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**Service innovation management in a modern economy: insights on the interplay between firms' innovative culture and project-level success factors**

**1. INTRODUCTION**

The service sector currently contributes over 70% to the gross domestic product of the world's largest economies (World Bank, 2019). Moreover, some rapidly spreading innovations, such as artificial intelligence and the Internet of Things, are also encouraging the development of new services in many sectors and enhancing the servitization of business models (Mao et al., 2020; Palo et al., 2019). Under this prevalent trend, understanding how to achieve new service (NS) success in the over-competitive and fast-changing modern markets represents a topic of considerable practical relevance for managers in most organizations (Frank et al., 2019; Gallouj et al., 2015; Klarin, 2019; Sakata et al., 2013; Teece et al., 2016). Thus, this new scenario requires a clear roadmap to successfully address service innovation. However, previous research on NS success has been far less prolific than the study of new product success, despite both innovations share similar levels of risk failure (O'Cass and Wetzels, 2018). Only recently, the literature provides the first reviews of the evolution of service innovation research (e.g., Biemans et al., 2016; Papastathopoulou and Hultink, 2012), and meta-analyses of previous empirical evidence on the NS success factors (Kuester et al., 2013; Storey et al., 2016), in an initial attempt to integrate the fragmented and even contradictory findings available. Nevertheless, there is still a relative paucity of knowledge about the key NS success factors (Storey et al., 2016).

Most previous studies in the innovation literature analyze the direct effects of success factors on innovation performance (Slater et al., 2014). However, the study of relationships among the drivers of innovation success has received little attention by researchers, which hinders theoretical developments and achieving a deeper comprehension of the complexities of innovation success (Edvardsson et al., 2013; Papastathopoulou and Hultink, 2012). The lack of these studies is especially apparent in the service innovation domain, an exception being the work carried out by Melton and Hartline (2010, 2013).

Accordingly, the primary objective of this paper is to contribute to the service innovation management literature by analyzing how different NS success factors interrelate and contribute to NS performance. In this way, our study diverges from the prevalent “direct-effects models” (Henard and Szymanski, 2001) and offers new evidence on the critical drivers of NS success and how these factors strengthen each other. In this way our results facilitate a more in-depth understanding on how to leverage the presence of success factors during the NS development process (Edvardsson et al., 2013) and, therefore, how to manage service innovation success (O’Cass and Wetzels, 2018) and cope with the dynamics of change in modern markets (Palo et al., 2019).

To select the success factors considered in our research model we considered simultaneously two decision criteria: (1) the inclusion of different types of NS success factors to enrich the analysis of the success factors interplay and (2), most importantly, to address literature gaps identified in previous studies to reinforce the contribution of the relationships analyzed in our study. Concerning the first criterion, we make a distinction between organizational-level success factors, i.e., organizational characteristics that pervade all the organization, and success factors at project-level, i.e., factors which adopt a specific configuration for each innovation project (Papastathopoulou and Hultink, 2012). Service firms’ innovative culture or innovativeness, defined as a cultural trait that reflects “*the firm’s receptivity and inclination to adopt new ideas*” (c.f. Rubera and Kirca, 2012, p. 130), is considered in this study as an organizational-level success factor (Hult et al., 2004). Within the project-level NS success factors, bearing in mind the classification proposed by De Brentani (2001), and used subsequently by Ottenbacher et al. (2006) and Kuester et al. (2013), as well as the typology proposed by Storey et al. (2016), we consider new service advantage as a *service factor* (De Brentani, 2001; Kuester et al., 2013); new service synergy as a *strategic factor* (Storey et al., 2016); top management support as *process characteristic*, acknowledging that managers’ support has to be decided and implemented for each innovation project; cross-functional communication as a *team characteristic* (Storey et al., 2016); and FLE ITE (front-line employees involvement, training and empowerment) as a *process characteristic* that facilitates the NS design and launch (Ottenbacher et al., 2006; Storey et al., 2016). We thus include in our research model all the categories of success factors defined by the former authors except for market-related factors, which represent non-controllable factors by the firm.

In relation to the second criteria to select the NS success factors, addressing important research gaps identified in previous studies, we make several contributions. First, we adopt a novel approach and use the Social Capital Theory to examine how service firms' innovativeness affects the deployment of critical success factors at project-level –see Figure 1. Previous research in the innovation field underlines that very little is known about how firms' innovative culture affects the deployment of other critical success factors during the innovation process (Tian et al., 2018). In this study, we contribute to the scarce empirical evidence on the expected effects of innovativeness in the service sector adopting a social capital perspective, as firms' innovativeness reflects the *cognitive dimension* of social capital (Nahapiet and Ghoshal, 1998). Specifically, following the recommendations of recent studies, we analyze the impact of innovativeness on (1) top management support to the service innovation project (Karahanna and Preston, 2013); (2) cross-functional communication during the NS development (Nguyen et al., 2018) and (3) NS synergy, or the NS congruence with the firm's skills and resources (Yan and Guan, 2018). Each of these project-level factors constitute the departing point for the analysis of further relationships in our conceptual model.

Second, existing literature pays little attention to the *social aspect* of top management support to an innovation project, i.e., the 'human' side of their assistance, which is related to aspects such as encouraging information exchange between functional groups or building support to the project within the firm (Felekoglu and Moultrie, 2014). Accordingly, following recent literature calls, we extend our conceptual framework to unpack the social mechanisms by which top management can facilitate service innovation success (Amoako-Gyampah et al., 2018). To this end, we analyze the effect of top management support on cross-functional communication and FLE support to the NS project, two other key drivers of NS success at project-level (Biemans et al., 2016). FLE support to the NS project is conceptualized in terms of the adoption of three human resource management practices: FLE involvement during NS development, FLE training for the NS provision, and FLE empowerment to exercise control over NS job-related situations (FLE ITE).

Third, the literature notes that despite the essential role of cross-functional communication to facilitate knowledge sharing (Darawong, 2015), the consequences of cross-functional communication have not been fully explored and understood (Nguyen et al., 2018), especially in the service innovation field (Park et al., 2011). Thus, the conceptual model is enriched by analyzing the

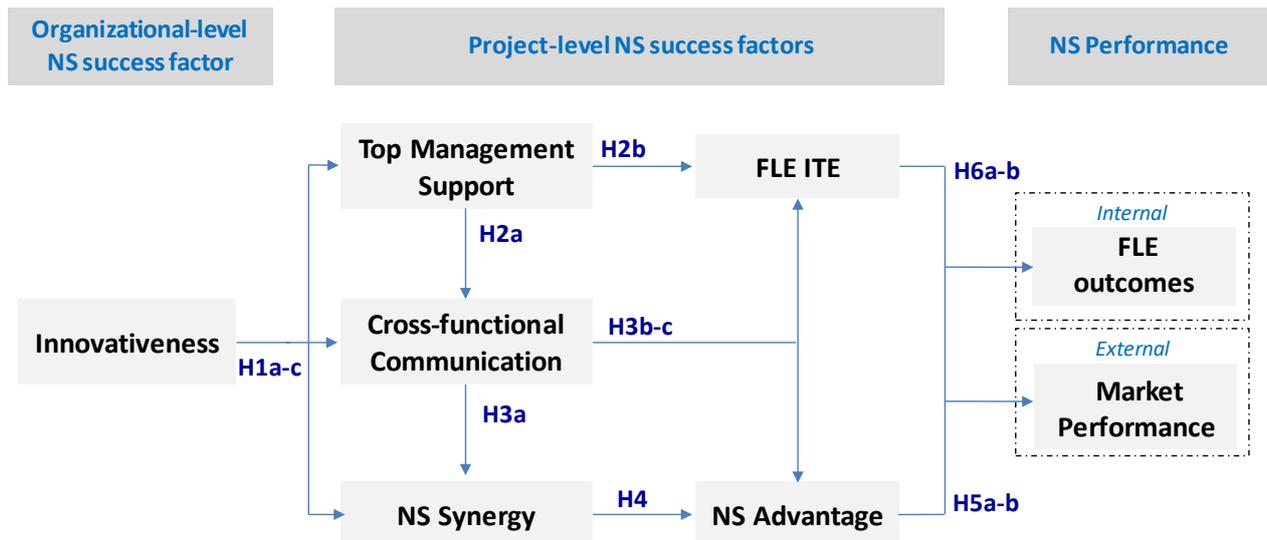
contribution of cross-functional communication, *as an uncertainty-reducing factor per se* thanks to knowledge sharing (Brettel et al., 2011), to the decrease of three inevitable types of uncertainty associated to the innovation efforts (O'Connor and Rice, 2013) by benefiting three key NS success factors at project level: (1) uncertainty about the *market* acceptance of the NS, helping to define NS advantage (van Riel et al., 2004), (2) uncertainty about the availability of the *resources* required to develop the NS, favoring NS synergy (Apreda et al., 2019; Souder and Moenaert, 1992), and (3) uncertainty about *organizational* support to the project, fostering FLE ITE (Malhotra and Ackfeldt, 2016).

Fourth, Storey et al. (2016) underline that although NS advantage is among the most frequently cited success factors in service innovation, how to reinforce NS superiority remains largely understudied (Papastathopoulou and Hultink, 2012). Therefore, in addition to the aforementioned effect of cross-functional communication on NS advantage, we also analyze the effect of NS synergy as a driver of NS advantage. This relationship has been extensively researched in the product innovation domain but, to the extent of our knowledge, it has not been tested in the service innovation field. Similarly, the internal benefits for the organization of NS advantage are not fully understood and deserve further analysis (Umashankar et al., 2011). Previous studies prove that innovation efforts are more fruitful when employees are satisfied (Nikpour, 2018); that FLE driven innovation improves their satisfaction (Santos-Vijande et al., 2016), or that human capital can drive service innovation advantage (Prajogo and Oke, 2016). However, we have not identified studies which analyze if new services superiority (from the market perspective) can enhance FLE satisfaction. In this respect, frontline work is difficult and stressful and it is necessary to achieve a better understanding of how to prevent frontline employee burnout, considering both internal and external motivating factors (Wirtz and Jerger, 2016; Wirtz and Lovelock; 2017). Thus, we examine the consequences of NS advantage on FLE outcomes as a NS internal performance indicator. The research model also includes the effect of NS advantage on the NS external or market performance –see Figure 1.

Fifth, we also incorporate to our theoretical framework the effect of FLE ITE on the NS internal and external success in an attempt to contribute to the literature on how human resource management practices impact organizational performance in terms of innovation success (Barrick et al., 2015).

In response to calls for insights into how service innovation occurs in different industry contexts (Aspara et al., 2018; Biemans et al., 2016), as many focus on the financial sector (Sakata et al., 2013; Carlborg et al., 2014), in this study we use a sample of hotels and knowledge-intensive business service firms (KIBS) located in Spain. Both service sectors constitute key strategic sectors in modern economies (Brenner et al., 2018; WTO, 2020).

**Figure 1. Conceptual model**



In the next section, we put forward the theoretical basis for our research model and the relationships between the NS success factors. Following our hypotheses, we describe the research methods and data analysis. Finally, we discuss the theoretical and managerial implications of the results, the future research directions and the limitations of the study.

## 2. THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

Innovativeness is understood as the part of organizational culture which reflects the conviction that innovation is an essential mechanism for strengthening the firm’s competitiveness (De Brentani and Kleinschmidt, 2004; Hurley and Hult, 2004)<sup>1</sup>. The literature consistently identifies an open-minded attitude towards innovation as a key organizational driver of innovation success (Cegarra-Navarro et al., 2019; Storey et al., 2016). However, the literature also underlines the need to extend

<sup>1</sup> Rubera and Kirca (2012) identify different conceptualizations of innovativeness commonly used in the literature. In this study innovativeness is defined as part of the organizational culture; thus, innovativeness reflects the firm’s willingness to accept and adopt new ideas. Innovativeness can also be defined as an indicator of the firm’s innovation output (e.g. number of new products and services commercialized in a period) or measure the innovations degree of newness or radicalness.

previous research on how a firm's innovative culture or innovativeness affects project-level success factors in service innovation management (Grzegorzcyk, 2019; Moorman and Day, 2016). Innovativeness, therefore, constitutes the starting point for the network of relationships among NS success factors analyzed in this study, and Social Capital Theory provides a useful framework to analyze its effects. This theory has been increasingly used in the literature during the last decade to examine how innovation practices take place (Yan and Guan, 2018).

The central premise in the Social Capital Theory is that firms are embedded in networks of social relationships that constitute a valuable resource (i.e., capital) to achieve improved social and operational outcomes (Inkpen and Tsang, 2005; Nahapiet and Ghoshal, 1998). Thus, social capital represents the set of resources embedded within, available through, and derived from the network of relationships among actors in an organization (Nahapiet and Ghoshal, 1998). Social capital can be articulated around three basic dimensions: a *structural dimension* (including, formal and informal, organizational and personal, patterns of connections in the network of relationships), a *cognitive dimension* (including shared goals, representations, language and culture), and a *relational dimension* (including trust and strength and quality of relationships) (Inkpen and Tsang, 2005; Karahanna and Preston 2013; Nahapiet and Ghoshal, 1998). Innovativeness, as representative of a firm's cultural predisposition to innovate is a constituent element of the cognitive dimension of firm's social capital. Social capital can positively affect many internal and external activities of the firm as, for example, the management style, the internal coordination, or how firm's resources are leveraged (Arregle et al., 2007). Accordingly, building on previous research, we analyse from a social capital perspective in the service innovation domain how innovativeness facilitates top management support during service innovation, affects cross-functional communication and shapes NS synergy.

### ***2.1. Effects of innovativeness on top management support, cross-functional communication and NS synergy from the Social Capital Theory***

Top management support to service innovation refers to: (a) the effective allocation of resources to the innovation project, and (b) management's active involvement in the development process (De Brentani and Kleinschmidt, 2004), acting as a facilitator, champion, and/or visionary (Henard and Szymanski, 2001; van Riel et al., 2013). Innovativeness promotes among all the employees, including top management, awareness and understanding of the critical role innovation

plays in the firm's long-term survival (Rubera and Kirka, 2012). Thus, from a social capital theory perspective, innovativeness, as part of the cognitive social capital of the organization (Inkpen and Tsang, 2005; Nahapiet and Ghoshal, 1998), provides shared representations and interpretations that can facilitate a common understanding of the organization's collective goals and a unified effort to accomplish them (Karahanna and Preston, 2013). In this line of reasoning, the innovation literature acknowledges that innovativeness motivates top management to steer their priorities and daily working behavior towards a sustained innovation effort over time (van Riel et al., 2013), and plays a fundamental role in top management willingness to take risks, think beyond the established boundaries and promote innovation (Lyons et al., 2007). Consequently, innovativeness influences where top management's attention is focused and how they carry out their daily work (Karahanna and Preston, 2013). As a result, we expect top management in service firms with high levels of innovativeness to be more willing to support an approved NS project (Hult et al., 2004; van Riel et al., 2013), to effectively channel and allocate sufficient human and financial resources for its development, and to closely follow the development team's progress (Lyons et al., 2007). We therefore hypothesize:

**H1a.** *Innovativeness is positively related to top management support to the NS project.*

Cross-functional communication refers to the exchange of work-related information between the departments of a firm during the innovation development process (Darawong, 2015). Innovativeness involves a set of shared values that promote adaptation to change, risk taking and commitment to the development of new products or services (Song et al., 1997; van Riel et al., 2013). As part of the cognitive dimension of social capital, innovativeness it is acknowledged as an important determinant of cross-functional knowledge sharing, as mutual goals build trust and willingness to interact and make information accessible (Nguyen et al., 2018). Similarly, common vocabulary and cognitive frames help the information exchange and the assimilation of new knowledge (Karahanna and Preston, 2013). Thus, innovativeness creates a climate that is favorable for both formal and informal communication among departments and within the development team (Hult et al., 2004; Lyons et al., 2007), as well as employees' collaboration across the board (Santos-Vijande et al., 2012). As a result, firms with high levels of innovativeness are likely to facilitate cross-

functional communication and to encourage useful information exchange among their staff, consequently enriching and enhancing the firm's innovation efforts. We therefore hypothesize that:

**H1b.** *Innovativeness is positively related to cross-functional communication.*

Synergy represents the congruency between the resources and skills needed to develop an innovation project and resources and skills available in the firm, i.e., innovation synergy indicates to what extent an innovation benefits from the firm's body of knowledge and experience (Cooper, 2017). Synergy represents a critical success factor for innovation insofar as it entails that the firm makes full use of its capabilities to compete (Huang and Tsai, 2014). A firm's ability to exploit in-house strengths includes technological synergy and marketing synergy (Cooper and Kleinschmidt, 2011). In the service sector, human resources synergy (the availability of suitable staff able to provide the service) is also important (De Brentani, 2001).

Innovativeness, as part of the organizational culture and the cognitive capital of the firm, derives from the firm's accumulated experience and learning (Yan and Guan, 2018). Thus, the collective patterns of behavior and assumptions represented by firms' innovativeness emerge from prior practice. In this way, innovativeness can be considered as intrinsically linked to the pooling and exploitation of the firm's expertise in the innovation processes (in terms of developing values and mental models), preventing in this way that the firm never gains the returns that should come from its accumulated practice. Indeed, recent research has identified innovativeness as being an indicator of a firm's "inside-out" capability (Huang and Tsai, 2014; Saeed et al., 2015), or its willingness to achieve superior performance by exploiting its valuable resources. Moreover, from a social capital theory perspective, Yan and Guan (2018) also suggest that the firm's cognitive capital has positive effects on exploitative innovation. Innovativeness is also identified as a distinct feature of a firm's entrepreneurial orientation (Matsuno et al., 2002), which facilitates exploitative innovation (Zhan et al., 2016), i.e., innovation that benefits from the ability to leverage the firm's knowledge and skills. Therefore, although this relationship has not previously formally stated in the literature, innovativeness is expected to foster strategic decisions during the NS innovation process by exploiting the firm's internal resources and skills, favoring in this way NS synergy. We therefore hypothesize that:

**H1c.** *Innovativeness is positively related to NS synergy.*

## ***2.2. Social implications of top management support***

Top management plays a key role in a firm's proactive search for innovation opportunities and the deployment of the required organizational resources to accomplish the development processes (Felekoglu and Moultrie, 2014). However, top management support to an innovation project not only includes 'technical' aspects such as fixing budgets and schedules, providing strategic guidance and resources, supervising the progress or making kill/go decisions, but also a 'human' or 'social' side related to eroding the barriers to cooperation, creating an environment well suited to fertile information exchange and building support to the project within the firm (Amoako-Gyampah et al., 2018; Felekoglu and Moultrie, 2014). In this way, the 'social' side of top management support to an innovation project can minimize potential conflicts among the different functional areas or departments of the firm, provide cohesion and motivation for the innovation efforts, and facilitate the development team's work throughout the innovation process (Carbonell and Rodríguez-Escudero, 2009). Recent studies suggest that these 'soft' tasks developed by top management, i.e., which involve social contact, have a strong impact in the innovation project success, and contribute to develop the firm's own social capital (Amoako-Gyampah et al., 2018). Accordingly, we analyze the leading role of top management in the development of two social mechanisms that reinforce NS success: enhanced cross-functional communication during NS development and an improved FLE ITE, in this case as a means to build a favorable atmosphere to the NS project and build support to the NS among FLE.

Top management support is crucial to cross-functional communication since communication and knowledge transfer do not simply occur just because cross-functional teams are created (Song et al., 1997). Top managers' leadership can guide collaborative communication and encourage constructive feedback (Lovelace et al., 2001). Thus, the experience of top managers together with their authority and commitment play a key role in enabling reciprocal communication among the firm's functional areas that are involved in the innovation project, in building mutual trust, and in creating mechanisms that facilitate the flow of information (Evanschitzky et al., 2012; Troy et al., 2008). Accordingly, we hypothesize that top management support is of vital importance for effective cross-functional communication during the NS development process:

**H2a.** *Top management support to the NS project is positively related to cross-functional communication.*

FLE ITE (involvement, training and empowerment) is desirable in the NS development process for several reasons (Ottenbacher et al., 2006; Vermeulen et al., 2005). First, FLE *involvement* is a mechanism that provides relevant input (knowledge, opinions, and ideas) for service innovation and helps new market demands to be rapidly detected (Umashankar et al., 2011). It also acts as a key motivational factor for FLE engagement and collaboration in the NS provision (Santos-Vijande et al., 2016). Therefore, top management support to the NS project is likely to favor the involvement of FLE in the NS development process not only to benefit from its FLE expertise, creativity, and capacity to envision potential service innovations, but also, from a social perspective, to reinforce the FLE support to the NS project and their commitment to the provision of the NS (Santos-Vijande et al., 2016; Young and Jordan, 2008). Additionally, FLE *training* is necessary for NS provision in order to facilitate the formation of a superior firm-client interface (Vermeulen et al., 2005). Well-trained FLE are more likely to facilitate a more positive customer experience with the NS, and to better adapt to changing customer needs (Ottenbacher and Harrington, 2010). Similarly, well-trained FLE are capable to better deal with NS failure, respond to complaints and facilitate a rapid service recovery and problem resolution, which ultimately benefits the internal climate and diminishes FLE job burnout (Santos-Vijande et al., 2013). Hence, top management support to the NS project is likely to encourage FLE training in order to improve the NS experience and the NS market acceptance, but also from a social aspect, to facilitate the FLE support to the NS. Furthermore, if FLE are not adequately *empowered*, they cannot translate their training, flexibility, and capacity to make their own judgements in addressing unexpected circumstances during the provision of the NS (Ottenbacher and Harrington, 2010; Umashankar et al., 2011). Top management plays a key role in determining the empowerment of the FLE in service provision (Ottenbacher and Harrington, 2010). Thus, top management support to the NS is also likely to include, from a social perspective, FLE empowerment to improve the FLE backing for the NS. We therefore hypothesize that:

**H2b.** *Top management support to the NS project is positively related to FLE ITE.*

### ***2.3. Effects of cross-functional communication on NS synergy, NS advantage, and FLE ITE***

Cross-functional communication is a key component of a broader concept, cross-functional integration or cooperation during the innovation project (Song et al., 1997). Cross-functional communication helps firms reap some of the key benefits of cross-functional integration such as knowledge sharing among departments, early intelligence about the requirements of innovation projects, reduction of the inevitable uncertainties associated to the innovation project, and sound decision making (Brettel et al., 2011). From this perspective, our study explores the effect of cross-functional communication on other NS success factors at project level that benefit from uncertainty reduction.

Cross-functional communication helps to broaden individual perspectives during the innovation process, and supports one of the key benefits of cross-functional integration: a more efficient understanding and use of the existing resources in the firm (De Brentani, 2001). If cross-functional communication is good, then information about the specific marketing or financial resources available and/or required to commercialize the NS, the technical requirements of the NS provision or the existing skills of the staff, will be more readily accessible. In this way, cross-functional communication helps to reduce the uncertainty about the potential lack of resources to develop the NS (O'Connor and Rice, 2013) and can foster a firm's ability to capitalize its internal resources and skills (Souder and Moenaert, 1992). In this respect, Apreda et al. (2019) suggest that cross-functional communication is a relevant factor to avoid expert myopia in forecasting technological innovation. Therefore, cross-functional communication as a factor that reduces resource uncertainty can facilitate NS synergy; accordingly, we hypothesize that:

**H3a.** *Cross-functional communication is positively related to NS synergy.*

In modern markets, creating successful innovations requires incorporating diverse sources of information in order to successfully keep up with the evolution of the clients' needs and to provide market value (Brettel et al., 2011). Cross-functional communication provides opportunities for the timely integration of critical information into the NS development process (van Riel et al., 2004) and favors the quality of the decisions adopted to configure a valuable and successful innovation (Cooper, 2017; Troy et al., 2008). In this way, cross-functional communication becomes an important mechanism to lower *market uncertainty* (O'Connor and Rice, 2013) and provide superior value in

the satisfaction of consumer needs and wants (Park et al., 2011) helping to define NS advantage (van Riel et al., 2004). Sharing information and achieving good communication during the development process may be even more critical to enrich NS advantage, since services contain many intangible and experience-related attributes that require a combination of items from different domains of knowledge (Darawong, 2015; van Riel et al., 2004). Therefore, we hypothesize that:

**H3b.** *Cross-functional communication is positively related to NS advantage.*

The literature underlines that good internal communication provides important benefits for firm's employees which include, inter alia, improved employee productivity and motivation, organizational commitment, and reduced absenteeism (Malhotra and Ackfeldt, 2016). Nonetheless, previous research in the innovation literature does not analyze potential benefits of cross-functional communication for FLE, as the ultimate service providers. In this study, we contend that cross-functional communication can benefit FLE ITE, building in this way organizational support to the NS project among FLE (Malhotra and Ackfeldt, 2016) and thus reducing *organizational uncertainty* (O'Connor and Rice, 2013). In this respect, sharing information during the NS development process facilitates FLE involvement by incorporating their knowledge and experience (Cooper, 2017). When cross-functional communication is functioning well, the FLE will be knowledgeable about the NS features and objectives in advance, thus helping their training in the NS requirements (Ottenbacher et al., 2006; Yang et al., 2016). Likewise, sharing information is a key factor in building a team's empowerment in an organization (Si and Wei, 2012). Accordingly, information exchange during the NS development can broaden the FLE understanding of the NS, their commitment to the NS and facilitate their empowerment to deliver the service effectively (Malhotra and Ackfeldt, 2016). Therefore, to expand our understanding of the benefits of internal communication in service innovation, we hypothesize that:

**H3c.** *Cross-functional communication is positively related to FLE ITE.*

#### **2.4. NS synergy and NS advantage**

Synergistic innovation leverages a firm's core resources and competencies, thereby improving its performance and quality and enhancing its value creation (Calantone et al., 2006). Service firms with greater technological synergy can take advantage of their technological knowledge to develop timely service innovations at lower costs and with more efficient provision processes (Huang and

Tsai, 2014; Lee et al., 2019). Also, service firms with greater marketing synergy will have a greater opportunity to integrate marketing activities and intelligence to the NS in order to provide a superior market offer relative to competitors (Calantone et al., 2006; Cooper, 2017; Huang and Tsai, 2014). Technical and marketing synergy thus reinforce the perceived value of the service innovation and the firm's strength in the market to expand and retain its customer base (Lee et al., 2019). Human resource synergy also allows service firms taking advantage of their staff knowledge and experience, which can benefit the client's perception of NS value during the NS provision (Zeithaml et al., 2009). This relationship between innovation synergy and innovation has been extensively researched in the product innovation domain but, to the extent of our knowledge, it has not been tested in the service innovation field. NS success has been studied in the literature less often than the new product development process, partially because service innovation has traditionally been considered the result of intuition or luck (Levitt, 1981). In fact, in the early 1970s, it was claimed that new services simply arose or "happened" and, nowadays, this debate remains open as many authors continue to discuss whether or not new services are the result of a formal development process (Martovoy and Mention, 2016). In this respect, showing that service innovation benefits from the synergy with the firm's resources may be an interesting result, since NS synergy requires an adequate assessment of the firm's resources and some degree of planning. We therefore hypothesize that:

**H4.** *NS synergy is positively related to NS advantage.*

### **2.5. NS internal and external performance: the role of NS Advantage and FLE ITE**

In this study, NS performance is conceptualized from both an external and an internal perspective. External NS performance refers to the NS outcomes in the marketplace (Melton and Hartline, 2013). Internal NS performance captures the extent to which the NS improves FLE's satisfaction, motivation, and commitment (FLE outcomes), which benefits the firm's internal climate and constitutes a relevant output of the service innovation process (Santos-Vijande et al., 2016). Although the literature on innovation is consistent about the positive link between NS advantage and NS market success, there has been very little development of theory regarding the extent to which NS advantage may also have an impact on FLE outcomes (Umashankar et al., 2011). Providing superior services from the market perspective is likely to offer FLE important motivating benefits in terms of internal fulfilment, pride, and commitment to their firm, but empirical evidence in this

respect is scarce (Wirtz and Jerger, 2016; Wirtz and Lovelock; 2017). This is a relevant topic since FLE, as the service's providers, have to field complaints when the service does not meet the customers' expectations, and are also involved in the tensions that arise in service recovery. Indeed, in service failure settings, the literature acknowledges the need to recover not only external clients, but also the firm's internal clients as prime assets in a service firm (Santos-Vijande et al., 2013). Accordingly, NS advantage may benefit FLE in that it can alleviate job stress and burnout, and contribute to the FLE satisfaction, motivation and commitment to the NS. Moreover, NS advantage also requires a superior NS delivery system. If the delivery system fails, then the advantage cannot be transferred to customers. Accordingly, it is likely that NS advantage helps prevent service delivery failure and also avoids complaints and the need to implement service recovery strategies, thus greatly enhancing FLE internal climate and personal satisfaction. We therefore hypothesize that:

**H5a.** *NS advantage is positively related to FLE outcomes.*

The literature on service innovation success confirms that innovation superiority in comparison with alternative products or services leads to greater market acceptance (Cooper, 2017). NS advantage reinforces clients' perceptions of receiving a superior service that is more closely adapted to their needs (Lee et al., 2019). Therefore, NS advantage improves customers' satisfaction and loyalty (Storey and Hull, 2010), and ultimately leads to increased NS sales, market share, and profits (Cooper, 2017; Lee et al., 2019). We hence view NS advantage as a key determinant of NS market performance and hypothesize that:

**H5b.** *NS advantage is positively related to NS market performance.*

The literature suggests that FLE ITE is likely to influence the NS internal performance or FLE outcomes in terms of motivation and satisfaction with the NS (Gwinner et al., 2005). In particular, FLE involvement in innovation activities fosters FLE closer identification with the firm's objectives and values as well as an increase in their overall effort and desire to remain in the firm (Cadwallader et al., 2010). Well-trained FLE are more confident, better equipped to adapt to changing conditions, and capable to provide a superior firm-client interface. They consequently have a greater sense of control that improves their job satisfaction during the provision of the NS (Maglio et al., 2010). The relationship between employee empowerment and its impact on employee outcomes has long been studied in the literature from different perspectives (Gazzoli et al., 2010; Maglio et al., 2010). The

empowerment of FLE allows them to use their own judgement and to have flexibility and autonomy during NS provision. This positively influences their overall job satisfaction and commitment to the firm (Ottenbacher and Harrington, 2010). We therefore hypothesize that:

**H6a.** *FLE ITE is positively related to FLE outcomes.*

Service firms whose employees feel valued, since they contribute to the design of service innovations, receive adequate training about the NS features, and feel empowered to take the initiative to solve unexpected service delivery problems, are likely to achieve an improved NS market success in terms of sales, market share, and profits (Ottenbacher et al., 2006). Thus, when FLE ITE is implemented during NS development, the FLE are in an optimal position to provide timely and efficient interventions to improve customer experience since they are aware of the NS features, they are well prepared to provide the NS, and they have the tools and power to adapt the NS to the customer when necessary (Santos-Vijande et al., 2013). In this line of reasoning, Barrick et al. (2015) confirm a positive link between human resources engagement and organizational performance; and Podsakoff et al. (2009) show that, when employees perceive organizational support through an adequate training and psychological empowerment, their behavior as ‘*citizens*’ in the organization is improved, and they are motivated to go beyond their job role and to place more emphasis on service-oriented actions, which improves firms’ performance and effectiveness. Accordingly, FLE ITE would accrue benefits to the provision of the NS and, ultimately, to the NS external performance. Although this relationship has not been formally stated, we hypothesize that:

**H6b.** *FLE ITE is positively related to NS market performance.*

### **3. METHODOLOGY**

#### **3.1. Sample and data collection**

The conceptual model was tested using a sample of KIBS and hotels located in Spain. the literature on service innovation warns that most of the empirical insights available in the field are drawn from North American and Northern and Western European countries (Carlborg et al., 2014). Similarly, it is noticed that research attention has mainly focused on certain service industries such as financial services (Biemans et al., 2016; Carlborg et al., 2014). Hence, further studies are required to expand our knowledge and understanding of the critical NS success factors in different

service markets (Aspara et al., 2018). As intermediaries and input providers for many other economic agents' innovation processes, KIBS constitute one of the main engines for future growth in the more developed countries (Brenner et al., 2018). The tourism industry also plays a prominent role in fostering economic growth in modern economies (WTO, 2020). Hotels account for the greatest share of tourists' total expenditure in accommodation, which reinforces the strategic importance of this sector (INE, 2019). Both KIBS and hotels face increasing pressure to innovate and to adapt to changing customer demands and competitive pressures. Professional business services and hospitality services differ in terms of complexity, but can both be regarded as *tacit or experiential* services in nature, since they are delivered through interpersonal interactions based on the provider's tacit knowledge (in opposition to *explicit services*, mainly delivered with the aid of technology, e.g., banking, insurance or telecommunications) (Storey et al., 2016).

Following a stratified random sampling procedure, we used the SABI (Iberian Balance Analysis System) database to pinpoint the target population. The KIBS sector was identified considering the NACE codes used by the European Monitoring Centre on Change. For the hotel sector, mid-range service, up-scale, and luxury hotels were chosen since a lack of innovation is more frequent in the lower categories. In both cases, the firms had to have more than 10 workers.

Data were collected through a self-report survey: 1,236 and 971 questionnaires were sent to the KIBS firms and hotels, respectively. General Managers and Managing Directors, as executive positions that receive information from a wide variety of departments or areas within the company, were considered as key informants in each hotel to provide information about their firm's innovation activities and performance outcomes (Ordanini and Parasuraman, 2011). Thus, most of the firms included in this study are small- and medium-sized enterprises (SMEs), with less than 250 employees, where General Managers or Managing Directors have a high level of access to strategic information (O'Cass and Weerawardena, 2010). Our informants have been employed in their respective firms, on average, for more than 9.5 years in the case of KIBS and 7.5 years in the case of hotels. The time period in the workplace also facilitates a good knowledge of the firms' operations and innovation practices. Moreover, Melton and Hartline (2013) also acknowledge the difficulty of identifying the executives responsible for service innovation, while the use of key informants with similar levels of influence adds to the internal validity of the measurements (Aragón-

Correa et al. 2007). The questionnaires were sent by e-mail, fax, or ordinary mail in accordance with each respondent's preference. To favor recall and ensure the quality of the information acquired, the key informants were asked to provide detailed information about a relevant or significant NS development project undertaken by their firm in the preceding three years. The delivery of the questionnaire was followed up by contacting the firm again, twice if necessary, to ensure that the questionnaire had been received and to increase the response rate. For the KIBS firms, a total of 246 valid responses were obtained, equivalent to a 19.90% response rate. For the hotel sample, 256 valid responses were received, corresponding to a 26.36% response rate. Thus, the resulting overall final data set corresponded to 502 NS implementations. Table 1 shows the population considered, the sample distribution and the sample features in terms of number of employees and sales turnover. In the KIBS sample the business consultancy firms are under-represented, while the engineering, architecture, and environmental consultancy firms are over-represented.

**Table 1. Population, sample distribution and sample characteristics**

<b>Subsample</b>	<b>Population</b>		<b>Sample</b>		<b>Response rate</b>		
	Number of firms (%)		Number of firms (%)		%		
<b>Hotels - Category</b>	<b>971 (44.0)</b>		<b>256 (51.0)</b>		<b>26.4</b>		
3 stars	459 (47.3)		106 (41.4)		23.1		
4 stars	451 (46.4)		130 (50.8)		28.8		
5 stars	61 (6.3)		20 (7.8)		32.8		
<b>KIBS – Nace code (2005)</b>	<b>1,236 (56.0)</b>		<b>246 (49.0)</b>		<b>19.9</b>		
74.11, 74.12, 74.14: Management, legal, or accounting consultancies	309 (25.0)		28 (11.4)		9.1		
74.8: Miscellaneous business services	277 (22.4)		57 (23.2)		20.6		
74.2: Engineering, architecture, and environmental consultancies	249 (20.1)		100 (40.6)		40.2		
74.13, 74.4, 74.5: Market research, advertising, personnel recruitment and training consultancies	226 (18.3)		19 (7.7)		8.4		
72: IT services	175 (14.2)		42 (17.1)		24.0		
<b>Total</b>	<b>2,207 (100)</b>		<b>502 (100)</b>		<b>22.7</b>		
<b>Hotels subsample</b>				<b>KIBS subsample</b>			
<b>Employees</b>	<b>n</b>	<b>Sales Turnover (€)</b>	<b>n</b>	<b>Employees</b>	<b>n</b>	<b>Sales Turnover (€)</b>	<b>n</b>
10-49	190	≤ 600,000	82	10-49	160	≤ 600,000	41
50-99	46	600,001–1,500,000	51	50-99	47	600,001–1,500,000	55
100-249	18	1,500,001–3,000,000	58	100-249	32	1,500,001–3,000,000	51
≥ 250	2	≥ 3,000,001	65	≥ 250	7	≥ 3,000,001	99
<b>Total</b>	<b>256</b>	<b>Total</b>	<b>256</b>	<b>Total</b>	<b>246</b>	<b>Total</b>	<b>246</b>

Applying the approach of Armstrong and Overton (1977), we found there to be no significant differences between early (first quartile) and late (fourth quartile) respondents, and therefore that non-response bias cannot be considered to be a major concern in this study. We controlled common method variance *ex-ante* (through study design) and *ex-post* (statistical techniques) (Podsakoff et al., 2012; Santos-Vijande et al., 2016): in the first case, we preserved respondents' anonymity, established a psychological separation between predictor and criterion variables, and underlined that no right or wrong answers existed; in the second case, Harman's single-factor test was applied and no problem was detected. Recent studies suggest that such method for identifying common method variance is meaningful (Babin et al., 2016). Specifically, the factorial analysis carried out shows that the variance explained for the first factor is 44.273% with principal components as the method of extraction and 42.916% with principal axis factoring as the method of extraction, which is below in both cases of the 50% value threshold. Furthermore, the number of factors in the unrotated factor structure is five. These five factors are equivalent to a total variance explained of 74.399% with principal components as the method of extraction and 67.773% with principal axis factoring as the method of extraction.

However, the above Harman's single-factor test procedure requires that the data meets the criteria to be suitable for this statistical technique (Child, 2006) so we checked that the data followed a normal distribution. The analysis of the data revealed that none of the items followed a normal distribution, as the Kolmogorov-Smirnov test, with the correction of Lilliefors, and the Shapiro-Wilk test show that the significance is 0.000 (Farrell and Rogers-Stewart, 2006; Razali and Wah, 2011), which means that the normality assumption is not fulfilled (see Appendix A1).

Based on these results, it can be stated that it is not appropriate to carry out an exploratory factor analysis (EFA) to perform Harman's single-factor test. In this context, to check that our study has no problems with common method variance in PLS-SEM we fulfilled two additional analyses: on the one hand, a full collinearity test under PLS-SEM (Kock, 2015; Kock and Lynn, 2012) with which we confirmed that all variance inflation factors (VIFs) for all the latent variables in the structural model were lower than five. These results reveal that such structural model does not have common method bias. Hair et al. (2017a, p. 143) assert that "in the context of PLS-SEM, ...a VIF value of five and higher indicate a potential collinearity problem".

We additionally employed a modified test based on the marker-variable technique of Lindell and Whitney (2001). With this procedure we economize survey items since we did not measure *ex-ante* an unrelated construct. In this regard, the number of years the interviewees had been in their position was chosen a priori as a theoretically unrelated "*marker variable*" (Simmering et al., 2015). When this marker variable was included in the structural equation model, none of the dependent variable variances significantly increased. Furthermore, the average correlation between the marker variable and the constructs of the structural equation model was 0.000, and the average significance was 0.831 (two-tailed), which is above the thresholds of 0.05 (two-tailed) or 0.01 (two-tailed) necessary to consider correlations as being significant. In conclusion, common method variance was not a problem in this study.

### **3.2. Measurement scales**

The items in the scales used to measure the constructs under analysis –see Table 2– were scored on a seven-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. *Innovativeness* was measured taking as referent the scale proposed by Hult et al. (2004). *Top management support* was measured considering the items suggested by Cooper and Kleinschmidt (2011) and Carbonell and Rodríguez-Escudero (2009). The *cross-functional communication* scale was inspired by the study of Park et al. (2011). The *NS synergy* scale was based on the study of Ottenbacher et al. (2006). The scale for *NS advantage* included the items used by Ottenbacher et al. (2006) and Menor and Roth (2007). The *FLE ITE* scale took as a reference the items provided in Ottenbacher et al. (2006). To measure the internal NS performance or *FLE outcomes*, we designed an original scale inspired by the works of Cadwallader et al. (2010), Melton and Hartline (2013), and Umashankar et al. (2011). This scale assesses the degree to which the NS improves FLE satisfaction, acts as a motivating stimulus for these employees, fosters their creativity and commitment, and contributes to their development of the firm's common knowledge. *NS market performance* refers to NS sales, market share, and profits relative to the firm's objectives, since relative measures facilitate the comparison of different innovation projects (Santos-Vijande et al., 2016; van Riel et al., 2004). Finally, we took as control variables the sales turnover and the NS launch proficiency. Control variables are expected

to vary and have potential direct effects on the endogenous latent variables included in the model – Figure 1.

**Table 2. First-Order Measurement Models (n = 502)**

FACTOR	Loading <sup>a</sup>	AVE	CR	Sqrt AVE
<b>INNOVATIVENESS (INN)</b>		76.6%	0.908	0.875
The company willingly accepts innovation proposals	0.839			
Management is actively seeking innovative ideas	0.913			
Innovation is a fundamental part of the culture of our company	0.873			
<b>NS SYNERGY (NS_SYN)</b>		69.0%	0.870	0.831
The NS benefited from synergies with existing human resource capabilities	0.822			
The NS benefited from synergies with existing technical expertise and resources	0.838			
The new service benefited from synergies with existing marketing expertise and resources	0.832			
<b>CROSS-FUNCTIONAL COMMUNICATION (CROSS_CM)</b>		87.7%	0.955	0.936
The intensity of the communication flows during the NS development was very high (communication frequency)	0.949			
NS relevant and useful information was efficiently disseminated within the firm during the innovation process (communication quality)	0.943			
Cross-functional communication was facilitated during the service innovation process (multidirectional communication)	0.916			
<b>TOP MANAGEMENT SUPPORT (TMS)</b>		90.1%	0.948	0.949
Top management adopted an active involvement in the daily management of the project (reviewing progress and task priorities, making kill/go decisions)	0.947			
Top management allocated the necessary resources (human, financial, and physical) for the NS development	0.952			
<b>NS ADVANTAGE (NS_ADV)</b>		62.7%	0.834	0.792
The NS offers better value than services from competitors	0.841			
The NS was developed in response to changes in customer needs and wants	0.750			
The NS is a significant improvement over recent services from competitors in terms of meeting customer needs	0.782			
<b>FLE ITE</b>		72.4%	0.913	0.851
FLE were involved and valued in the NS development	0.859			
FLE received extensive training for the provision of the NS	0.842			
FLE were allowed to use their own judgement in solving unexpected problems during the NS provision	0.858			
Management trusted FLE discretion to provide the NS	0.845			
<b>NS MARKET PERFORMANCE (NS_MP)</b>		86.8%	0.963	0.932
The NS has exceeded the success targets set by the firm	0.926			
The NS has exceeded market share goals	0.943			
The NS has exceeded sales targets	0.942			
The NS has exceeded profit targets	0.917			
<b>FLE OUTCOMES (FLE_O)</b>		81.9%	0.948	0.905
The NS has improved FLE satisfaction	0.885			
The NS has served as a stimulus to the FLE	0.932			
The NS has fostered FLE creativity and commitment to the organization	0.915			
The NS has fostered FLE development of the firm's common knowledge	0.887			

<sup>a</sup> The criterion employed in PLS-SEM to consider an indicator to be suitable for a measurement scale is that of Hair et al. (2017a, b).

AVE: average variance extracted; CR: composite reliability; sqrt: square root.

### 3.3. Data analysis

We used the SmartPLS 3 statistics package (Hair et al., 2017a, b) to perform partial least squares (PLS) structural equation modeling (SEM). There were three reasons for taking this approach (Hair et al., 2017a, b): first, the structural model of the study is complex with many latent variables and indicators; second, there is no need for the dataset to have a normal distribution since PLS-SEM is a non-parametric technique; and third, the explorative nature of several relationships analyzed in the study. Next, we shall follow the methodological procedure suggested by Hair et al. (2017a, b) to assess the results of the measurement and the structural models. The analysis of the psychometric properties (reliability, convergent and discriminant validity) indicated that all the items met the requirements to be taken as indicators of the latent variables. All the loadings were above the 0.7 threshold –Table 2–, and the associated *t*-statistic corresponded to statistical significance. This statistical significance level was determined by bootstrapping with 5000 subsamples and with the same number of cases as in the original sample (Hair et al., 2017a, b).

Both the average variance extracted (AVE) and the composite reliability (CR) index were above the thresholds for acceptance, indicating satisfactory reliability for the latent variables. The AVE values ranged from 62.7% to 90.1%, and the CRI values from 0.834 to 0.963. Discriminant validity was demonstrated by checking that for each pair of latent variables the square root of AVE exceeded the correlation between those variables (Fornell and Larcker, 1981), and by calculating the Heterotrait-Monotrait Ratio of correlations (HTMT) which is below the conservative threshold value of 0.85 (Henseler et al., 2015; Cheah et al., 2018). The correlation matrix, means, standard deviations, and square root of the AVE of the ten first-order latent variables are given in Table 3.

**Table 3. Descriptive Statistics and Correlation Coefficients (n = 502)**

	1	2	3	4	5	6	7	8	9	10
1. INN	1	0.350	0.526	0.469	0.461	0.467	0.333	0.452	0.039	0.041
2. NS_SYN	0.284***	1	0.557	0.599	0.722	0.644	0.302	0.512	0.077	0.129
3. CROSS_CM	0.467***	0.474***	1	0.694	0.536	0.810	0.432	0.611	0.044	0.071
4. TMS	0.407***	0.498***	0.632***	1	0.666	0.712	0.291	0.431	0.060	0.061
5. NS_ADV	0.353***	0.526***	0.424***	0.514***	1	0.614	0.414	0.555	0.158	0.095
6. FLE ITE	0.398***	0.529***	0.727***	0.623***	0.470***	1	0.457	0.622	0.034	0.093
7. NS_MP	0.298***	0.260***	0.406***	0.268***	0.341***	0.417***	1	0.593	0.019	0.088
8. FLE_O	0.400***	0.435***	0.566***	0.391***	0.446***	0.592***	0.556***	1	0.041	0.017
9. TURN	-0.009	0.069	0.044	0.056	0.132**	-0.002	0.001	-0.040	1	0.035
10. LAU_P	-0.081	-0.068	-0.069	-0.079	-0.081	-0.049	-0.039	-0.037	-0.007	1
Mean	5.936	5.399	5.363	6.186	5.444	5.412	4.254	4.868	4.410	5.148
SD	1.408	1.213	1.315	0.975	1.189	1.218	1.414	1.309	1.511	1.151

\*\*\* p < 0.01, \*\* p < 0.05 (bilateral). Correlations are below the diagonal. The mean of the scores of the indicators that make up each of the latent variables are used to compute the correlation coefficients. **HTMT ratios are above the diagonal.**

INN: innovativeness; NS\_SYN: new service synergy; CROSS\_CM: cross-functional communication; TMS: top management support; NS\_ADV: new service advantage; FLE ITE: front-line employees' involvement, training, and empowerment; NS\_MP: new service market performance; FLE\_O: front-line employees outcomes; TURN: sales turnover; LAU\_P: launch proficiency of the service innovation.

After successfully testing the measurement models, we evaluated the structural model (Hair et al., 2017a, b). Table 4 lists (a) the path coefficients and their associated *t*-statistics, and (b) the coefficient of determination ( $R^2$ ) and the Stone-Geisser criterion ( $Q^2$ ). The *t*-statistic to determine the level of significance of the path coefficients was computed by bootstrapping with 5000 subsamples, again with the same number of cases as in the original sample (Hair et al., 2017a, b). The criterion used to accept the  $R^2$  value was the widely accepted threshold value 0.10 (Falk and Miller 1992). Table 4 shows that the  $R^2$  values for NS synergy (0.244), cross-functional communication (0.454), top management support (0.171), NS advantage (0.348), FLE ITE (0.589), NS market performance (0.199), and FLE outcomes (0.399) surpass the critical 0.10 value. The  $Q^2$  values range from 0.150 to 0.418, indicating acceptable levels of predictive relevance (Chin and Newsted, 1999). In addition, the overall goodness-of-fit (GoF) criterion reached a value of 0.519, showing that the model performs satisfactorily (Wetzels et al., 2009).

**Table 4. Structural Model Results (n = 502)**

<b>Paths specified</b>	<b>Standardized coefficients</b>	<b>t-value bootstrap<sup>a</sup></b>
<b>Control relationships</b>		
Sales turnover → NS synergy	0.050	1.261 <sup>n.s.</sup>
Sales turnover → Cross-functional communication	0.013	0.391 <sup>n.s.</sup>
Sales turnover → Top management support	0.058	1.316 <sup>n.s.</sup>
Sales turnover → NS advantage	0.094	2.335 <sup>**</sup>
Sales turnover → FLE ITE	-0.043	1.533 <sup>n.s.</sup>
Sales turnover → NS market performance	-0.023	0.566 <sup>n.s.</sup>
Sales turnover → FLE outcomes	-0.066	1.773 <sup>*</sup>
Launch proficiency → NS synergy	0.078	2.154 <sup>**</sup>
Launch proficiency → Cross-functional communication	0.029	0.914 <sup>n.s.</sup>
Launch proficiency → Top management support	0.040	1.009 <sup>n.s.</sup>
Launch proficiency → NS advantage	0.013	0.388 <sup>n.s.</sup>
Launch proficiency → FLE ITE	0.032	1.107 <sup>n.s.</sup>
Launch proficiency → NS market performance	0.045	1.162 <sup>n.s.</sup>
Launch proficiency → FLE outcomes	-0.053	1.569 <sup>n.s.</sup>
<b>Model relationships</b>		
H1a: Innovativeness → Top management support	0.407	8.435 <sup>***</sup>
H1b: Innovativeness → Cross-functional communication	0.251	5.925 <sup>***</sup>
H1c: Innovativeness → NS synergy	0.086	1.546 <sup>n.s.</sup>
H2a: Top management support → Cross-functional communication	0.528	12.739 <sup>***</sup>
H2b: Top management support → FLE ITE	0.282	5.802 <sup>***</sup>
H3a: Cross-functional communication → NS synergy	0.432	7.925 <sup>***</sup>
H3b: Cross-functional communication → NS advantage	0.230	4.813 <sup>***</sup>
H3c: Cross-functional communication → FLE ITE	0.555	13.077 <sup>***</sup>
H4: NS synergy → NS advantage	0.427	9.099 <sup>***</sup>
H5a: NS advantage → FLE outcomes	0.220	4.374 <sup>***</sup>
H5b: NS advantage → NS market performance	0.176	3.502 <sup>***</sup>
H6a: FLE ITE → FLE outcomes	0.497	9.944 <sup>***</sup>
H6b: FLE ITE → NS market performance	0.326	6.621 <sup>***</sup>
<b>Latent variable</b>	<b>R<sup>2</sup></b>	<b>Q<sup>2</sup></b>
NS synergy	0.244	0.160
Cross-functional communication	0.454	0.392
Top management support	0.171	0.150
NS advantage	0.348	0.209
FLE ITE	0.589	0.418
NS market performance	0.199	0.169
FLE outcomes	0.399	0.320

n.s. non-significant.

\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.10.

<sup>a</sup> The level of statistical significance is established from the bootstrapping performed with 5,000 subsamples (Hair et al., 2017a, b).

NS: new service; FLE: front-line employees; FLE ITE: front-line employees involvement, training, and empowerment

#### 4. FINDINGS

Regarding the hypothesized relationships (Table 4), the results indicated that innovativeness in

service firms, as expected, has a positive and significant impact on top management support to the service innovation project (H1a: path coefficient = 0.407;  $t$ -statistic = 8.435), and on cross-functional communication during NS development (H1b: path coefficient = 0.251;  $t$ -statistic = 5.925). Contrary to our expectations, innovativeness does not have any significant direct effect on NS synergy (path coefficient = 0.086;  $t$ -statistic = 1.546), so that H1c is not supported. This result is, however, in line with the findings of Yan and Guan (2018).

Top management support to the NS project reinforces cross-functional communication (H2a: path coefficient = 0.528;  $t$ -statistic = 12.739) and benefits FLE ITE, i.e., the FLE involvement during the NS development, their adequate training for providing the NS, and their empowerment to adjust to the service provision conditions and requirements (H2b: path coefficient = 0.282;  $t$ -statistic = 5.802). Cross-functional communication, allows a better exploitation of the firm's resources and skills, i.e., NS synergy (H3a: path coefficient = 0.432;  $t$ -statistic = 7.925), fosters NS advantage (H3b: path coefficient = 0.230;  $t$ -statistic = 4.813), and benefits FLE ITE (H3c: path coefficient = 0.555;  $t$ -statistic = 13.077). NS synergy also favors NS advantage (H4: path coefficient = 0.427;  $t$ -statistic = 9.099).

NS advantage improves FLE outcomes (H5a: path coefficient = 0.220;  $t$ -statistic = 4.374), and reinforces the NS market performance as expected (H5b: path coefficient = 0.176;  $t$ -statistic = 3.502). Our findings also confirm that FLE ITE boosts both FLE outcomes (H6a: path coefficient = 0.497;  $t$ -statistic = 9.944) and NS market performance (H6b: path coefficient = 0.326;  $t$ -statistic = 6.621).

As complementary findings, it is interesting to note that the routes of indirect effects in the conceptual model through significant paths, considering double, triple, and quadruple mediation effects, were significant in all cases (data available from the authors upon request). These results reinforce the relevance of the chain of effects among the key factors for success in service innovation. Remarkably, for the overall sample, the total indirect effect of innovativeness on NS market performance is 0.162 ( $t$ -statistic = 7.283), and its total indirect effect on FLE outcomes is 0.236 ( $t$ -statistic = 8.561). These findings help to respond to recent calls in the literature for more empirical evidence about how the organizational culture influences a firm's innovation and performance (Moorman and Day, 2016; Tian et al., 2018). Thus, an innovative culture in service firms not only enhances the market or external success of service innovation, but to an even greater extent the NS

internal performance in terms of FLE outcomes. Moreover, although H1c is not supported, the analysis of indirect effects reveals that innovativeness indirectly influences NS synergy through top management support and cross-functional communication by means of two paths: (a) innovativeness → cross-functional communication → NS synergy (indirect effect = 0.108;  $t$ -statistic = 4.840); and (b) innovativeness → top management support → cross-functional communication → NS synergy (indirect effect = 0.093;  $t$ -statistic = 5.466). The two paths have a total indirect effect of 0.201 ( $t$ -statistic = 6.536).

Additionally, to confirm the robustness of our theoretical framework and the stability of the empirical results, we performed a multi-group analysis: KIBS ( $n=246$ ) vs. Hotels ( $n = 256$ ). Thus, in addition to services typology provided by Storey et al. (2016) alternative service taxonomies exist which use classification criteria such as (1) demand orientation –consumer vs. industrial services-, (2) knowledge intensity and (3) technology intensity (Glückler and Hammer, 2011); or (1) customer contact, (2) customization, (3) standardization, (4) technology and labor intensity in service delivery, and (5) service complexity (Jaakkola et al., 2017). Thus, professional services can be categorized as complex and highly specific business services reliant on the knowledge of an expert, whereas hospitality services represent standardized, less complex, consumer services. By exploring whether the intensity of the relationships among the success factors depicted in the conceptual model varies in accordance with the type of service considered our study also contributes to understanding how service innovation occurs in different contexts or service industries.

In this regard, we employed two tests to provide confidence in the empirical results regarding the structural model relationships: the parametric test and the Welch-Satterthwaite  $t$  test (Hair et al., 2017a, b). We did not include the PLS-MGA test (one-tailed test) for three reasons: first, this test “allows for testing only one-sided hypotheses” (Hair et al., 2017b, p. 152); second, “the bootstrap-based distribution is not necessarily symmetric... and limits its applicability as researchers routinely draw on two-tailed tests” (Hair et al., 2017b, p. 152); and third, “due to unequal sample size PLS-MGA is not recommended, even more it could result in invalid findings” (Vlacic et al., 2020, p. 172). These three reasons limit the applicability of the PLS-MGA test (one-tailed test) and explain divergences on the  $p$ -values with the parametric test (two-tailed test) and the Welch-Satterthwaite test (two-tailed test) (Appendix A2).

Overall, the empirical results show the consistency of the findings regardless of the type of service considered as there is only a single significant difference between KIBS and Hotels. In particular, the effect of FLE ITE on FLE outcomes is stronger in KIBS firms (path coefficient = 0.616;  $t$ -statistic = 10.607) than in hotel firms (path coefficient = 0.355;  $t$ -statistic = 4.791) but in both groups (KIBS and Hotels) the proposed hypothesis in our theoretical framework, H6a, is confirmed. FLE involvement in service innovation allows taking advantage of their knowledge and experience to improve the NS design from the market perspective, and also facilitates the comprehension of the NS among the FLE. Training employees improves their problem-solving skills, and empowering FLE lets them exercise their full potential as service providers, thus enhancing their front-line experience. FLE in KIBS are highly qualified professionals which adopt a proactive role in the provision and adaptation of sophisticated services to business clients. From this perspective, it is reasonable that FLE ITE in KIBS has a stronger motivating effect and improves to a greater extent FLE outcomes than in hotels.

## **5. DISCUSSION AND CONCLUSION**

Foresight and adaptation to change are fundamental elements for the survival of organizations and the advancement of society, even more, under the current levels of uncertainty. The great importance of anticipation and adaptation to change makes recent studies continue analyzing innovation from different perspectives, looking for the recipe for innovation success. Fernández-Sastre and Montalvo-Quizhpi (2019) watch for ingredients at the country level, but they found that not all the public innovation policies influence firms' decision to innovate. National culture is not the solution either, according to the recent results obtained by Grzegorzcyk (2019). Datta et al. (2019), after analyzing national systems of innovation conclude that "it is the role of firms to convert ideas and inventions to innovation" (Datta et al., 2019, p. 28), and that innovation management in companies is a critical forerunner of innovation success. Recent studies also highlight the importance of services in the economy and how modern companies increasingly use a servitization foci, regardless of whether their output is more or less tangible (Frank et al., 2019). Under this scenario, this study provides a clear roadmap to help firms to achieve service innovation success from an internal and external perspective. Our results provide a clear picture of the complex

interplay among innovativeness and project-level NS success factors to strengthen service innovation success. Similarly, this study broadens our understanding of the antecedents of several project-level success factors which managers may identify as relevant, but be less aware of how to leverage their presence during service innovation (Papastathopoulou and Hultink, 2012). As aforementioned, understanding successful service innovation management in the modern economies, characterized by the sustained growth of the service sector, is critical to cope with the market evolution and for companies' long-term competitiveness. In this respect, this paper also offers several recommendations for practitioners.

The study confirms that innovativeness, as part of the cognitive dimension of firm's social capital, plays a prevalent role in the configuration of service innovation projects. Our findings indicate that *innovativeness* drives top management behavior during NS development encouraging *top management support* to the innovation project. One of the current deficiencies in the innovation literature is understanding the rationale behind top management involvement and commitment to the innovation process (Felekoglu and Moultrie, 2014), and this study contributes to filling this lacuna. Innovativeness also reveals itself as a key factor to achieve a collaborative climate during NS development and foster the implementation of effective *cross-functional communication* flows. Innovativeness, however, does not exert a direct significant effect on *NS synergy*, which suggests that firm's innovative culture does not guarantee *per se* the exploitation of the available organizational skills and resources. Practitioners need to understand that innovativeness lays the foundation for fertile cross-functional communication, which is crucial to enrich the firm's innovation efforts. However, the effect of innovativeness on cross-functional communication is weaker than its effect on top management support to the NS project, which suggests that firms' innovative culture exerts a stronger effect on the management style than on the behavioral practices of the teams in charge of service innovation. Furthermore, innovativeness indirectly influences the NS success in the market place and the internal outcomes of the NS among FLE. Thus, for managers, innovativeness should be regarded as a key mechanism for promoting service innovation success and firm's competitiveness.

*Top management support* to NS development encourages *cross-functional communication* during the innovation project and benefits *FLE ITE*, a key factor to foster FLE commitment and

support to the NS. Felekoglu and Moultrie (2014) underline that the existing literature focuses mostly on the technical aspects of top management support (fixing priorities, providing resources, supervising progress, and making kill/go decisions), while the social aspects (stimulating communication, building support and creating a favorable atmosphere to the NS project) have received far less attention. In this way, our results fill an important literature gap and provide an important managerial insight: developing top management support to a NS project entails the implementation of key social mechanisms, such as communication flows and FLE ITE, that reinforce service innovation success. In this way, firms can avoid common innovation efficiency issues associated with individualistic approaches to innovation (Tian et al., 2018) or expert biased behavior (Aprea et al., 2019), and develop a more encompassing approach to innovation that allows employees across the organization to be part of the process. As nowadays organizations have at their disposal a volume of information relevant to forecasting much larger than they can actually handle (Gordon et al., 2020), cross functional communication and FLE involvement in service innovation may also allow that the analysis of a large volume of data and information becomes a shared task.

Good *cross-functional communication* during NS development helps to make the NS project's requirements clear within the organization and facilitates *NS synergy* or a strong fit between the NS and the pool of organizational resources. Thus, managers can encourage the exchange of useful information and facilitate communication flows to achieve a better match between the NS project needs and the resources available in the firm. Previous research barely explores how to achieve *NS synergy*. However, these results are relevant for service innovation managers since synergistic innovations imply assuming fewer risks, reducing resource uncertainty, and lowering opportunity costs arising from a potential infra-utilization of the firm's resources (Calantone et al., 2006), which in turn results in an overall greater organizational efficiency (Cooper, 2017). *Cross-functional communication* also has a significant effect on *NS advantage*. Thus, this study suggests that high levels of communication during the NS development allows integrating the firm's knowledge and market experience, which can be greatly tacit in nature due to services intangibility, leading to an improved market offer which provides superior value and diminishes market uncertainty. Additionally, *cross-functional communication* is especially important to benefit *FLE ITE*. Thus, high

levels of inter-functional communication during NS development seem to play a key role for incorporating FLE inputs during the NS development, developing higher levels of training about the intangible and experience-related attributes of the NS, and facilitating a greater empowerment of FLE to provide the service. These findings reinforce the idea that firms need to move forward and give preponderance to the key benefits of good internal communications. In this way, managers can build organizational support to the NS and reduce organizational uncertainty. Despite significant technological advances in recent decades, humans are still relevant in innovative processes. From this view, Datta et al. (2019) reflect on the importance of employee training and empowerment as key aspects of firm innovation.

The results also confirm that *NS synergy* enhances the firm's ability to improve *NS advantage*, i.e., to develop new services which meet the market's needs better than the alternatives available on the market. Thus, *NS synergy* allows the firm to operate from a position of strength, and to exploit its domain of knowledge. Although NS advantage is among the most consistent drivers of NS success (Papastathopoulou and Hultink, 2012), previous evidence on how to develop NS value is limited and needed further research. In this respect, our results contribute to the literature by showing: (1) the direct effect of cross-functional communication on NS advantage, and (2) the direct effect of NS synergy on NS advantage; complementary analysis of indirect effects also reveal (3) the indirect effect of innovativeness on NS advantage (total indirect effect = 0.230;  $t$ -statistic = 6.867), and (4) the indirect effect of top management support on NS advantage (total indirect effect = 0.219;  $t$ -statistic = 6.169). Therefore, managers need to consider the complex interplay among innovativeness and project-level NS factors to strengthen the NS advantage. For managers, innovativeness should be regarded as a key mechanism for promoting their firm's competitiveness in terms of, inter alia, new solutions and continuous improvement of the market offer. Moreover, the fact that NS synergy benefits the NS advantage suggests the need to plan the NS development based on adequate assessment of the service firm's resources.

*NS advantage* has consistently proven to lead to improved *NS market performance*, and this link is confirmed in the present study. The results also confirm that *NS advantage* reinforces *FLE outcomes* to an even greater extent than *NS market performance*. This suggests that, from the FLE perspective, it is highly satisfactory to deliver a superior NS value relative to the competitors' offers. In sum,

managers should be fully aware of the fact that FLE are responsible for providing the NS, and NS advantage contributes to their own comfort in the workplace. Therefore, managers must be specially careful in the process of outlining NS advantage from the market place perspective, since it fosters the NS internal and external performance.

This study also reinforces the idea that human resource management practices in service firms (*FLE ITE*) have an impact on *NS internal and external performance*. FLE involvement in service innovation not only allows taking advantage of their knowledge and experience to improve the NS design from the market perspective, but also facilitates comprehension of the NS among the FLE. Training employees improves their problem-solving skills, and empowering FLE lets them exercise their full potential as service providers, thus enhancing their front-line experience. In this way, *FLE ITE* encourages service-oriented behaviors and creates a fertile ground for the backing of *NS market performance* (sales, market share, and profits). *FLE ITE* not only drives *NS market performance*, but also has a positive impact on *FLE outcomes* with the NS. Therefore, FLE ITE contributes to the internal success of the NS in terms of FLE satisfaction, stimulus, commitment to the firm and knowledge development. Therefore, managers concerned about NS success should ensure that FLE are valued by the firm, are able to participate actively in the design of service innovations, are well-trained to provide effective service encounters, and are empowered to adapt to customer interactions. In sum, managers should be aware that strategies including strong involvement of human resources benefit the NS internal and external success.

This study offers guidance to increase performance and promote successful innovation in service companies. Costs resulting from innovation failure threaten firms' competitive position and survival. However, superior outcomes from innovation success influence firms' performance and also the competitiveness of national economies. Society at large also benefits. Service innovation entails the deployment of material, economic, and human resources; thus, lower innovation failure rates avoid the opportunity cost derived from the misuse and waste of resources. From this perspective, service innovation success also has important implications in terms of global sustainability. Moreover, in many countries, public and private entities allocate resources to promote innovation as an engine of economic and social development and seek, through funding or training, to encourage companies' innovation capability. However, some innovation policies do

not achieve the desired effect (Fernández-Sastre and Montalvo-Quizhpi, 2019). From this view, policy-makers, should rethink innovation policies. This study may favor a better allocation of public resources as our findings show the importance of focusing on promoting innovativeness in firms to trigger the deployment of different project-level NS success factors and improve the NS internal performance and market success.

## 6. FUTURE RESEARCH AND LIMITATIONS

Areas for future analysis include studying whether the model relationships are robust considering different types of innovation, e.g., radical vs incremental (Klarin, 2019), and/or in different service contexts. Future research might also consider other NS success factors such as organizational design, absorptive capacity, innovation strategy, and marketplace characteristics (Storey et al., 2016). Attention also needs to be paid to alternative measures of service success that are related to customer satisfaction and loyalty, learning, and the firm's image or leadership in the market place (Santos-Vijande et al., 2016). Another promising avenue for future research might be the study of the interactions among the antecedents of successful collaborative service innovation with different market agents, such as customers, suppliers, or research centers.

While this study aims to advance the field's comprehension of NS innovation, its empirical results should be interpreted in light of the following limitations, as most survey studies. First, we used cross-sectional data, i.e., there is no certainty that its repetition in another context or for another time period would yield the same results. Second, we use perceptual data from a single key informant per firm (General Managers or Managing Directors), and this informant was free to choose the NS project; but, at the same time, common method bias is unlikely to be a limitation since the study design (*ex-ante*) and assessments (*ex-post*) carried out indicated that it was not a problem in the present study (c.f., Babin et al., 2016; Podsakoff et al., 2012; Simmering et al., 2015), and the measurement scales were reliable and valid according to established procedures (c.f., Hair et al., 2017a, b). This research also approaches threats to validity by working with the highly reliable marker-variable technique (Simmering et al., 2015). Third, the research captures self-reports of service innovation success “*by high-level decision makers in service enterprises*” (Melton and Hartline, 2010, p. 423), although, in this regard, future research will benefit from considering alternative measures of NS market performance. Fourth, the measurement of cross-functional

communication does not distinguish between informal and formal communication during the NS development process (Brettel et al., 2011). We did, however, gather information on the frequency and quality of the cross-functional communication during NS development (Park et al. 2011; Darawong, 2015). Fifth, in accordance with contingency theory, the relationships analyzed merit study under different environmental conditions.

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**Appendix A1. Items from the first-order measurement models (n=502)**

FACTOR Items	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Test statistic	Degrees of freedom	Significance	Test statistic	Degrees of freedom	Significance
<i>First order</i>						
<b>INNOVATIVENESS (INN)</b>						
INN1	0.229	502	0.000	0.818	502	0.000
INN2	0.246	502	0.000	0.787	502	0.000
INN3	0.220	502	0.000	0.831	502	0.000
<b>NS SYNERGY (NS_SYN)</b>						
NS_SYN 1	0.204	502	0.000	0.877	502	0.000
NS_SYN 2	0.223	502	0.000	0.861	502	0.000
NS_SYN 3	0.225	502	0.000	0.864	502	0.000
<b>CROSS-FUNCTIONAL COMMUNICATION (CROSS_CM)</b>						
CROSS_CM 1	0.220	502	0.000	0.885	502	0.000
CROSS_CM 2	0.204	502	0.000	0.894	502	0.000
CROSS_CM 3	0.200	502	0.000	0.892	502	0.000
<b>TOP MANAGEMENT SUPPORT (TMS)</b>						
TMS 1	0.294	502	0.000	0.726	502	0.000
TMS 2	0.250	502	0.000	0.786	502	0.000
<b>NEW SERVICE ADVANTAGE (NS_ADV)</b>						
NS_ADV1	0.253	502	0.000	0.825	502	0.000
NS_ADV2	0.196	502	0.000	0.887	502	0.000
NS_ADV3	0.247	502	0.000	0.830	502	0.000
<b>FLE ITE</b>						
FLE ITE 1	0.234	502	0.000	0.861	502	0.000
FLE ITE 2	0.223	502	0.000	0.853	502	0.000
FLE ITE 3	0.192	502	0.000	0.887	502	0.000
FLE ITE 4	0.199	502	0.000	0.890	502	0.000
<b>NEW SERVICE MARKET PERFORMANCE (NS_MP)</b>						
NS_MP 1	0.151	502	0.000	0.942	502	0.000
NS_MP 2	0.171	502	0.000	0.944	502	0.000
NS_MP 3	0.172	502	0.000	0.944	502	0.000
NS_MP 4	0.168	502	0.000	0.946	502	0.000
<b>FLE OUTCOMES (FLE_O)</b>						
FLE_O1	0.181	502	0.000	0.933	502	0.000
FLE_O2	0.185	502	0.000	0.923	502	0.000
FLE_O3	0.188	502	0.000	0.921	502	0.000
FLE_O4	0.186	502	0.000	0.918	502	0.000

<sup>a</sup> Correction of the significance of Lilliefors

## Appendix A2. Multi-group results: KIBS vs. Hotels

	KIBS vs. Hotels		
	Path coefficients differences between groups	Parametric test <i>p</i> -values (two-tailed test)	Welch-Satterthwaite <i>t</i> test <i>p</i> -values (two-tailed test)
<b>Structural model relationships</b>			
H1a: Innovativeness → Top management support	0.000	0.996	0.996
H1b: Innovativeness → Cross-functional communication	-0.038	0.666	0.666
H1c: Innovativeness → NS synergy	-0.153	0.151	0.152
H2a: Top management support → Cross-functional communication	0.008	0.924	0.924
H2b: Top management support → FLE ITE	-0.074	0.440	0.442
H3a: Cross-functional communication → NS synergy	0.007	0.944	0.944
H3b: Cross-functional communication → NS advantage	0.036	0.715	0.714
H3c: Cross-functional communication → FLE ITE	0.063	0.469	0.468
H4: NS synergy → NS advantage	-0.019	0.843	0.843
H5a: NS advantage → FLE outcomes	-0.110	0.254	0.253
H5b: NS advantage → NS market performance	-0.035	0.729	0.729
H6a: FLE ITE → FLE outcomes	<b>0.261</b>	<b>0.006</b>	<b>0.006</b>
H6b: FLE ITE → NS market performance	0.061	0.540	0.541