different economic sectors, including services. The question that arises, though, is how to identify the innovative behavior of service firms?

Some authors have already attempted to introduce a concept of innovation capabilities in services. As we explore in detail, these authors frame their studies around capabilities for new service development (NSD), or they have explored innovation within a dynamic capabilities approach. The way we understand, those characteristics do not account for all the distinct routines a service organization can take place in order to generate different kinds of innovation (i.e. product, process, management, or marketing). Therefore, we propose an alternative course of action. Departing from Zawislak's et al. (2012) innovation capability model, we stretch the discussion for each of the four innovation capabilities proposed. This way, the objective of this study is to adapt Zawislak's et al. (2012) framework of innovation capabilities to incorporate elements of services particular characteristics.

This is an exploratory multi-case study. We conducted semi-structured interviews with top managers from six service firms of multiple sizes and operating in varied sectors. We have also collected additional secondary data, such as industry reports, press articles, and companies documents, to form our data base. The main results of this study show innovation capabilities of service organizations depicted into the elements each capability comprises on detail. The analysis of these elements shed light in the various overlaps between routines, processes, and resources a service organization faces. Moreover, the relational aspect of services became evident and the incremental nature of innovation outcomes as well.

UNDERSTANDING SERVICE INNOVATION

Although the literature of innovation has traditionally emphasized technological innovation, conventionally measured by R&D expenses, or by number of patents, the study of innovation in services expect a different approach. Of course innovation management require a rigorous process, with a systematic procedure, even for service firms. But while technological innovation is linear and more structured, service innovation is not necessarily technological, and is often realized without prior R&D (Sundbo, 1997; Gallouj, 2002). Innovation in services differs from manufactured goods because of its nature of intangibility and strong need of customer interaction during service provision. By acquiring significant expertise in managing the interface with clients, and having also accumulated great breadth of experience in managing complex flexible outcomes, service firms have caught up industrial firms, and are now in a position to become sources of innovation in its own way (Gadrey, Gallouj, & Weinstein, 1995).

The service literature has also identified four main characteristics that differ them uniquely from goods. Intangibility, heterogeneity, inseparability and perishability (IHIP) have been regularly cited as their fundamental differences (Zeithaml, Parasuraman, & Berry, 1985; Fitzsimmons & Fitzsimmons, 2000; Moeller, 2010). In addition, services are recognized as a collection of processes that will deliver value to a particular customer. The service process is the transformation of the user and the orchestration of resources to perform established procedures. Back-office and front-office operations are of great relevance and will have an impact on perceived quality (Parasuraman, Zeithaml, & Berry, 1988), for example. Increased service quality will lead to increased customer satisfaction, whilst loyalty may be amplified (Miles, 2013).

But there are other characteristics of services that demand a particular approach on innovation, especially in the 21st century that is markedly invaded by digital technologies and the transversal nature of services,. Services are naturally intangible activities, which means their output is not crystalized in an entity that property is exchanged. In fact, the production and the consumption of services occur simultaneously, making customer's participation into the process extremely important for this kind of economic activity. Moreover, services relational character also affects how firms organize their own and third parties resources in order to reliably deliver their offers into the market. We address those characteristics next.

Production and Consumption Simultaneity

The definition of services drives the conclusion that the fundamental characteristic of every service activity is client participation in various forms during the production of the service (Gallouj & Weinstein, 1997). If providing a service means changing the state of a reality, then the service is consumed precisely in the moment it is being produced, despite of spatial proximity between producer and consumer. As Gallouj and Weinstein (1997) summarize, various concepts have been developed in order to account for client interaction (i.e. interface, co-production, servuction). Regardless of service rationale, be it more relational or more technical, at the interface between the service provider and its client different types of interaction occur. Also, various types of elements are exchanged, such as information, knowledge, or emotions (Sundbo & Gallouj, 2000). This is why the literature on service management has also stressed the idea of perceived value. The perceptions of value may be formed at the pre-purchase phase, post-purchase phase or, both (Boksberger & Melsen, 2011), and firms might also depend on third parties engaged in a service system to deliver the definite value. Additionally, service systems are characterized as value co-creation configurations of people and technology, connecting internal and external stakeholder that share information to enhance the service provision (Maglio & Spohrer, 2008).

The Relevance of Relationships

Another defining characteristics of services is that it requires undertaking activities for customer integration and the incorporation of its resources into the processes of a company. Customer integration is thus defined as the combination of customer' resources (persons, possessions, nominal goods, personal data, etc.) with firm' resources, in order to perform a

transformation process (Moeller, 2008). It is a relationship between both parties by definition. Value is thus defined by and co-created with the consumer rather than embedded in output (Vargo and Lusch, 2004). Ritala, Hyötylä, Blomqvist, and Kosonen (2013) go further and explain that the nature of the process of service production and consumption depends on the interaction between customer and provider. In essence, a service "does not exist beforehand, but is provided through a unique, context- and customer-dependent process" (Ritala et al., 2013, p. 489). For innovation, the development of relations between firm and customers through stronger engagements becomes decisive in the development, design, and delivery of new products and services (Agarwal & Selen, 2009).

Innovation in Services

Service innovation shares commonalities with the traditional concept of innovation and benefit from innovation strategies and capabilities that have been found in the manufacturing sector (Leiponen, 2012). Of course it follows the steps of first sourcing information for ideas generation, to finally leveraging something new into the market and trying to find means of protecting the innovation. But services, in essence, are a performance, they are processes coordinated to deliver a result. For that reason, service innovation do not follow a technological path, but trajectories in which technologies are only one vector among several others (Gallouj & Weinstein, 1997; Sundbo, 1997; Toivonen & Tuominen, 2009). For instance, "the use of formal R&D or patents systems are much less relevant in service-based firms than for goods-based ones" (Rubalcaba et al., 2012, p. 698). Likewise, many ideas for service innovation come from daily business activities and from the interaction with customers and partners. Direct customer requests, follow-up of the customers' problems and acquisition of customer feedback are all information sources that can result in new ideas (Toivonen & Tuominen, 2009). This way, innovation in services may deal with changes in the product, the process, the organization or managerial practices, and the market a firm serves (Sundbo & Gallouj, 1998). In essence, a better service offering is possible through both radical or incremental changes to improve capacity management, customer interaction, personnel behavior, and many more reasons. These changes can be implemented using or modifying an organization's existing resources and capabilities (Agarwal & Selen, 2009).

THE INNOVATION CAPABILITIES APPROACH

It has been reviewed so far that services possess some particular characteristics, which will impose a different approach for organizing innovation. What we see next is that innovative firms are those who manage their resources in a process of learning-by-doing and that this knowledge is translated into routines that sustain competitive advantages for the firm. These are called innovation capabilities. Mainstream innovation studies are focused on industrial innovation processes and, consequently, derived many of firm's innovative behavior from a technological capability a firm possess within its R&D department. As we have argued, this characteristic is not frequently apparent in service firms. Therefore, we address next how the literature have tried to identify innovative behavior of service organizations and propose our own framework.

Origins and definition

Dosi, Nelson and Winter (2000) explain that "to be capable of some thing is to have a generally reliable capacity to bring that thing about as a result of intended action". Moreover, through the analysis of firm capabilities it is possible to conceptualize the elements of continuity and idiosyncrasy that are central to the evolutionary view of firm behavior. Every firm is embedded in a sectoral environment with a given technology as standard, that is, with elements that give certain homogeneity to its actors (Dosi, 1982; Nelson, 1990). When competing on the market, however, what makes difference are not the common elements, but what a firm can do differently. In essence, how it manages its innovation capabilities. It is firm's accumulated knowledge on how to innovate that can make them successful and sustain competitive advantages.

In this sense, in our understanding, innovation capabilities are a set of knowledge and other resources (e.g. know-how, financial or physical assets, human capital etc.) that are firm specific and are needed to develop efficient solutions in different dimensions of the business. These assets are incorporated into routines that convey the ability to mobilize these resources and perform coordinated activities to achieve a goal that purposefully create, extend or modify its resource base in a process of "learning by doing" and exchanging information through the firm's human capital (Nelson & Winter, 1982; Amit & Schoemaker, 1993; Helfat & Peteraf, 2003; Winter, 2003).

Innovation Capabilities in Services

The literature on service innovation has identified the need to define how firm capabilities, processes, and tools might support a better understanding and improvement of how to make things different (Rubalcaba et al., 2012). This way, some scholars have discussed service innovation capabilities and crafted their own conceptual models or definitions. A majority of studies date roughly from the late 2000's, which indicates the relative little discussion on this topic. Although many of these studies have gathered empirical data to measure the fitness of their propositions, they still do not address precisely what in our view are the constructs of innovation capabilities in services. There are two main reasons for that. First, they frame their ideas around capabilities for new service development (see Froehle & Roth, 2007; Gryszkiewicz, Giannopoulou & Barlatier, 2013; Janssen, Castaldi & Alexiev, 2016); or second, they have explored innovation within a dynamic capabilities approach (see also Agarwal & Selen, 2009; den Hertog, van der Aa & de Jong, 2010; Pöppelbuß et al., 2011; Kindström, Kowalkowski & Sandberg, 2013).

The way we understand, these studies use a narrow view of innovation capabilities that do not account for different forms of innovation, i.e. new processes, markets, business models, customer management, etc. This argument agrees with Schumpeter's (1934) seminal definition of innovation, which comprehends the introduction of new products, new methods of production, opening new markets, and so on.

Therefore, in the remainder of this section we introduce a framework of innovation capabilities that is well adjusted to manufacturing firms. We then describe some elements already found on the literature to adapt this framework to services.

Defining a Conceptual Model

Some authors have tried to operationalize innovation capabilities (Guan & Ma, 2003; Yam et al., 2004), focusing its arguments on firm's technological capability (Lall, 1992; Bell & Pavitt, 1995). It is manifested by R&D departments and has a positive relationship with innovation, but is not sufficient for leveraging new products and processes. Since innovation may be the result of a complex process and depend on a set of complementary capabilities, it is often dispersed throughout a firm's structure (Zawislak, Fracasso & Tello-Gamarra, 2018). Moreover, firms that do not invest in technological capabilities, which is the case of services, may also present innovative performance.

Considering that, Zawislak et al. (2012) propose a model that understands innovation capabilities as the firm's technological learning process, translated into product development and operations of that technology, as well as managerial and transactional routines. The integration between those four capabilities effectively promotes innovation, which creates competitive advantages (Zawislak et al., 2012, 2013, 2014; Alves et al., 2017). The framework is described on Figure 1.

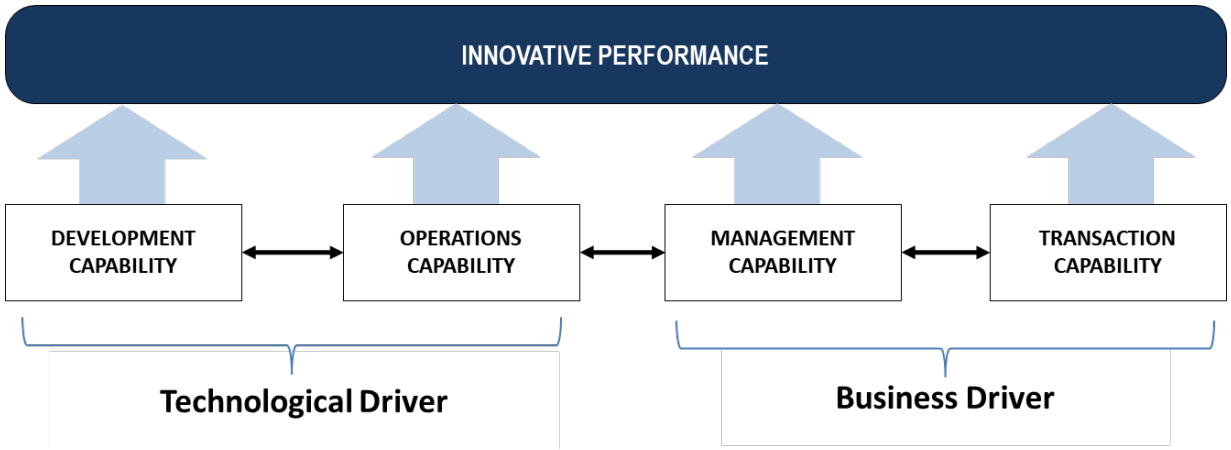

Figure 1. Innovation Capabilities Framework (Zawislak et al, 2012)

The model is composed by two main drivers: technology and business drivers. The technological aspect concerns knowledge creation, assimilation and application, and implies product and process innovation. Business capabilities are more related to strategy and administrative issues, transforming knowledge into management of people and organizational capacity on the one hand, and marketing and customer relations on the other. Initially developed for manufacturing firms, the model assumes that all companies should have, even in different measures and impacts, all four capabilities (Reichert et al., 2016; Alves et al., 2017).

Following Zawislak et al. (2012) model, an innovation capabilities framework should have also four main capabilities representing the innovation process: it starts from idea generation and knowledge searching, ending at the delivery of value for a customer. But distinctively, this framework lack on considering services specificities, such as production and consumption simultaneity, or direct customer interface.

Therefore, we have searched the literature for elements of services that define each innovation capability and synthesized them on Table 1. Combined, the four innovation capabilities affect firm's innovative performance.

Table 1. Features of Innovation Capabilities in Services

Capability	Services	Authors
Development capability	• Arranging available technology; • Co-creation; • Interactive process.	Gallouj & Weinstein (1997); Prahalad and Ramaswamy (2004); Djellal, Gallouj and Miles (2013).
Operations capability	• Uncertainty, variability, prevision difficulty; • Definition of rigorous, repeatable standard operational procedures; • Effectively communication with customers; • Adjustable user-producer interface; • Resource flexibility; • High customization; • Customer' resources integration into the service system.	Moeller (2008, 2010); Schmenner (2004); Corrêa et al. (2007).
Management capability	• Higher risk adoption; • Risk sharing with customers; • Managing the degree of interaction between employees and customers; • Effectively personnel training and engagement.	Lightfoot, Baines & Smart (2013); Li, Yang, & Wu (2009); Chang (2016).
Transaction capability	• Keeping the relationship during and after the service provision; • Trust and commitment; • Information sharing and transparency; • Informal exchange; • Managing customer experience and journey; • Customer retention and life-time value; • Loyalty programs.	Zeithaml, Bitner & Gremler (2010); Kreye, Roehrich & Lewis (2015); Berry (1995); Lemon & Verhoef (2016); Kumar & Reinartz (2016).

METHOD

The literature review presented so far explicit some efforts on current literature that build an integrated concept of innovation capabilities in service organizations, but there gaps still to be covered. Thus, following the goal of identifying the elements of innovation capabilities in service organizations, it becomes necessary an empirical effort with an exploratory qualitative approach in order to uncover what routines and activities comprise those capabilities. As we have presented, we use Zawislak's et al. (2012) model of innovation capabilities as the framework of analysis for this investigation. The procedures to carry out all the research are described as follows.

Cases Selection

An exploratory research using case study method requires a strict criteria to select the target firms (Yin, 2001). Because of that, we designed a deep investigation of six service firms following

the typology proposed by Gadrey (2000). As the author mentions, there are three "demand rationales" for services: assistance or intervention rationale; provision of technical capacities rationale; and entertainment or performance rationale. For this study, we decided to encompass only the first two rationales. The decision to not consider 'live performance rationale' services is because of its little potential to increase productivity, depending basically on human interaction.

Therefore, there are two main criteria to select the cases for this research. First, we searched for mature companies that have, at least, five years of operations and stable revenue streams. Because the innovation capabilities model proposed in Zawislak's et al. (2012) study assumes that every firm has all four capabilities and none of them are null, we assume that scrutinizing a successful innovative firm will unveil how innovation is organized and show evidences about the routines comprehending each service innovation capability. A second criterion for selecting cases is to search for firms operating in diverse markets, covering both providers for corporate clients (b2b) and final consumers (b2c). This allows a clearer perspective of the nuances that different service activities may present in terms of customer relationship and role of technology, for instance, but also mitigates the risk of sectoral bias in our findings. Table 2 presents a brief description of the firms investigated in this study.

Table 2. Cases Selected Overview

Firm	**Type**	**Market**	**Sector**	**Foundation**	**Employees**	**Revenue**
Firm 1	Assistance/Intervention	B2C	Transportation	1939	1.100	R$ 300M
Firm 2	Technical capacity	B2C	Financial services	1902	28.000	R$ 1B
Firm 3	Assistance/intervention	B2B	Management consulting	2007	350	R$ 100M
Firm 4	Technical capacity	B2B	Software	2003	200	R$ 350M
Firm 5	Assistance/intervention	B2C	Food services	2004	160	R$ 16M
Firm 6	Assistance/intervention	B2C	Food services	2010	36	R$ 5M

Data Collection

Qualitative research demands gathering multiple sources of data in order to mitigate biases and to validate the information. Interviews were made through videocalls and the secondary data was also found on pages available on the internet. It is also worth noting that all field research was carried out during the Covid-19 pandemic.

After structuring a research protocol, we conducted semi-structured interviews with top management within the firms selected as our primary data source. The aim was to obtain an in-depth perspective of how firms organize themselves for innovation throughout its different departments. Table 3 details each interview. On total, we recorded 466 minutes (around 8 hours), which were all transcribed for further analysis.

Table 3. Interviews Summary

Firm	**Interviewees roles**	**Duration**	**Date**
Firm 1	Chief Innovation Officer	75 minutes	March, 20 2020
Firm 2	Product Manager; Product Analyst	73 minutes	March, 30 2020
Firm 3	Partner (Head of Innovation)	64 minutes	March, 31 2020
Firm 4	Chief Marketing Officer	61 minutes	March, 31 2020
Firm 5	Head of New Businesses; Franchise Manager	84 minutes	May, 07 2020
Firm 6	Chief Executive Officer	109 minutes	May, 07 2020
Total	*8 interviewees*	*466 minutes*	

As Yin (2001) explains, the use of multiple sources of evidence is relevant to give significance to case studies results. Therefore, as a complement for the interviews, we accessed different sources of information, such as companies' webpages, press articles, videos and presentations provided by the firms. Those documents were also used to triangulate the findings. The amount of secondary data consisted on 107 documents from all six firms.

Data Analysis

All data collected was systematized for further content analysis (Bardin, 2009; Minayo, 2008) using MS Excel. According to Bardin (2009), this technique represents a set of communication analysis that aim to obtain, by systematic and objective procedures, the message content and indicators that allow the inference of relative knowledge. On a first round of analysis, primary and secondary data were codified and classified into the four categories of analysis, which are the innovation capabilities in the model (i.e. development, operations, management,

transaction). A second round of analysis searched for eliminating duplicate information and grouped similar codes into what we call “elements”.

RESULTS AND DISCUSSION

The main results of this study are twofold. First, it was possible to depict the innovation capabilities of service organizations, defining the elements each capability comprises. Second, some additional characteristics were able to be identified, leading us to an adjusted definition of innovation capabilities in services. One the characteristics this analysis sheds light is the multiple overlaps between routines, processes, and resources. Those routines which in the case of manufactured goods the boundaries are sharper and well defined, in the case of services their frontiers become diffuse. We discuss all these issues as follows.

The Elements of Innovation Capabilities in Services

The elements that constitute an innovation capability provide the detailed routines, activities, resources, and knowledges that are involved in this category. Depicting these elements permits the identification of avenues for promoting change in organizational forms and processes to drive the innovative behavior of service organizations. As you will notice, some elements will appear in more than one capability. As we argue, this means that innovation capabilities in services are overlapped and that their boundaries are diffuse. We stretch the discussion on this topic later.

Therefore, in this section we present the elements depicted from each innovation capability in service organizations and present a brief description of them. The elements identified for each innovation capability are presented on Figure 2.

Development Capability. The results present six elements of the Development Capability in services. This capability comprehends both external activities, such as interactions with multiple agents to insight generation or to co-create solutions, and internal activities like data collection and analysis and innovation projects management.

Operations Capability. There are eight elements identified in the Operations Capability of service organizations. They account for the all the aspects of running the service system smoothly from a firm perspective, and conveniently from an user perspective. Constant interactions between provider and consumer are at the core of this kind of capability.

Management Capability. The group of activities comprised on Management Capability concerns the organization structure as a whole that sustains the operations running smoothly. It involves more objective activities, such as defining a strategic plan or defining back-office routines and measures, but it also involves broad activities, like stimulating collaboration between peers and managing the company's culture.

Transaction Capability. The majority of elements were identified on Transaction Capability, totalizing ten elements. They express the strong necessity of customer interaction and the effort of the organization to deliver a segmented and customized service for its user particular necessity. Marketing and sales activities are fundamental, but also managing points of contact with users, like employees and partners, to provide the right experience.

External interaction Innovation management Insights/cocreation Quality and improvement Research and development Service design **Development Capability**	Engagement/collaboration Organizational structure Partners orchestration Quality and improvement Recruitment, training & development Risk management Routine management Strategic planning **Management Capability**
Operations Capability Availability Information sharing/communication Knowledge breadth Quality and improvement Service design System orchestration User engagement/trust User integration	**Transaction Capability** Customization/segmentation Employee competence Information sharing/communication Marketing Partners orchestration Profit leverage Quality and improvement Sales Service design User engagement/trust

Figure 2. Elements of Innovation Capabilities in Services

Towards a Definition of Innovation Capabilities Adequate for Services

As we have seen, the discussion about innovation capabilities have traditionally taken technological innovation as its unit of analysis. This movement has certainly been beneficial for a great advancement to the field, but it still cannot cover a wide variety of firms. Service

organizations operate in a particular way, and its characteristics have to be taken into consideration when analyzing their innovative behavior. Our findings evidence some of these characteristics. For instance, there is a clear overlap between innovation capabilities, and services relational character shape how firms organize their capabilities in this kind of organization.

The analysis of Figure 2 shows that some elements are present in more than one capability. "Quality and Improvement" and "Service Design" are two examples. What is clear is that there are overlaps between every innovation capability. It is difficult to define with precision what constitute the activities and the routines exclusively from each capability. In this sense, what we conclude is that the boundaries of each innovation capability are diffuse in service organizations. This leads us to recognize the difficult association of causes to the innovative behavior of service firms, or in other words, the modification of organizations' existing resources and capabilities (Agarwal & Selen, 2009).

An outcome from all those characteristics found on services literature and confronted with empirical evidences is that innovation capabilities in services relate to each other in a multidimensional way, and impact one another in diverse directions. Additionally, all innovation capabilities present permeable frontiers that are accessible to the organization's external environment. As we have mentioned earlier, service organizations face the necessity of constantly interacting with resources from customers, partners, or other stakeholders, that will influence how they organize their own resources. Our data analysis expresses this characteristic in multiple elements.

CONCLUSION

This study uncovered the elements of innovation capabilities in services and proposed a new path for further investigation of the innovative behavior of service organizations. Departing from Zawislak et al. (2012) framework, which suits manufacturing firms well, we have found elements of each innovation capabilities that are adjusted to services.

Many of the elements found on the empirical evaluation had already been mentioned on literature, which suggests the cohesion of the present study and a good design of the research procedures. As already expected, services are in fact less dependent on R&D routines and more targeted to customer interaction in order to generate innovation. On the other hand, some new

elements appeared as possible elements from where to derive firm's innovative behavior, such as "Strategic Planning", on Management Capability, or "Availability", on Operations Capability.

This study has its own limitations. For instance, the number of firms studied and the volume of interviews may not be sufficient to generalize the findings. Therefore, we suggest further studies to either stretch the investigation for a broader number of cases, or to test quantitively these findings to verify the fitness of these constructs and to define how they impact firms' innovation outcomes.

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