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# Developing and Validating Service Innovation Readiness

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# DEVELOPING AND VALIDATING SERVICE INNOVATION READINESS

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## Abstract

*Services have emerged as major economic activities in Taiwan in recent years, since more than 70% of GDP in Taiwan is generated by service sectors. Nevertheless, knowledge of service innovation remained under-explored. To address this research gap, this study proposed the concept of “Service Innovation Readiness” based on expert interviews of five service industries (Department Stores and Retail, Financial, Biotechnology and Medicine, Tourism, and Information Services) and a review of existing literature. Given this, we propose a multi-dimensional construct of Service Innovation Readiness (SIR) consisting of five factors: Strategic Investment, Risk Tolerance, Innovative Champion, IT Experience, and Inter-Organizational Collaboration. To validate the framework of SIR, a survey was conducted in the five service sectors and the final sample consisted of 312 valid cases. The results grant support to the framework, showing that SIR is a multi-dimensional construct. The positive relationship between SIR and service performance provides further evidence to support the predictive validity of the construct measurement. Conclusion and implications are included.*

*Keywords: New service development, Service Innovation Readiness, Service Performance*

# 1 INTRODUCTION

Since service has been playing a more important role in the current economy, the focus of innovation has begun shifting from product-centric to service-centric. Service Innovation (SI) is initially introduced as an IT-driven process that ultimately led to product innovation (Barras 1990). However, subsequent studies argue that service innovation is a broader concept that includes process innovation, product innovation, and other types of innovation (Gallouj & Weinstein 1997). In general, service innovation includes a firm's comprehensive management activities geared toward developing and marketing new services to meet customers' evolving needs (Menor & Roth 2007; Gallouj & Savona 2009).

What, then, leads a firm to initiate service innovation? In examining innovation-related studies, scholars have found that existing resources/capabilities do contribute to a firm's innovation and subsequent outcomes. For instance, market orientation (Narver et al. 2004), information technology (Pavlou & El Sawy 2006), have been found to be positively correlated with innovation outcomes. Nonetheless, we believe that the initiation of service innovation reflects a firm's perceived readiness through an assessment of the various competitive resources it possesses. However, no comprehensive construct exists in the literature that captures the key determinants of this perceived readiness.

We address the research gap. We build on Resource-Based View and propose the concept of "Service Innovation Readiness" (SIR). Theoretically, a firm must transform current resources into a valuable bundle in order to achieve superior status (innovation) and performance (Hunt and Morgan 1996). According to the Resource-Based View (RBV), the superiority of a firm is viewed as a competitive advantage derived from deploying valuable resources the firm controls (Barney et al. 2001). In addition, in a more competitive environment, a firm must continuously reconfigure its resources to maintain its competitive advantage (Fiol 2001). We argue that whether a firm perceive itself ready for implementing service innovation depends on its confidence of applying the bundle of valuable resources at the firm's disposal. Therefore, SIR is conceptualized as a composite construct in the present study to capture the various key resources/capabilities needed to establish a firm's readiness for launching service innovation.

The rest of this paper is organized as follows. First, based on a literature review, we identify five key factors and discuss their connections with SIR. Second, we introduce a two-stage approach to develop and validate the SIR framework. Third, we validate the construct with a survey and examine the relationship between SIR and firm performance. Finally, we conclude this paper with discussion of findings, contributions, and limitations with suggestions for future research at the end.

## 2 SERVICE INNOVATION READINESS

Based on the perspective of organizational change, a firm must first help its employees prepare for a specific change and so they can properly adopt and institutionalize the change. Armenakis et al. (1993) introduce the concept of "Organizational Readiness" (OR) to indicate the extent to which a firm is ready to adopt a specific change. They emphasize the need to consider those affected by change and define OR as "organization members' beliefs, attitudes, and intentions regarding the extent to which changes are needed and the organization's capacity to successfully make those changes". To properly adopt a change, a firm must first communicate internally with organization members to ensure (1) the focal change is perceived as being needed, and (2) the firm is perceived as being able to successfully adopt the change (Armenakis & Bedeian 1999).

Employing a collective viewpoint can provide only a partial explanation when the adopting entity is an organization (Rogers 1995). Referred to Diffusion of Innovations (DoI), a firm that attempts to innovate must first evaluate the imperative of innovation to assure the appropriateness of adoption (Molla & Licker 2005). The source of imperativeness mainly consists of characteristics of both innovation and the adopting context (Rogers 1995; Armenakis & Bedeian 1999). As such, Molla and

Licker (2005) regard the organization as an adopting entity and argue that a firm's readiness is an organization's assessment of its preparation to exploit the potentials of innovation, which involves assessing the imperative induced interactively by the attributes of innovation, managing practices, organizational characteristics, and environmental factors.

Therefore, we propose the concept of "Service Innovation Readiness" (SIR) to represent a firm's self-assessed preparation to implement service innovation. SIR is defined as *an organization's assessment regarding the importance of service innovation and the organization's ability to effectively implement it*. In line with the Resource-Based View (Barney et al. 2001; Fiol 2001), we regard SIR as an advantage derived from how a firm strategically utilizes its current resources. In other words, a firm is more likely to initiate innovative services as the firm sees itself possessing the necessary resources such as strategically allocating investment on service innovation, specializing in service-related technology, and support from top management..

On the basis of the literature review and findings from exploratory interviews with 36 managers from service firms, we identify five key factors as critical determinant of an organization's readiness for launching service innovation—Strategic Investment, Risk Tolerance, Innovative Champion, IT Experience, and Inter-Organizational Collaboration. According to Resource-Based View, a firm's self-assessment on the five factors will shape its readiness for service innovation. Thus, SIR is conceptualized and operationalized as a second-order construct that consists of the five factors which are first-order dimensions. The five dimensions contribute to SIR, making SIR a formative construct (Diamantopoulos & Winklhofer 2001).

## **2.1 Strategic Investment**

A strategy is generally a plan of action designed to achieve a particular goal. More specifically, in one context, the forming of a new strategy can be a response to competition. Referring to studies on innovation, a firm must first adjust or rebuild its strategy so it is favourable to innovation because that position generally ensures appropriate and adequate resources will be invested in implementing innovation (Li & Atuahene-Gima 2001). Furthermore, organizational strategy has been proven to be a critical component for a firm in establishing its competence to innovate (Ritter & Gemunden 2004; Menor & Roth 2007). Moreover, the invested resources not only reflect a firm's commitment to SI (Boulding & Staelin 1995), but also illustrate de facto support from top managers. Therefore, we argue the invested resources induced by the strategy serve as a key factor in shaping a firm's preparation to adopt SI. We then conceptualize "Strategic Investment" as *the extent to which a firm commits to and invests in the adoption of service innovation*.

## **2.2 Risk Tolerance**

Scholars find that, historically, organizational decision makers tend to maintain prior investments/routines even when they have become useless economically (Barton et al. 1989). Such a tendency may constrain a firm's innovation because one must overcome inertia to introduce a new product/service (Nijssen et al. 2005). Chandy and Tellis (1998) propose "willingness to cannibalize" (WtoC) to explain why some firms introduce more radical innovation than others do. They define WtoC as "the extent to which a firm is prepared to reduce the actual or potential value of its investment for creating and introducing new products/services". Instead of avoidance, they suggest a firm should endure such losses for smoothly introducing a radical innovation; otherwise, the innovation will probably fail. Since SI involves satisfying customers' evolving needs by collaborating with others in introducing new services, we regard SI as a radical innovation that may not be accomplished using existing processes. As such, a firm should be in a position to afford actual/potential losses caused by investments in service innovation. In line with Chandy and Tellis's (1998) work, we define "Risk Tolerance" as *the extent to which a firm is willing to tolerate actual/potential losses of its current investments when adopting service innovation*.

### 2.3 Innovative Champion

Leadership has been long regarded as critical to change/innovation implementation (Howell and Avolio 1993). Leadership is a process of identifying common goals and influencing followers to voluntarily direct their efforts in pursuit of them (Yukl 1998). After a firm has clearly stated its new goals, scholars suggest that, in order to smoothly initiate change, top managers should first start communicating the goals and empowering followers to act in their pursuit. For that reason, when a firm has decided to implement service innovation, top managers should coach and guide employees to invest in service innovation. Therefore, we argue that such behaviors are key elements in a firm's preparation to adopt service innovation. We refer to concepts of both "Transformational Leadership" (Avolio et al. 1999) and "Innovation Champion" (Berry et al. 2006) and then propose the concept of "Innovative Champion," which is defined as *the extent to which top managers guide and encourage employees to bring up ideas for service innovation.*

### 2.4 IT Experience

Information Technology (IT) is crucial in a firm's operations and its ability to gain superior performance. In studies of innovation in services, scholars indicate that IT utilization contributes to the introduction of new services because it enhances information processing and inter-firm coordination (Menor & Roth 2007). Tippins and Sohi (2003) introduce "IT Experience" as the degree to which a firm uses information technology for facilitating and improving inter-organizational coordination and information processing. Since service innovation emphasizes collaborating with customers/partners in developing and marketing new services (Vargo & Lusch 2008; Lusch et al. 2007), we believe that type of IT experience would also be critical for a firm when adopting service innovation. As such, we regard IT experience as one key component of SIR. In addition, we adopt Tippins and Sohi's (2003) work and define "IT Experience" as *the degree to which a firm uses information technology for facilitating/improving coordination with customers/partners and information processing in service innovation-related activities.*

### 2.5 Inter-Organizational Collaboration

Inter-firm collaboration has long been regarded as a critical issue in management studies (Ritter & Gemunden 2004). Through inter-firm collaboration, a firm can expand and/or renew its current resource set and, consequently, gain competitive advantage (Hunt & Morgan 1996). Similarly, in studies of service sectors, scholars of Service-Dominant Logic also stress the critical role of inter-firm collaboration in introducing new services (Lusch et al. 2007). Since SI involves collaborating with others to introduce new services, a firm's current framework of inter-firm collaboration would serve as a strong enabler for a firm to adopt SI. For instance, prior experiences in information sharing and co-planning would help with future cooperation in developing new services. Thus, current inter-firm collaboration can be considered a key factor in representing a firm's readiness for SI. To evaluate the collaboration framework, we refer to Sanders (2007) and define "Inter-Organizational Collaboration" as *the extent to which a firm shares information and responds to market change with its partners.*

Figure 1 below represents the conceptual framework of Service Innovation Readiness.

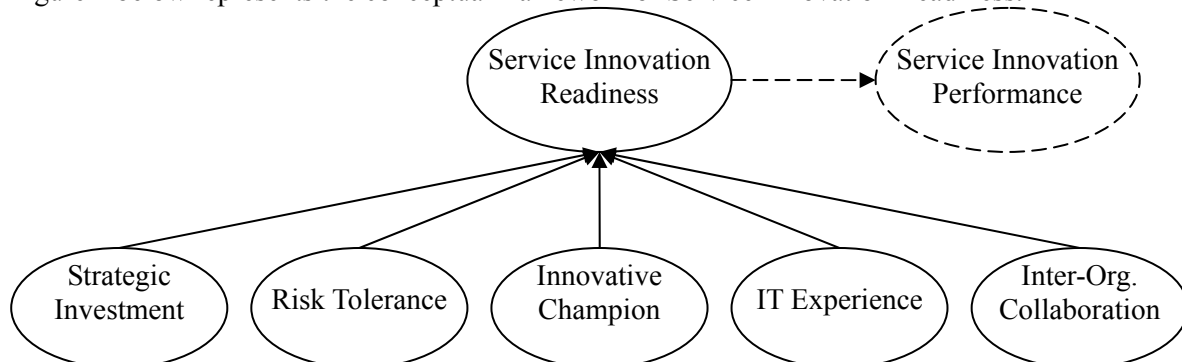


Figure 1. The conceptual framework of Service Innovation Readiness

## 3 METHODOLOGY

We employ a two-stage approach in validating SIR. First, we generate the measurement items based on in-depth interviews with managers and a literature review. Second, we validate the SIR measure using various techniques.

### 3.1 Instrument design

In the initial stage, we first identify and list measurement items based on existing theoretical and empirical studies. We then employ in-depth discussions with several managers experienced with SI to ensure the content validity of the measurement items. Finally, we obtain a collection of 22 items that uniquely represent the following components: strategic investment, risk tolerance, innovative champion, IT experience, and inter-organizational collaboration (table 1). The questionnaire uses seven-point Likert scales ranging from 1 (strongly disagree) to 7 (strongly agree).

At the latter stage, we conduct a survey of companies in service industries in Taiwan to collect data for validating the SIR framework. We then conduct confirmatory analysis to examine the reliability and validity of the data. In addition, to ensure the appropriateness of “Service Innovation Readiness,” we (1) employ two additional items as a reflection of SIR, and (2) adopt the measure of Service Innovation Performance (Menor and Roth 2007). To properly assess the two concepts, most of the items within the two constructs uses seven-point Likert scales ranging from 1 (very low) to 7 (very high) (table 1). Through these two measures, we could further consolidate the validity of the SIR framework (Jarvis et al. 2003).

### 3.2 Respondent ample and data collection

The sampling frame consists of 2500 service firms from five service industries in Taiwan—Retailing, Financial, Healthcare Service, Tourism, and Information Services. The sample companies are drawn from a listing of firms in the five service sectors published by the China Credit Information Service (CCIS). Telephone interview is conducted for data collection from September through November of 2009. Attempts are made to contact each firm in the sample to identify the appropriate key informant who can accurately assess the firm’s readiness for launching SI. The final sample consists of 312 valid responses, which corresponds to a response rate of 12%. In terms of organizational size, the order of responding companies was: medium (63.5%), big (20.5%), and small (16%).

## 4 RESULTS

### 4.1 Measure Validation

We perform confirmatory factor analysis (CFA) for all the first-order constructs with AMOS 5.0. Table 1 shows all indicators load substantively ( $>.60$ ) and significantly on their hypothesized factors ( $p<.001$ ), while the composite reliabilities of all constructs exceed the usual .60 benchmark (ranging from .90 to .98). Furthermore, the average variance extracted (AVE) for the constructs are all greater than 0.50, confirming that all measures demonstrate satisfactory convergent validity. Table 2 indicates satisfactory discriminant validity for all measures in that all the squared roots of AVE exceed the correlations between any pairs of constructs (Fornell & Larcker 1981). Hence, all the constructs provide evidence of strong reliability and validity.

Construct	Items	Factor Loading
Strategic investment (CR=0.94; AVE=0.75)	Our firm has regular department(s) responsible for new service innovation.	0.81
	Our firm employs task-oriented projects for new service innovation.	0.88
	Our firm employs formalized processes for new service development projects.	0.87
	Our firm increases investments for service innovation on important strategic goals.	0.86
	Our firm sets clear execution and operation targets for service innovation.	0.90
Risk tolerance (CR=0.94; AVE=0.68)	Our firm supports service innovation even if it could potentially take away sales of existing services.	0.76
	Our firm is very willing to sacrifice sales of existing services in order to improve sales through service innovation.	0.84
	Our firm tends to invest in service innovation even if it causes existing service facilities to become obsolete.	0.87
	Our firm has no problem replacing existing systems or machinery if it will help create a competitive advantage in the marketplace.	0.83
	Our firm can easily change its organizational scheme to fit the needs of new services.	0.68
Innovative Champion (CR=0.97; AVE=0.86)	Managers endeavor to introduce customers to better services.	0.89
	Managers constantly encourage employees to propose ideas for new services.	0.93
	Managers maintain welcoming and open attitudes toward employees' proposing ideas for new services.	0.96
	Managers set a good example to lead employees to think outside the box to develop ideas for new services.	0.95
IT Experience (CR=0.98; AVE=0.92)	IT is used to speed up the introduction of new services.	0.94
	IT is used to facilitate new services/.	0.95
	IT is used to identify and diagnose customer needs, share information, and coordinates new services/products development activities.	0.92
	Communication flow within service innovation project groups is facilitated through IT-based channels.	0.90
Inter-Org. Collaboration (CR=0.97; AVE=0.88)	Our firm has real-time sharing of operations information with organizational partners.	0.92
	Our firm engages in collaborative planning with organizational partners.	0.90
	Our firm has information platforms from which we share operations-related information with organizational partners.	0.91
	Our firm collaborates with organizational partners and responds rapidly to market changes.	0.92
SIR (CR=0.90; AVE=0.82)	Based on current conditions, we can effectively drive service innovation.	0.90
	In general, what degree of service innovation readiness do you think your company has?	0.91
SI performance (CR=0.92; AVE=0.76)	As compared to the industry, what is the level of your company's service innovation efforts in meeting customers' needs?	0.83
	As compared to the industry, what is the level of your company's success rate in implementing service innovation in the past 3 years?	0.91
	As compared to the industry, what is the level of your company's overall service innovation performance in the past 3 years?	0.96
	As compared to the industry, what is the percentage of the company's service innovation share of profit in the past 3 years?	0.88

*Table 1. Results of Measurement Properties*

Construct	Mean	SD	1	2	3	4	5	6	7
1. Strategic investment	4.48	1.50	<b>0.86</b>						
2. Risk tolerance	4.18	1.32	.71**	<b>0.82</b>					
3. Innovative champion	5.05	1.42	.74**	.72**	<b>0.93</b>				
4. IT experience	4.57	1.41	.73**	.75**	.73**	<b>0.96</b>			
5. Inter-Org. collaboration	4.36	1.39	.67**	.67**	.65**	.76**	<b>0.94</b>		
6. SIR	4.36	1.39	.78**	.77**	.75**	.83**	.76**	<b>0.91</b>	
7. SI performance	4.29	1.51	.71**	.65**	.60**	.66**	.59**	.71**	<b>0.87</b>

Notes: a) Figures in diagonal are values of the square root of the AVE

b) \*  $p < .05$ , \*\*  $p < .01$

Table 2. Descriptive and measurement statistics ( $N = 312$ )

#### 4.2 Analysis of second-order construct of SIR

To estimate the formative second-order construct of SIR, we model the path weights ( $\gamma_i$ ) from the first- to the second-order constructs (Diamantopoulos and Winklhofer 2001) and test the correlations among the first-order constructs. As shown in Figure 2, the impact of all ( $\gamma_i$ ) first-order constructs on SIR are significant ( $p < .05$ ), suggesting they all contribute to shaping the latent construct (Diamantopoulos & Winklhofer 2001). Table 2 shows that the correlations of pairs of first-order factors ranged from .65 to .76, which are all below the suggested cutoff value of .90. Additionally, we test the correlation between the reflective measure of SIR and the aggregated measure of SIR, and the correlation (0.89,  $p < .001$ ) indicates the latent concept of SIR truly represents what it is designed to assess (Pavlou & Sawy 2006).

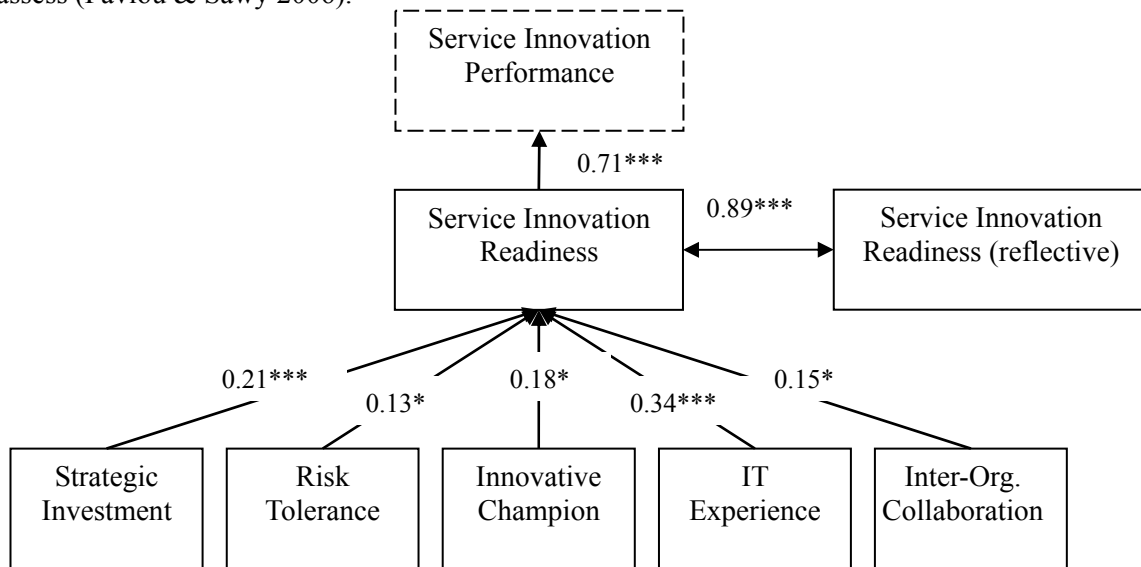


Figure 2. The second-order formative construct of SIR

We also examine whether the second-order constructs fully mediate the impact of the first-order factors on SI performance. The results show the best model exists when SIR is included as a mediator between all five first-order constructs and SI Performance. In other words, the results indicate the second-order construct is a more parsimonious representation of the first-order constructs; that is, the second-order construct captures its power in explaining variation in the dependent variable(s) (Chin 1998). In sum, the results support the conceptualization of SIR as a second-order formative construct with satisfactory validity.

#### 4.3 Examination of nomological validity

We examine the nomological validity of SIR measures to provide evidence that is supported by the theoretical literature. Referred to as the Resource-Based perspective, practices of service innovation can be regarded as a firm's advanced status as compared with its competitors and, ultimately, a firm's advantage contributes to its financial performance (Hunt & Morgan 1996). Thus, SIR would



contribute to a firm's SI-related performance because it leads to the presence of service innovation. That, in turn, suggests SIR is positively associated with SI performance.

For properly assessing a firm's SI-related performance, we refer to the measure of Menor and Roth's (2007) "NSD Performance" and define "Service Innovation Performance" as *a longitudinal and comparative performance measure of service innovation*. The statistical results confirm the coefficient is significant between SIR and SI performance ( $\gamma = 0.71, p < .001$ ; Figure 2). In addition, the SIR explains a considerable percentage of the variation of SI performance ( $R^2 = .50$ ) and, for that reason, the results support the nomological validity of the SIR construct.

## 5 DISCUSSION AND CONCLUSIONS

How does a firm decide it launch on service innovation? To address this question, we propose the concept of "Service Innovation Readiness." This study attempts to further the understanding of service innovation by conceptually developing and validating a set of multi-item scales that constitute Service Innovation Readiness. In so doing, this study aims to provide an answer to the above question.

In this study, the authors report the development and validation of a new multi-item scale for Service Innovation Readiness. SI Readiness captures a service firm's self-assessed preparation for developing and marketing new services. More than that, SI Readiness is conceptualized as a multi-dimensional construct that includes the following complementary dimensions: Strategic Investment, Innovative Champion, Risk Tolerance, IT Experience, and Inter-Organizational Collaboration.

In the development stage, we first identify five key factors contributing to firm's readiness based on results of both literature reviews and expert interviews. Second, the authors conduct in-depth interviews in order to achieve the content validity of the 5-factor framework. In the validation stage, the authors first introduce the "SI Performance" instrument as a key construct for the nomological test. Third, we employ a pilot test to elaborate and confirm the appropriateness of measurement items. Fourth, a large-scale survey is conducted to examine the external validity of the "SIR" framework.

According to the analytical results of the large-scale survey, the Service Innovation Readiness framework is generally validated as a multi-dimensional construct consisting of five critical and complementary elements. In reference to RBV, this study provides a framework of SIR in explaining (1) how a firm can initialize service innovation, and (2) what prior capabilities a firm may need to shape its preparation to adopt service innovation. The SIR framework truly represents the scenario of service innovation that describes a firm's capability-based readiness to adopt service innovation.

### 5.1 Implications

In theory, a firm should adopt and integrate new resources with current resources to form a valuable bundle of resources through which to gain competitive advantages (Barney et al. 2001). In fact, recent service-related studies have started arguing the importance of transformation and integration of current capabilities/resources when introducing new services (Vargo & Lusch 2008). However, few studies adopt such a comprehensive perspective when studying how a firm manages its service innovation. Referred to as RBV, this study proposes a "Service Innovation Readiness" framework in explaining why and how a firm is able to adopt service innovation. To effectively adopt SI, we suggest a firm should first build up its readiness by evenly enhancing the five key capabilities.

Academically, the findings first confirm the argument that a firm should establish a superior set of resources/capabilities (SIR) to achieve superior advantages (SI Performance). Second, the formative construct of SIR demonstrates that a firm should integrate new resources with current resources to form a superior contemporary set of resources (Fiol 2001). Practically, the SIR framework suggests a firm should first assess its preparation for service innovation before implementation. More importantly, shaping the overall preparation requires a firm to establish/enhance its abilities in managing service innovation-related activities.

## 5.2 Limitation and future research

Although the SIR framework is properly developed and validated, there are still some limitations in this study. First, in the large-scale survey, we only collect data from one top manager in each sample company. In spite of the fact we ensure that all respondents are responsible for his/her company's innovation affairs, there may still be some bias due to lack of multiple respondents for each sample company. Second, the large-scale survey target companies belonging to only five service industries, which may limit the generalizability of the SIR framework.

As to suggestions for future research, first, while we have identified five critical elements of SIR, how the five factors interact to shape SIR remains unclear. Thus, further studies should investigate the interaction effects of the five capabilities in the SIR framework. Second, the SIR framework still needs further examination to confirm its generalizability. Third, the SIR framework shows that a firm's self-assessed preparation is critical to service innovation. Hence, scholars may further investigate the effect of readiness on service innovation outcomes.

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