ADMINISTRAÇÃO:
CIÊNCIA E TECNOLOGIA, ESTRATÉGIA, ADMINISTRAÇÃO PÚBLICA E ESTUDOS ORGANIZACIONAIS 2

Clayton Robson Moreira da Silva
(Organizador)

Atena Editora
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Ciências Humanas e Sociais Aplicadas

Administração: ciência e tecnologia, estratégia, administração pública e estudos organizacionais 2

Editora Chefe: Profª Drª Antonella Carvalho de Oliveira
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Edição de Arte: Luiza Alves Batista
Revisão: Os Autores
Organizador: Clayton Robson Moreira da Silva

Dados Internacionais de Catalogação na Publicação (CIP)

A238 Administração: ciência e tecnologia, estratégia, administração pública e estudos organizacionais 2 / Organizador Clayton Robson Moreira da Silva. – Ponta Grossa - PR: Atena, 2021.

Formato: PDF
Requisitos de sistema: Adobe Acrobat Reader
Modo de acesso: World Wide Web
Inclui bibliografia
ISBN 978-65-5706-881-6
DOI 10.22533/at.ed.816210903

1. Administração. 2. Estratégia. I. Silva, Clayton Robson Moreira da (Organizador). II. Título.

CDD 658

Elaborado por Bibliotecária Janaina Ramos – CRB-8/9166

Atena Editora
Ponta Grossa – Paraná – Brasil
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Atena Editora
Ano 2021

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Atena Editora
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APRESENTAÇÃO

O livro “Administração: Ciência e Tecnologia, Estratégia, Administração Pública e Estudos Organizacionais” é uma obra publicada pela Atena Editora e divide-se em dois volumes. Este segundo volume reúne um conjunto de vinte e sete capítulos, em que são abordados diferentes temas que permeiam o campo da administração. Compreender os fenômenos organizacionais é o caminho para o avanço e a consolidação da ciência da administração, possibilitando a construção de um arcabouço teórico robusto e útil para que gestores possam delinear estratégias e tomar decisões eficazes do ponto de vista gerencial, contribuindo para a geração de valor nas organizações.

Nesse contexto, compreendendo a pertinência e avanço dos temas aqui abordados, este livro emerge como uma fonte de pesquisa rica e diversificada, que explora a administração em suas diferentes faces, uma vez que concentra estudos desenvolvidos em diferentes contextos organizacionais. Assim, sugiro esta leitura àqueles que desejam expandir seus conhecimentos por meio de um material especializado, que contempla um amplo panorama sobre as tendências de pesquisa e aplicação da ciência administrativa.

Além disso, ressalta-se que este livro visa ampliar o debate acadêmico, conduzindo docentes, pesquisadores, estudantes, gestores e demais profissionais à reflexão sobre os diferentes temas que se desenvolvem no âmbito da administração. Finalmente, agradecemos aos autores pelo empenho e dedicação, que possibilitaram a construção dessa obra de excelência, e esperamos que este livro possa ser útil àqueles que desejam ampliar seus conhecimentos sobre os temas abordados pelos autores em seus estudos.

Boa leitura!

Clayton Robson Moreira da Silva

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TOWARDS A SERVICE INNOVATION CAPABILITIES MODEL

Data de aceite: 01/03/2021

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ABSTRACT: This essay makes a theoretical approach between the concepts of innovation in services and innovation capabilities and aims to define the concept of service innovation capability. An extensive literature review was carried out in order to understand the links between those two concepts and, despite other attempts on the literature, none have explicitly defined the concept of service innovation capability. This way, we use Zawislak's et al. (2012) model of innovation capabilities (product development, operations, management, and transaction) to evaluate the relevant aspects of consideration for a further framework modelling for services. This study demonstrates that development capabilities are related to new ways of arranging the available technology to deliver value for the customers through co-creation experiences; operations capabilities deals with the reduction of uncertainties for both customers and for the firm; management capabilities are related to risk sharing; and transaction capabilities encompasses the ability to maintain relationships.
KEYWORDS: Service, Innovation, Capabilities.

RESUMO: Este ensaio faz uma aproximação teórica entre os conceitos de inovação em serviços e capacidades de inovação e tem como objetivo definir o conceito de capacidade de inovação em serviços. Uma extensa revisão da literatura foi realizada a fim de compreender as ligações entre esses dois conceitos e percebeu-se que, apesar de outras tentativas na literatura, nenhuma definiu explicitamente o conceito de capacidade de inovação de serviço. Dessa forma, utilizamos o modelo de Zawislak et al. (2012) de capacidades de inovação (desenvolvimento de produto, operações, gestão e transação) para avaliar os aspectos relevantes a serem considerados numa modelagem alternativa dessa estrutura para serviços. Este estudo demonstra que as capacidades de desenvolvimento estão relacionadas a novas maneiras de organizar a tecnologia disponível para entregar valor aos clientes por meio de experiências de cocriação; as capacidades de operações tratam da redução de incertezas tanto para os clientes quanto para a empresa; as capacidades de gerenciamento estão relacionadas ao compartilhamento de riscos; e as capacidades de transação abrangem a habilidade de manter relacionamentos.
PALAVRAS - CHAVE: Serviços, inovação, capacidades.

If the 20th century is known as the age of machines and large scale production, the 21st century could be considered the age of services. Not only there is an increasing relevance of

service industries in the global economy, along with a deindustrialization process worldwide, there is also a servitization process of manufactured goods that is demanding rigorous efforts from the business environment. If, firstly, services acted as support activities for manufacturing, now they represent entire profitable industries that has recognizable value in global economy. All of this is made viable because of the high pace of changes in technologies and markets due to digital transformation of industries and also the increasing investment on knowledge to shape market dynamics (in detriment of investing in land, capital goods, or labor). Those settings permit the creation of new business models that are capable of revolutionizing entire industries. For instance, McKinsey Global Institute (2019) reports that services play a growing (and undervalued) role in global value chains: "in the future, the distinction between goods and services will continue to blur as manufacturers increasingly introduce new types of leasing, subscription, and other 'as a service' business models, […] which will be increasingly important for how companies and countries participate in global value chains" (McKinsey Global Institute, 2019).

Innovation, thus, is key if firms in all industries aim to keep growth, profitability and competitive advantages on the market. It is the only factor that can lead companies to sustainable results. Moreover, in order to create its successful trajectory, firms must be able to efficiently orchestrate resources to generate innovation. The key question here is, if innovation derives from technological advancement, and if service innovation do not necessarily follow a technological trajectory (Gallouj and Weinstein, 1997), then services are not innovative? The answer is certainly no. Innovation in services has its specificities and do not follow the same logic as goods. In fact, innovation studies have been focused on manufactured goods, while less attention has been paid to services. Also, scholars that have paid attention to services often relate it to operations or marketing management literature. Although there is a whole body of literature, journals and scholars on the topic, there is still space for research on the innovation studies area to cover service innovation.

Despite technological development, service firms or business units are able to innovate due to their specific capabilities (Nelson & Winter, 1982) that enable firms to be different from each other and to create competitive advantages. That group of capabilities slightly differ from those of manufacturing and we call them "service innovation capabilities". They involve more customer relationship, risk sharing and unpredictability and affect not only how a firm provides the service but also how it organizes itself to manage both their own but also customer resources to deliver value and make Schumpeterian profits.

Yet, there is a lack on the understanding in the literature about the relationship between services and innovation capabilities, and no one has yet made it clear what the variables of this relationship are. Those are the understandings that will provide the basis for the construction of a model. Many has been said about services and many more about innovation capabilities, so this is a binding relationship. To analyze the innovation capabilities of the firm, we depart from the model proposed in Zawislak et al. (2012) article. The authors

stress the idea that “innovation capability is the ability to absorb, adapt and transform a given technology into specific operational, managerial and transactional routines” (Zawislak et al., 2012), crafting their model on the basis of previous studies of technological capability (Lall, 1992; Bell & Pavitt, 1995). Although this model enhances the discussion of innovation capabilities when it considers both the firm and the organization of innovation locus, it is notably adjusted to manufacturing firms.

In this sense, our research question is “what are service innovation capabilities?”. This paper aims to unveil what are the theoretical foundations of service innovation capabilities, how do service specificities relate to and shape innovation capabilities, and what empirically testable generalizations are relevant in order to create a precise framework. We do this by making a theoretical approximation between the concepts of service innovation and innovation capabilities, which allow us to define the concept of service innovation capability. This way, we are able to adapt Zawislak’s et al. (2012) model considering services specificities and to propose a new framework.

This paper is structured as follows: the first two sections conceptualize service innovation and innovation capabilities, grounding the basis for a preceding section that discusses service innovation capability and presents an adapted conceptual model that generates a new framework. We finish the paper with limitations of this discussion and future research suggestions.

SERVICE INNOVATION

Economic development has been a function of technological change, which in a micro perspective is a factor that disestablishes a firm’s ability to allocate resources, but also enable its growth (Griliches, 1957; Penrose, 1959; Arrow, 1962, Schmookler, 1962; Chandler, 1977; Nelson & Winter, 1982). This way, innovation literature has emerged on the investigations of the growing industrial markets and focused, for instance, on describing the sources of invention, the influence of science for R&D departments, and the role of innovation on the long run (Fagerberg & Verspagen, 2009).

But since the late 1980’s the world has observed a more refined change in economic structure and the academic literature has followed it through. This strong transformation was led by the improvements on information and communication technologies that were more likely to widespread within service industries than in manufacturing sectors, which shed light into economic activities that had always been surpassed. As Barras (1986) puts it, “the application of information technology in a wide variety of previously ‘pre-industrial’ service activities will provide the motor for the next major wave of expansion of output and employment in advanced industrialized economies, and that an understanding of this new source of economic growth requires the development of a theory of innovation in services”. Despite its underestimate historical role, “services are not just now becoming important, but

just now they are becoming more apparent in the economy as specialization increases and as less of what is exchanged fits the dominant manufactured output classification system of economic activity" (Vargo and Lusch, 2004).

In this sense, we use a demarcation approach (Drejer, 2004) of service innovation to conduct this discussion, which we evidence the distinctive features of service innovation. It is worthy note, though, that service innovation shares commonalities with the traditional idea of innovation. Services in essence are processes that are coordinated to deliver a result, a performance. One might suppose that innovations might happen during the execution process because every delivery is different from another. From one perspective it is true, but variability is an intrinsic characteristic of services that we will discuss later. In this point, we agree we Drejer (2004), who argues that "an innovation, which can contribute to economic development and promote growth and welfare, has only taken place when a new element is developed, which can be applied in relation to several customers". Therefore, an activity that is performed during a single case is considered a piece of learning. The formalization of this new knowledge is required to change the service itself or to create a new service. On a time frame, formalization occurs after the provision of the service and, in general, is not performed by the front line operator, but by a back-office actor supporting the process. This structure is similar to the linear innovation process that is applied to manufacturing. Yet, it is important to differentiate innovation in services from organizational learning. In the case of services, innovation "is not based on scientific development as an R&D department but on its function of generating and collecting ideas and sorting them according to the strategy. The innovation process is generally an unsystematic search-and-learning process" (Sundbo, 1997).

With all that being said, some characteristics of service innovation are worth mentioning. A process of delivering service innovations depends, first, on the key characteristics of services that distinguish them from goods and modify the nature of innovation in those kind of firms. Second, there is a technological setting into which the service is embedded and that its resources are employed that also shape innovation trajectories. Third, and finally, the operations and processes involved during the provision of the service and the role of customers reflect other need for leveraging innovations. We cover all those aspects in the remaining of this section.

SERVICES CHARACTERISTICS

The literature around services have identified four main characteristics of this kind of value offering that differ uniquely from traditionally studied goods. Intangibility, heterogeneity, inseparability and perishability (IHIP) have been regularly cited as the their fundamental difference (Zeithaml, Parasuraman, and Berry, 1985), but have also been criticized. In other words, services are irreversible, non-stockable, interactive and variable.

Intangibility means that services are performances, rather than objects, they cannot be seen, felt, tasted, or touched in the same manner in which goods can be sensed. Inseparability of production and consumption involves the simultaneous production and consumption which characterizes most services. Heterogeneity concerns the potential for high variability in the performance of services. Perishability means that because services are performances that cannot be stored, making it difficult to synchronize supply and demand The literature suggests that each of these unique characteristic of services leads to specific problems for service managers and necessitates special strategies for dealing with them (Zeithaml, Parasuraman, and Berry, 1985). Table 1 presents a synthesis of services specificities.

	Characteristics of services applied to aspects of services
Intangibility	The provider is forced to offer a performance promise, which is intangible.
Heterogeneity	Difficulty in standardizing services related to production performance of different producers. Customer resources are heterogeneous by nature, because they belong to the customers themselves.
Inseparability	Production and consumption occur simultaneously. Customer resources are necessary for service provision and must be present for the resource formation.
Perishability	The unavailable option of storing or stockpiling services. The capacity perishes if not activated by the integration of customer resources.

Table 1 – Services specificities

Source: Adapted from Moeller (2010).

These characteristics, i.e. IHIP, has forced a focus on interaction and relationships (Vargo and Lusch, 2004) into the discussion of services and strengthens the discussion on innovation. Intangibility, for instance, means a difficulty to evaluate the quality of the service, while inseparability implicates in a ease of perceiving dissatisfaction and correcting failures throughout the process. All of this require another set of capabilities from service firms, which need to manage the influences of risks and costs of operations, the uncertainty about capacity and demand fluctuations, and the variability of customer interactions and behaviors, factors that intricates processes standardization.

TECHNOLOGICAL SETTING

As for traditional manufactured goods innovation, the case of services requires an analysis of the available technology which a development process may take place. This process of generating service innovations could result in new service development, quality improvements, or new means and processes for delivering a service. Utterback and

Abernathy (1975) argue that “there will be a strong mutual relationship between a firm’s choice of a strategy and its environment and given its strategy, between the types of product and process innovations that a firm undertakes and the way its productive resources will be deployed, particularly the state of development achieved in its production processes”. A firm will apply a given technology setting according to its “states of development of technological capability that enable a firm to choose and use technology to create strategic competitive advantage” (Rush, Bessant and Hobday, 2007). We discuss firm’s technological capability further.

Given that technological setting, services are processes that integrate those elements in order to provide a result or a benefit. In this sense, service firms deploy processes and resources, both tangible and intangible, to offer value for its market of interest into the form of a service. This is what research on operations management call “value package” (Corrêa et al., 2007). Value package is the combination of both services and goods as a unit for delivering a product for a customer. Because of that blurring distinction between services and goods, a value package. A service value package includes: explicit service, implicit services, facilitating goods, support facilities, information. For instance, a restaurant assemble its facilities and techniques (intangible) in a proper manner to provide a meal (tangible) for a customer (Corrêa et al., 2007). Knowing how to improve the use of these goods, or replacing them with others more efficient is part of the capacity for operational innovation.

Another aspect of interest are the trajectories of innovations in services that do not follow a technological path. Gallouj & Weinstein (1997) explain that “innovations in services do not follow a technological trajectory, but trajectories in which technologies are only one vector among several others. Likewise, Sundbo & Gallouj (1998) show that innovation in services can occur in four ways: product innovation, process innovation, organizational or managerial innovations, market innovations. Hence, service innovation in general involves the development of new procedures and concepts rather than new core technologies (Nijssen et al., 2006).

ROLE OF CUSTOMERS

“I believe that customer integration plays a major role in this paradigm shift and is the reason for the growing similarity between goods and services. Customer integration is the incorporation of resources from customers into the processes of a company” (Moeller, 2008). “Customer integration is thus defined as combining customer resources (persons, possessions, nominal goods, and/or personal data) with the company resources, in order to transform customer resources” (Moeller, 2008). “Companies willing to compete through service are advised to collaborate (co-create and co-produce) with customers and network partners to enhance knowledge, the fundamental source of competitive advantage” (Lusch,

Vargo, and O'Brien 2007).

It is necessary to change perspectives on many management practices. Providing information access (Prahalad and Ramaswamy, 2004), for instance, is essential to collaborate for value co-creation, but also exposes the firm to higher risks. This is a complete shift on the logic of operations and development in many manufacturing industries, but necessary in the case of services. It also influences customers' perceived quality, such as the capability of the provider to be reliable, responsive, and empathetic (Parasuraman, Zeithaml, and Berry, 1988). As Prahalad and Ramaswamy (2004) say, "companies have traditionally benefited from information asymmetry between the consumer and the firm". The authors also describe the importance of experimentation, community building and the role of interactions for enabling value creation.

When introducing the concept of a service dominant logic Vargo and Lusch (2004) stand that services are more customer centric. "This means more than simply being consumer oriented; it means collaborating with and learning from customers and being adaptive to their individual and dynamic needs. In their view, "value is defined by and co-created with the consumer rather than embedded in output" (Vargo and Lusch, 2004). And all of this will influence services operational capabilities. If we speak of innovation, the object of innovation must be validated in a transactional relationship. Therefore, innovation in service only exists at the end of this process because I need the provision and it happens at the service encounter on a user-producer interface. This is a dynamic process where production and consumption happen at the same time. There is a technical basis in every service that is provided. The ability to offer the service can be increased by increasing the participation of the client in the process (co-producer), discharging the firm's workforce.

INNOVATION CAPABILITIES

Every firm is embedded in a sectoral environment with a given technology as technological standard, that is, with elements that give a certain homogeneity to all the actors of that environment. When competing on the market, what makes the difference are not those elements that are common to all, but what the firm can do differently, in essence, how it manages its innovation capabilities. It is that firm's knowledge accumulated of how to innovate that can make them successful and sustain competitive advantages.

In this sense, capability can be defined as 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" (Nelson & Winter, 1982; Amit & Schoemaker, 1993; Helfat & Peteraf, 2003; Winter, 2003). "For managers, the challenge

is to identify, develop, protect, and deploy resources and capabilities in a way that provides the firm with a sustainable competitive advantage and, thereby, a superior return on capital. Unlike resources, capabilities are based on developing, carrying, and exchanging information through the firm's human capital." (Amit & Schoemaker, 1993). Diversified firms have a portfolio of services and a portfolio of businesses, but it is important to understand a view of the company as a portfolio of its competences (Prahalad & Hamel, 1990), or in our terms, a portfolio of capabilities. "To be capable of some thing is to have a generally reliable capacity to bring that thing about as a result of intended action. Capabilities fill the gap between intention and outcome" (Dosi, Nelson and Winter, 2000).

Similarly to the definition of a general capability (or organizational capability), the literature of strategic management has been discussing in the last two decades the concept of Dynamic Capabilities as the "capacity to renew competences so as to achieve congruence with the changing business environment" (Teece, Pisano and Shuen, 1997) by adapting, integrating and reconfiguring firm's knowledge and resources to sustain competitive advantages. Though similar, dynamic capabilities are not innovation capabilities. Strictly speaking, dynamic capabilities are in a spectrum slightly different from the capabilities of innovation. By definition, dynamic capabilities involve adaptation and change (Helfat & Peteraf, 2003) and alter how a firm currently makes its living (Helfat & Winter, 2011), but "dynamic capabilities do not directly affect output for the firm in which they reside" (Helfat & Peteraf, 2003), which is the purpose of innovation. The characteristic of a capability of being dynamic reflects its indirect contribution to the output of the firm through an impact on other capabilities, yet not necessarily those which, when assembled, address techno-economic problems (Alves et al., 2017).

Thus, innovation capabilities are considered a different kind of assets or resources that include technology, product, process, knowledge, experience and organization. It is tacit and is correlated closely with interior experiences and experimental acquirement. It is the ability to quickly introduce new products and to adopt new processes (Guan & Ma, 2003; Yam et al., 2004). Technological capability (Lall, 1992) has a positive relationship with innovation, but is not sufficient for leveraging new products and processes. "Innovation may be the result of a complex process and depend on a set of capabilities that, although often dispersed throughout the company's structure, can still be aligned with its strategic requirements. This set of capabilities form a meta-capability known as innovation capability" (Zawislak, Fracasso & Tello-Gamarra, 2018).

In this study we use Zawislak's et al. (2012) model, wherein innovation capability is understood 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) and the model is described in Figure 1.

The model is composed by two main drivers: technological capabilities and business capabilities. The technological aspect concerns knowledge creation, assimilation and application. Business capabilities are more related to the business itself, transforming that knowledge into management of people and organizational capacity on the one hand, and marketing and customer relations on the other. This is the arrangement of innovation capabilities that conform both firm and organization as loci for innovation to take place.

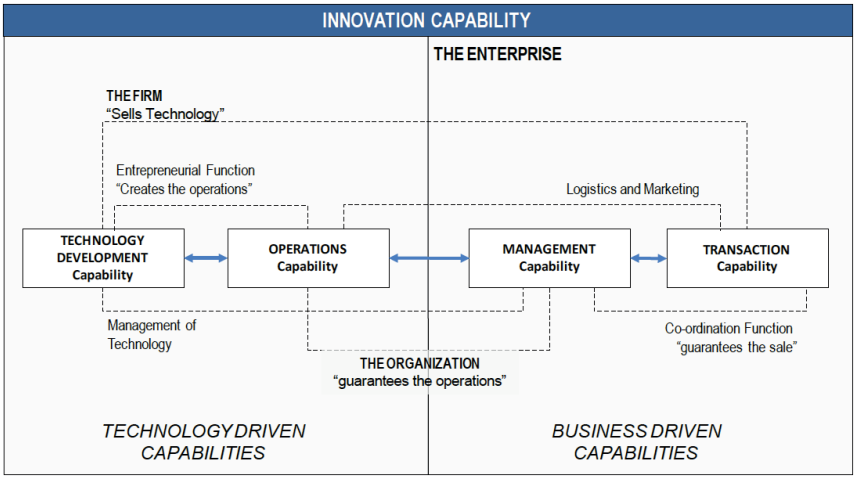

Figure 1 – Innovation Capabilities Framework

Source: Zawislak et al. (2012).

SERVICE INNOVATION CAPABILITIES

It has been reviewed so far that service innovation has its specificities that differ from traditional approaches of linear innovation. Intangibility, heterogeneity, inseparability and perishability impose lots of challenges to service firms, adding to it the crucial role of customers to provide their own resources for the service to be produced, but also for innovation generation. In addition, we have also discussed 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.

We now turn our discussion to the integrative idea of those two concepts mentioned before. As we argue, there is little effort in the literature to consolidate a concept of "service innovation capability", first because mainstream innovation studies are focused on industrial innovation processes, and second, but consequently, capabilities for innovation are derived from a technological capability a firm possess within its R&D department, which does not frequently occur in service firms. Some scholars have discussed service innovation

capabilities and crafted their own conceptual models or definitions. Table 2 presents a few recent studies on the topic that make this approximation:

Reference	Study contribution
Ethiraj et al. (2005)	Client-specific capabilities are a function of repeated interaction with a given client across multiple projects over time. Project management capabilities are acquired through deliberate and persistent investments in infrastructure (systems and processes) and training.
Froehle & Roth (2007)	Theoretical framework that integrates both process- and resource-oriented perspectives of new service development.
Agarwal & Selen (2009)	Service organizations increasingly create new service offerings that are the result of collaborative arrangements operating on a value network level. Higher-order dynamic capabilities in services are generated as a result of collaboration between stakeholders. Furthermore, it is through collaboration and education of the stakeholders that additional higher-order capabilities emerge (customer engagement, collaborative agility, entrepreneurial alertness, and collaborative innovative capacity), all of which influence the service innovation outcome.
den Hertog, van der Aa & de Jong (2010)	Identify a set of six dynamic capabilities for managing service innovation and apply a dynamic capabilities view (DCV) of firms for managing service innovation. The study proposes that successful service innovators, which may include manufacturing firms developing into providers of service solutions, outperform their competitors in at least some of these capabilities.
Pöppelbuß et al. (2011)	The design and implementation of new or enhanced service offerings is a dynamic capability because the service organization is required to sense impulses for innovation, seize meaningful ways for change, and to finally transform its operational capabilities to the desired state. A new framework is proposed which structures service innovation capability into the areas of sensing, seizing, and transformation.
Gryszkiewicz, Giannopoulou & Barlatier (2013)	Define service innovation capability as ability to efficiently and effectively combine resources to successfully execute the NSD process, in order to achieve the strategic service innovation goals.

Kindström, Kowalkowski & Sandberg (2013)	There is a need for product-centric firms to compete in the market by adding services to their portfolio, which requires a greater focus on service innovation if they are to remain competitive. A major challenge associated with this shift is the management of the essential dynamic capabilities of sensing, seizing, and reconfiguring needed for service innovation.
Janssen, Castaldi & Alexiev (2016)	The development of new services is becoming a major concern for firms throughout the entire economy, there is only little insight in the organizational antecedents of service innovation. Therefore, attention is shifting toward the actual capabilities that allow a firm to source ideas and convert them into marketable service propositions. The paper provides the operationalization of a set of dynamic service innovation capabilities (DSICs).

Table 2 – Service innovation capabilities on current literature

Source: Authors.

As can be seen, there are few studies on this topic and they date roughly in the last fifteen years, which indicates the still available gaps to be covered. Two studies have stretched further the concept of service innovation capabilities: Den Hertog, van der Aa and de Jong (2010) develop a framework considering different dimensions of service innovation and relate it with the dynamic capability view of the firm; whilst Janssen, Castaldi and Alexiev (2016) test this same framework with a quantitative analysis of 391 Dutch firms.

Notably, most of these studies have focused their discussion on two main characteristics: (1) they frame their ideas around capabilities for new service development (NSD), and (2) they have explored innovation within a dynamic capabilities approach (sensing, seizing, reconfiguration). Firstly, in our view the studies use a narrow understanding of innovation capabilities that considers only aspects relative to a firm perspective. There is also a need of an organizational perspective, in a sense that its organization also needs to be developed (i.e. define new routines and processes, hire new people with different skills, alter management configuration, etc.) when a company leverage something new to the market. Secondly, other capabilities are susceptible to generate innovations rather than exclusively those dynamic capabilities. These are the ordinary capabilities (Teece, 2014) which matter for enterprise performance, but lack the long-term impact of change management. In fact, Alves et al. (2017) have shown “that operations capabilities are actually ‘ordinary capabilities’. These are a sort of minimum competitiveness capabilities which are routine-based and less dynamic”.

Thus, capabilities, and service innovation capabilities as well, are based on routines, which are a “behavior that is learned, highly patterned, repetitious, or quasi-repetitious,

founded in part in tacit knowledge. Brilliant improvisation is not a routine" (Winter, 2003). "A capability enables repeated and reliable performance of an activity, in contrast to ad hoc activity that does not reflect practiced or patterned behavior" (Helfat & Winter, 2011). Moreover, a service innovation capability is the capacity to learn from and engage customers into an innovation process that is manifested in routines that can be repeated with reliability. In other words, because services are a combination of processes, a service innovation capability can be defined as a massive feat of coordination and orchestration to bring resources together and make it work smoothly (Dosi, Nelson and Winter, 2000) in order to generate value-adding organizational knowledge.

This way, Zawislak's et al. (2012) innovation capability model seems to be a coherent framework to depart a discussion. It considers the organization and firm on an integrated way, understanding the necessity of a coordinator-entrepreneur that is able to both create demand for the firm but also to organize its resources in a proper manner. It is that ability that makes a firm capable of constantly change itself to respond to market necessities. 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.

In this sense, we explicit next some key characteristics that should be taken into consideration if one's desire is to come up with a service innovation capabilities framework. We stretch the discussion for each of the four innovation capabilities proposed in Zawislak et al. (2012).

PRODUCT DEVELOPMENT CAPABILITY

Development capability has a different understanding of the development process for manufactured goods and for service innovation. The former is based on new technology for the creation of new products, materials, processes, etc., while the latter concerns much more on new ways of arranging the available technology to deliver value for the customers. For doing this, "managers must attend to the quality of co-creation experiences, not just to the quality of the firm's products and processes. Quality depends on the infrastructure for interaction between companies and consumers, oriented around the capacity to create a variety of experiences. The firm must efficiently innovate "experience environments" that enable a diversity of co-creation experiences" (Prahalad and Ramaswamy, 2004). The co-creation of this process of services development occur in a iterative way, as it "promotes forms of tailor-made and ad-hoc innovation. It implies an interactive organization of innovation rather than a linear organization" (Djellal, Gallouj and Miles, 2013).

The unique characteristics of services (IHIP) are fundamental to differentiate innovation from manufactured goods. There is, for example, no possibility of patenting a new way of delivering a service or a new business model. That is why a technological

capability is one in many other relevant factors to influence innovations in services (Gallouj & Weinstein, 1997). It is important to recognize how much of all the firm's technological effort really turns into positive outcome in a sense that "the firm must develop a set of complementary capabilities to deal with innovation" (Zawislak et al., 2013).

OPERATIONS CAPABILITY

Operations capability also concerns the fact that, in general due to IHIP characteristics, services have a higher degree of uncertainty over the results that are delivered. Thus, a service innovation capability model should understand how to reduce uncertainties for both customers, in the case of restrict means for previously evaluating outcomes, and for the firm, that suffer from perishable resources. This is made by defining rigorous, repeatable standard operational procedures and effectively communicating it. Co-creation of value also acts reducing uncertainties, which demands in-depth and very time-consuming dialogue. Learning how the firm intensively interacts with customers (Prahalad and Ramaswamy, 2004) and change its processes, while keep operational efficiency is a key aspect of service innovation capabilities.

The degree of intensity of interaction between customer and service process demand an adjustable user-producer interface, greater resource flexibility, different processes, and a higher level of customization of the value package delivery (Corrêa et al., 2007). Because customers input their own resources (Moeller, 2008) and competencies (Gallouj and Weinstein, 1997) in order to receive the value they expected for, a service firm operations must be structured to incorporate it properly. The problem placed is that these resources are not owned by the firm who delivers the service, thus it cannot control its orchestration. Hence, a service innovation capability model comprises the role of customers on a dynamic manner of indirect customer's resource orchestration. It is made by creating a system into which the firm learns, interacts, and responds to customer/user's resources while also deploying its own resources during the service provision.

MANAGEMENT CAPABILITY

To describe a innovation capability is to identify the routine that are embedded in firm's operations, culture and strategy, thus describing aspects that are manageable by the firm. But understanding a service innovation capability model, it is required to understand the role of customers interaction and resource integration. A firm cannot manage the resources that it doesn't control, rather its service innovation capabilities must integrate, but not control customers' resources. This elevated uncertainty for both firm and customer raise the risks of a service operations. The risk that customers may assume when consuming the service, for instance are choosing his or her dish they want to eat in a restaurant, or the location they want to sit on a flight. They don't know how they experience will be. How

it affects firm's operational efficiency and how to manage the resources in order to prevent issues becomes utterly important. In essence, a firm needs to assume risks (i.e. higher costs) in order to provide its customers the possibility of deciding themselves how to use the service provided. Examples on this are the no-show prediction problems that airway or health companies face. "Risk adoption (when a service provider undertakes activities that were formerly the customer's responsibility) and value creation appear to be pivotal factors when considering the design of service-oriented market propositions" (Lightfoot, Baines and Smart, 2013).

In order to develop service innovation capabilities, the firm needs to understand how to share the risk of the operation with customers, rather than take all the risk for it. This will establish the parameters for firm's managerial decision making on the degree of interaction between employees and customers during the service encounter, and also how the user experience, the perceived quality and the customer's expectations are managed and constantly adapted to face customers' needs. In such cases, the attitude of the employees, the level of their training and their engagement with the company alter the quality of the service delivery and the satisfaction perceived by the customers. All those risks mentioned will affect the strategic diversification of offers that the service firm carries out, the business model it applies and the strategic management for evaluating what are the competitive advantages the firm perceives.

TRANSACTION CAPABILITY

In contrast with goods transactions, the relationship between customer and service provider doesn't end right after the transaction itself. A transaction capability in services encompasses the ability to keep the relationship and collect feedback on the utility of the service provided. The superior consumer center that services employ make a shift from a transaction to a relationship focus (Vargo and Lusch, 2004). Likewise, as the level of service complexity of their offering increases, "how developing and maintaining relational capabilities (value-in-context) are more important than contractual capability (value-in-exchange)" (Gaiardelli, Martinez and Cavalieri, 2015). Therefore, a relational capability is "derived from values and processes in the exchange relationship and incorporates the following: trust and commitment, relational capital, information sharing routines and informal exchange" (Kreye, Roehrich and Lewis, 2015).

Coupling access to information with transparency enhances the consumer's ability to make informed choices and impacts its perception of quality. Also, the combination of transparency and risk assessment enhances firm's ability to co-develop trust (Prahalad and Ramaswamy, 2004). Innovating in the whole customer experience, retention actions, relationship management, trust building and customer education are all relevant components to be covered in a service innovation capability model. Hence, successful firms recognize

the necessity to ensure close customer relationships and establish routines that grow new relationships with higher levels of customer engagement and intimacy. There is “a move away from transactional economics and raises management challenges associated with the development of more relational approaches which value a social dimension as a mean of governing business exchange, and are often predicated on greater levels of trust”. (Lightfoot, Baines and Smart, 2013).

CONCLUSION

The aim of this essay was to comprehend the elements of a specific category of organizational capabilities: service innovation capabilities. We do this by analyzing current literature on service innovation and innovation capabilities to come up with some propositions that should be taken into consideration in the crafting of a service innovation capabilities framework. To surpass all those defining characteristics of service provision, we propose a revision of Zawislak’s et al. (2012) framework towards a service innovation capabilities adjustment.

Some other frameworks had already been suggested in the literature and we have identified its limits. First, most of them tend to focus specially on New Service Development (NSD) capabilities, which we consider a narrow understanding of innovation in an organization. In a Schumpeterian perspective, in addition to new offerings, innovation in service firms may occur with new processes for delivering the service, or a new market that can be reached, for example. Second, these frameworks are in general based on a dynamic capabilities view of the firm, which on the one hand enables innovation, but in the other is not necessarily its only source. As we have seen, Alves et al. (2017) have shown that Operational Capability is defined as ordinary (Teece, 2014), though is not a dynamic kind of capability, but is also a possible group of organizational knowledge that can generate innovations. Furthermore, it has not been proved yet whether service operations are ordinary or dynamic capabilities of firms. Future empirical research should address this issue.

Three problems emerge on this discussion. First, the role of technology for services development. If innovation derives from technological advancement, as it has been asserted by many scholars, and if service innovation do not necessarily follow a technological trajectory (Gallouj and Weinstein, 1997), then services are not innovative? The answer is certainly no. Innovation in services has its specificities and do not follow the same logic as goods, so it becomes relevant to understand how firms shape its technological capabilities for service provision.

Second, customer resources are not possessed by the provider, thus it is not possible to control it. Firms need to create an environment into which the customer engage to get the result it expects. Each customer has heterogeneous resources, theoretically making every

service provision customized. This fact repress firm's gains in scale economies, elevating uncertainty and risks. Figuring out how these aspects influence firm's capabilities of process adjustments and resource allocation is also important.

Third, the critical point of service management is that customer interaction is on the definition of service provision. Without customer interaction during the production/ consumption process the relation with the provider would be only transactional. In many cases, services also demand firms to collaborate with different players in a horizontal structure in order to deliver more specialized offers. How firms develop its relational capabilities, elevating trust into these relationships is another factor of interest.

As we have seen, service innovation capabilities require firms of any kind to develop elevated trust and commitment, relational capital, information sharing routines, close customer relationships, customer engagement, collaboration in networks, co-creation, uncertainty reduction and risk sharing. Finding the answer for these problems will set up the basis for developing a service innovation capabilities framework properly adjusted for service firms or business units. We expect that this approach not only permits the creation of new services, but also strengthens organizational adaptability for change in different environments and economic sectors.

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