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Examining the critical interplay of knowledge acquisition and integration capabilities in service innovation-based competitive advantage in project oriented service firms

ABSTRACT

While past knowledge-based approaches to service innovation have emphasized the role of knowledge integration in the delivery of customer-focused solutions, these approaches do not adequately address the complexities inherent in knowledge acquisition and integration in project-oriented firms. Adopting a dynamic capability framework and building on knowledge-based approaches to innovation, the current study examines how the interplay of learning capabilities and knowledge integration capability impacts service innovation and sustained competitive advantage. This two-stage multi-sample study finds that entrepreneurial project-oriented service firms in their quest for competitive advantage through greater innovation invest in knowledge acquisition and integration capabilities. Implications for theory and practice are discussed and directions for future research provided.

INTRODUCTION

Despite the growth of literature in service innovation and increased academic and practitioner interest in service innovation-based competitive advantage (Menor & Roth, 2008; Bharadwaj, et al., 1993), the knowledge processes leading to service innovation and in turn sustained competitive advantage are not well understood. The literature reflects several issues yet to be addressed: How does the firm's capacity to acquire and integrate knowledge from strategically important external and internal sources relate to service innovation and competitive advantage? What forms of service innovation are important and how do they relate to performance outcomes? What is the role of key decision-makers in this process? All these issues lead to a debate that has dominated service innovation literature over the last two decades, i.e. whether service innovation-based competitive advantages can be sustained.

Whilst a substantial body of literature suggests that service innovation-based advantages cannot be sustained (Martin & Horne, 1993) this observation predominantly comes from financial services where imitation is rampant and there is limited scope for longer service provider-customer relationship (Salunke et al., 2013). However, a growing number of researchers disagree with this view and argue that such advantages can be sustained through appropriate inimitability mechanisms (Bharadwaj, et al., 1993; Storey and Kahn, 2010; Salunke, et al., 2013). This issue that remains inconclusive is the focus of this study. We approach by stressing the importance of examining knowledge acquisition and integration processes in the development of customer focused solutions as a foundation of competitive advantages that are difficult to imitate. Adopting the dynamic capability view of competitive strategy, we theorize that the service firm's capability to integrate new knowledge (KIC) and it's the interplay with internally focused (episodic learning capability – ELC) and externally focused learning (client-focused learning capability - CLC) capabilities lead to multiple forms of service innovations that have implications to sustained competitive advantage (SCA).

In a departure from past financial industry contexts that have led to inconclusive findings we opt for project-oriented service firm (POSF) context that is characterized by relatively long project life cycles during which strong client relationships are built and nurtured. Recent research highlights the need for further research into service innovation-based competitive strategy in particular in other service industry settings where long-term customer/client involvement is evident (e.g., Salunke et al, 2011). POSF are conducive to service innovation (Larson & Gobeli, 1988) and reflect several characteristics unique to service settings: greater scope for co-creation of service solutions and project activities and outcomes are unique and customer centric (Davies and Hobday, 2005). Drawing on the

knowledge acquisition and integration literature from POSFs, we identify ELC and CLC as key capabilities representing externally-focused and internally-focused learning of the firm.

This study makes three important contributions. First, by conceptualizing CLC and ELC - the key internally focused and externally-focused knowledge acquisition activities of POSFs as dynamic capabilities we capture the strategic knowledge acquisition processes in project-oriented firms. Second, we identify the central role of KI (as a dynamic capability) and its interplay with client-focused learning and episodic learning capabilities leading to new knowledge combinations that are critically needed by the firm to deliver customer-focused service solutions which forms the foundation of competitive advantage. Third, we examine service entrepreneurship (SE) in the development of new knowledge configurations needed to pursue innovation and in turn in the service firm competitive strategy process.

Theoretical Perspectives:

The role of knowledge acquisition and integration in innovation: POSF context

The role of accumulating and integrating of knowledge resources in firm innovation has received substantial attention in the innovation literature. The importance of internal Almeida, Song & Grant, 1992) and external sources (Argote, 1999) of learning have been emphasized as prerequisite for innovation. Internal and external learning activities are not substitutes for one another, but complementary (Arora & Gambardella, 1990). The firm's capacity to integrate knowledge resources is viewed by many researchers as an organizational capability which represents a set of "inert" resources that are difficult to imitate and redeploy (c.f., Kogut & Zander, 1992; Grant, 1991) and therefore a source of strategic advantage.

In developing new solutions, project oriented firms face two important strategic concerns. First, producing effective solutions require firms to orchestrate their resources to assemble a set of products and services that align with the problems presented by clients (Sawhney, 2006) which represent gaps in client processes, a deeper understanding of which is

useful to identify potential value-creating opportunities. This requires service providers to possess superior client focused knowledge to balance the asymmetry arising from the context-rich knowledge the client possesses and the solution specific knowledge and expertise that the service provider possesses. Second, multiple project forms may be the best vehicles to effectively deliver these service solutions encompassing unique combinations of products/services thus enabling the firm to keep competitors at bay (Pennypacker & Dye, 2002). However, developing such unique resource combinations each time may hinder ‘economies of repetition’ (Davies & Brady, 2000), eroding the firm’s cost base which will be detrimental to the firm’s quest for SCA. A strategic issue for these firms then is how best to achieve synergies through economies of repetition, but at the same time judiciously incorporate new knowledge in a sustained manner into new solutions. As projects by nature are episodic, POSFs have the opportunity to transpose the knowledge gained from one project to other projects (Blazevic et al., 2003). Investing in organizational routines to codify such knowledge and integrate such knowledge to customer solutions provides them with SCA.

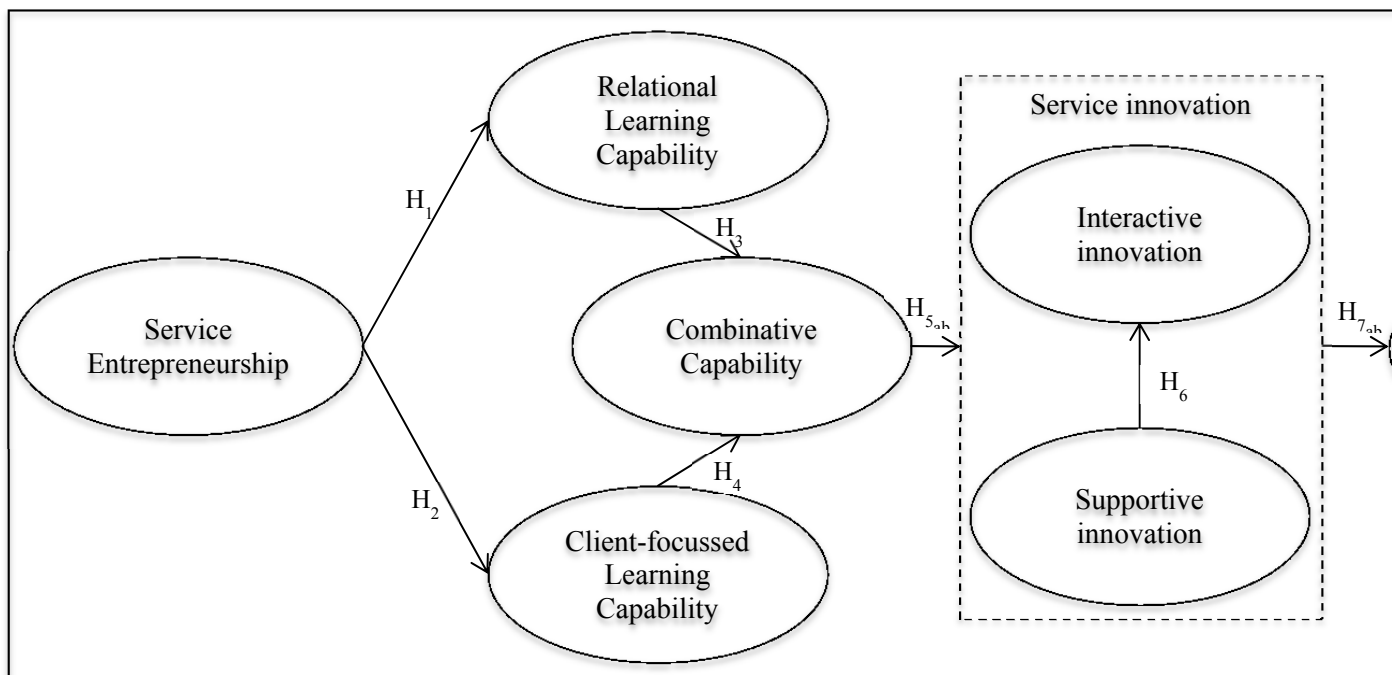
Sustainability of service innovation-based competitive advantage

Proponents of the view that service innovation-based advantages can be sustained argue that the cornerstone of persistent performance lies in the capabilities that are identified, built and nurtured by the firm (c.f. Grant, 1996; Bharadwaj, et al., 1993). Service firms that strategically build a portfolio of knowledge-based capabilities have more operations-based options than their counterparts who are less apt to invest (2002). Several studies in the service innovation-based performance literature subscribe to this capabilities-based view (e.g., Agarwal & Selen, 2009; Menor & Roth, 2008). The inimitability of capabilities or the “capability differential” is suggested as a key element of SCA (e.g., Bharadwaj, et al., 1993; Grant, 1991; Salunke, Weerawardena and McColl-Kennedy, 2011).

Conceptual Model and system of relationships

Our conceptual model is indicated in Figure 1. Building on the dynamic capability view, (Eisenhardt and Martin 2000; Helfat et al., 2007; Teece et al. 1997), our model posits that entrepreneurial POSFs pursuing innovation-based competitive strategy build and nurture key dynamic capabilities - *ELC, CLC and KI*. The first two capabilities represent the firm's capacity to generate knowledge from internal sources and external sources respectively and the integrative capability reflects the judicious application of the accumulated knowledge. We conjecture that that the interplay of these constructs leads to new knowledge combinations enabling the firm to develop new and value enhancing service solutions addressing different customer requirements. The primary task of dynamic capabilities in the competitive strategy process is to create new knowledge configurations (Eisenhardt and Martin, 2000) enabling the firm to pursue greater innovation which forms the foundation of competitive advantage (Zahra, Sapienza & Davidson, 2006). The two learning capabilities impact KIC which in turn influences two interrelated forms of service innovation, interactive service innovation (ISI) and supportive service innovation (SSI) manifest as service solutions (Berry et al., 2006).

Figure 1: Conceptual model



Service Entrepreneurship (SE) and dynamic capabilities

Entrepreneurial behavior has been positively linked to the firm's wealth creating efforts (Ireland, Hitt, Camp, & Sexton, 2001), higher order learning (Slater & Narver, 1995), new product introduction or market entry (Shane & Venkataraman, 2000) and superior market-based performance (Sarkar, Echambadi, & Harrison, 2001). The behavioral approach to entrepreneurship has gained prominence in entrepreneurship-innovation research over the last decade conceptualizes entrepreneurship in terms of three dimensions, innovativeness, proactiveness and risk-taking (e.g., Covin & Slevin, 1991). Salunke, et al., (2013) argue that this approach that has its origins in the manufacturing context is inadequate to capture the unique operational characteristics of service firms. They propose the additional dimension of *adaptiveness* to strengthen the behavioral entrepreneurship construct. We adopt Salunke et

al.'s (2013) operationalization of SE in terms of four dimensions, namely, *innovativeness*, *proactiveness*, *risk-taking* and *adaptiveness*.

The dynamic capability-based view assigns a prominent role to entrepreneurial key decision-makers in the competitive strategy making (e.g., Zahra, Sapienza, & Davidsson, 2006) in that it argues that capabilities which provide much needed new knowledge configurations to gain competitive advantage are built and nurtured by entrepreneurial key decision makers. Such capabilities are based upon the foundation provided by the structured and persistent efforts of the firm towards innovation-directed learning (Rae, 2000).

Episodic learning capability (ELC) The project-based literature in particular suggest that episodic learning leads to innovation (e.g., MacCormack, Verganti, & Iansiti, 2001). As projects by nature are episodic, knowledge gained from one project can be usefully transposed to other projects (Blazevic et al., 2003). With the traditional centralized R&D unit model of technological development followed by manufacturing firms, becoming irrelevant in project-based environments, episodic learning becomes a key source through which the firm achieve cost-efficiencies in multiple project settings (Acha et al., 2005).

Hypothesis 1: SE in project-oriented firms is positively related to its ELC.

Client-focused learning capability (CLC) Client-focused learning by the firm refers to acquisition of knowledge through interactions with its customers/clients with a view to understanding and satisfying their needs and wants. As customers/clients of today are more aware and demanding, firms are increasingly adopting a customer-oriented perspective as a source of competitive advantage (Woodruff, 1997). Prior research has highlighted the importance of learning from customers/clients: lead users (Von Hippel, 1989); customer as a resource (Gouthier & Schmid, 2003); creation of superior customer value (Narver & Slater,

1990) and customer linking as a key capability in market-driven firms (Day, 1994) and has been linked to entrepreneurship (Slater & Narver, 1995). The importance of customer/client input to NSD has also been emphasized by several researchers (e.g., Alam & Perry, 2002).

Hypothesis 2: SE in project-oriented firms is positively related to its CLC.

Knowledge integration capability (KIC) KIC is defined as the POSF's capacity to purposefully create new knowledge from combination of knowledge resources, extend such knowledge to value creating activities and modify such knowledge to address the changing market conditions. As noted earlier, entrepreneurial initiatives underlie this process. Using this capability, firms activate and alter resource configurations and learn new skills by recombining their current capabilities (Kogut & Zander, 1992). In project environments, firms with KIC combine various production inputs such as skills, knowledge, software and technology to produce project outcomes (Davies and Hobday, 2005).

Hypothesis 3: SE in project-oriented firms is positively related to its KIC.

Interplay between dynamic capabilities

As discussed earlier, the key role of KIC in a firm's innovation process is to ensure that the required new knowledge combinations are made available to the firm's entrepreneurial managers. For this to occur, the new knowledge must be present within the firm's domain. This is linked with the ability to learn from external and internal sources for innovation. In project-oriented environments, the firm's CLC and ELC represent the two sources of learning, respectively. Therefore, we argue that ELC and CLC drive KIC. Thus;

Hypothesis 4: ELC in project-oriented firms is positively related to its KIC.

Hypothesis 5: CLC in project-oriented firms is positively related to its KIC.

Dynamic capabilities and service innovation (SI)

While early attempts to conceptualize SI have examined dimensionality (e.g., Den Hertog, et al., 2010; Edvardsson & Olsson, 1996) as well as SI types and degrees (e.g., Johne & Storey, 1998), the manner in which *service firms create value for themselves* through user-centric innovation with a focus on service solutions has received scant empirical attention. Building on prior studies (e.g., Edvardsson & Olsson, 1996; Larsson & Bowen, 1989) and based on a study of project-oriented firms, Salunke et al (2013) operationalize SI as comprising (1) Interactive innovation (ISI) and (2) Supportive innovation (SSI). ISI refers to the value creating service solutions offered by the service firm in the service provider and customer context. When a new service is offered, the customer responds to the new value proposition by recognizing and actualizing the potential value the new service offers (Michel, Brown, & Gallan, 2008). SSI refers to the indirect value creating changes at the back-stage that support the new value proposition.

Dynamic capabilities are linked to firm innovation. As noted in the earlier sections, the primary task of dynamic capabilities is providing new resource combinations enabling the firm to undertake its primary value creation strategy. We therefore theorize that whilst the two learning capabilities represents knowledge accumulation from external and internal sources the KIC represents the firms capacity to provide knowledge combinations needed to develop innovative client focused solutions.

Hypothesis 6: KIC in project-oriented firms is positively related to ISI.

Hypothesis 7: KIC in project-oriented firms is positively related to SSI.

As noted earlier, SSI is linked to ISI. Innovative changes undertaken in the support service structures in project-oriented firms facilitate those in the firm who interact with customers in providing value-adding solutions to customers.

Hypothesis 8: SSI in project-oriented service firms is positively related to ISI.

Sustained competitive advantage (SCA) SCA refers to the firm's ability to achieve a 'superior marketplace position'. We adopt Barney's (1991, p. 102) definition of SCA: "A firm is said to have SCA when it is implementing a value-creating strategy not simultaneously being implemented by any current or potential competitors and when these other firms are unable to duplicate the benefits of this strategy." The inimitability of distinctive capabilities based on "capability differential" is a key element of SCA in the capability-based model (Grant, 1991; Bharadwaj, et al., 1993). We conjecture that by shifting to 'solution-based innovation' POSFs enter in to a domain where collaborative linkages and information exchanges are necessitated between service providers and clients/customers. Such relationship erects an inimitability barrier to the firm's closest competitors.

H9: ISI in project-oriented service firms is positively related to its SCA.

H10: SSI in project-oriented service firms is positively related to its SCA.

METHOD

The study adopted a two-stage design. The conceptual model was tested in an exploratory survey using an Australian sample followed by a confirmatory mail survey-based study on a US sample of POSFs with CEOs/senior managers as respondents.

The Australian and US quantitative studies

In the exploratory phase, approximately 2000 Australian POSFs that matched the selection criteria were contacted. 192 usable surveys were obtained representing a response rate of over 10%. The confirmatory sample of US project-oriented firms was obtained through a professional market research company. A total of 261 usable responses were obtained with a corresponding response rate of over 20%. The exploratory (N=192) and

confirmatory study (N=261) samples were of sufficient size to achieve a high level of statistical power (McQuitty, 2004).

Common method variance and data equivalence

Several measures recommended by Podsakoff, MacKenzie, Lee, & Podsakoff (2003) were undertaken during the instrument design and testing stage to mitigate common method variance. A *post-hoc* factor analysis (Harman's single-factor test) was also performed to check for common method bias. While the results do not preclude the possibility of common method variance, they do suggest that it is not a likely explanation for the reported findings. To test for equivalence, a two-part procedure recommended by Mullen (1995) was followed. The tests for measurement and structural invariance indicate the equivalence of the measures and the structural paths across both samples.

Measures

Measures used in the study are drawn from existing scales and modified using the findings of our qualitative study. *SE*: We used the measure by Salunke, et al (2013) which is an aggregate measure with four dimensions; *proactiveness*, *innovativeness* and *risk-taking* (Covin & Slevin, 1986) *adaptiveness* (Gwinner, Bitner, Brown, and Kumar, 2005). The dynamic capability constructs were operationalized using the conceptualization proposed by Helfat et al (2007). Each dynamic capability construct comprised 6 items capturing the three transformational activities i.e., *create*, *extend* and *modify* (2 items representing each of the processes). The items were sourced from the literature: *CLC* (e.g., Grewal and Slotegraaf, 2007; Sawhney, 2006); *ELC* (e.g., Blazevic et al., 2003; McGrath and Keil, 2007); *KIC* (e.g., Galunic and Rodan, 1998; von Hippel, 1989). Each dynamic capability construct was assessed on a 5-point Likert scale (anchored by "Not at All" and "A Great Deal" at the endpoints) *SI*: We used the service innovation measure by Salunke, et al., (2013) which conceptualizes SI in terms of *ISI* and *SSI* and measure each innovation type with six items

each. *SCA*: *SCA* was operationalized using four items derived from our qualitative study and based on Bharadwaj, et al. (1993) and Barney's (1991) work which is premised on the inability of competitors to duplicate the benefits of the innovation strategy (Likert - anchored by "Strongly Disagree" and "Strongly Agree").

Results

Partial least squares in structural equations modeling (PLS-SEM) (e.g. Hair et al., 2012) was used in our analyses. PLS-SEM simultaneously estimates measurement models and the structural model, as required in the two-step SEM modeling approach (Anderson and Gerbing, 1991). The dimensionality of each construct was assessed using exploratory factor analysis with oblimin rotation. The analyses support unidimensionality for latent constructs in the model. Summary statistics are shown in Table 1 for the Australian and US samples.

Insert Table 1 and Table 2 about here

As shown Table 1, the measures demonstrate satisfactory reliability and validity estimates. The results of hypotheses testing are presented in Table 2. The standardized path coefficients between the latent constructs in the model are shown in Figure 2 and Figure 3 for the Australian and US sample, respectively, with the associated t-values in the parentheses.

In both samples, as hypothesized (see Table 2), there are significant positive relationships between SE and the dynamic learning capabilities, viz. ELC [H_1 : $\beta_{Aus} = 0.38$; $t = 5.47$ ($p < .001$); $\beta_{US} = 0.40$; $t = 6.62$ ($p < .001$)]; CLC [H_2 : $\beta_{Aus} = 0.48$; $t = 7.01$ ($p < .001$); $\beta_{US} = 0.51$; $t = 8.86$ ($p < .001$)]. The hypothesized path between SE and KIC (H_3) is not supported. There are significant positive relationships between dynamic learning capabilities and KIC, viz. ELC \rightarrow KIC [H_4 : $\beta_{Aus} = 0.32$; $t = 6.39$ ($p < .001$); $\beta_{US} = 0.39$; $t = 7.29$ ($p < .001$)]; CLC \rightarrow KIC [H_5 : $\beta_{Aus} = 0.45$; $t = 6.01$ ($p < .001$); $\beta_{US} = 0.43$; $t = 7.39$ ($p < .001$)]. With the exception of the relationship between KIC and ISI in the Australian sample [H_6 : $\beta_{Aus} = 0.009$; $t = 0.2431$ ($p = .808$)], the results suggested a significant positive relationship between KIC and the two

types of SI, viz. KIC \rightarrow ISI [H_6 : $\beta_{US} = 0.18$; $t = 2.02$ ($p < .05$)]; KIC \rightarrow SSI [H_7 : $\beta_{Aus} = 0.58$; $t = 9.90$ ($p < .001$); $\beta_{US} = 0.61$; $t = 12.66$ ($p < .001$)]. Also, as hypothesized, SSI had a significant positive effect on ISI in both samples, viz. [H_8 : $\beta_{Aus} = 0.80$; $t = 19.02$ ($p < .001$); $\beta_{US} = 0.62$; $t = 9.39$ ($p < .001$)]. Finally, SI in turn had a significant positive relationship with the outcome dependent variable, SCA, viz. ISI \rightarrow SCA [H_9 : $\beta_{Aus} = 0.28$; $t = 2.83$ ($p < .05$); $\beta_{US} = 0.31$; $t = 2.44$ ($p < .05$)]; SSI \rightarrow SCA [H_{10} : $\beta_{Aus} = 0.29$; $t = 2.79$ ($p < .05$); $\beta_{US} = 0.24$; $t = 2.08$ ($p < .05$)]. The model explained 30% and 25% of the variance in the SCA construct in the Australian and US sample, respectively.

DISCUSSION

Our study was intended to examine the interplay between the capabilities for knowledge accumulation and integration in the delivery of solution-focused service innovation and in turn on SCA in POSFs. The results, whilst supporting the hypothesized relationships highlight the complexities involved with the knowledge accumulation and integration across the two samples. First, SE emerges as the primary driver of the innovation-based competitive strategy. Entrepreneurial key decision-makers in their efforts to outperform competitors pursue solution-based innovation addressing their clients' needs which requires them to build and nurture a set of dynamic capabilities in ELC, CLC and KIC. Results across both samples support our theorization that firms pursuing SI acquire knowledge from both external and internal sources. Interestingly, while our hypothesized direct relationship between SE and KIC was not supported, the findings indicate the KIC is driven by the two learning capabilities. This suggests that the mere presence of entrepreneurship will not drive the KIC and presence of new knowledge acquired through CLC and ELC is a prerequisite for knowledge integration to occur.

The new knowledge developed through the two learning capabilities needs to be integrated for the development of innovative solutions addressing the clients' requirements.

Interestingly, there's a differential effect of KIC on the two innovation types across the two samples: While firms in the US sample use KIC to directly influence both types of innovation, firms in the Australian sample tend to deploy KIC to directly influence SSI (with an indirect effect on ISI).

Overall our study findings have important implications for the service innovation-based competitive strategy literature. First, the way SE was conceptualized, operationalized and its emergence in the findings as a key driver of capabilities and the overall competitive strategy process brings forth new insights. Second, the interplay of learning capabilities and KIC provides valuable insights on the complexities involved in the development of knowledge configurations needed in the solution focused service innovation. Our findings suggest that the presence of ELC (externally focused) and CLC (internally focused) are prerequisites for the firm's effort to integrate such knowledge for the development of innovative solutions addressing customer needs. The mediating role of KIC suggests that POSFs in their quest for innovation-based competitive advantage acquire and integrate knowledge acquired from internal and external linkages. With the knowledge gained through multiple sources, POSFs having superior KIC are able to provide innovative solutions to their clients. Our model captures the complexities involved with the knowledge accumulation and integration in the service innovation process. Third, our findings on the hypothesized relationship between SI and SCA have important implications to the substantial debate in the service innovation literature whether SI-based advantages can be sustained. Fourth, we used the dynamic capability view to conceptualize and operationalize the capabilities involved with the development of new knowledge configurations that facilitates solution-based SI in POSFs. Although the dynamic capability view has dominated the competitive strategy literature over the last decade it has not been used to examine the knowledge accumulation and integration interplay in SI research. Similarly, our operationalization of the dynamic

capability constructs in terms of the three activities suggested in the literature, namely, *create*, *extend* and *modify* activities was supported contributing to the dynamic capability-based view of competitive strategy. Finally, the significant relationship between SI and KIC suggests that innovation is a cornerstone of service firm competitive strategy.

Managerial implications

For the managers the findings of our study provide a feasible path to gain competitive advantage through SI. Our findings suggest that the presence of a set of dynamic capabilities is a prerequisite for solution-based innovations to occur in a service firm. Managers must invest their time and resources to build organizational routines that will be building blocks of ELC, CLC and KIC. By opting to learn from past project episodes as a strategic activity, managers will be able to cut down costs involved with the development of repeated solutions with client-focused modifications. Similarly, having a greater understanding of key clients of the firm that are served by or having a superior CLC is important. Most importantly, managers must invest resources to build and nurture KIC which provides new knowledge configurations required to provide innovative solutions to their clients. The pivotal importance of KIC in conjunction with the dynamic learning capabilities (i.e., ELC and CLC) to innovation, suggests that POSFs invest in and implement systems and flows or redesign organizational structures that facilitate combinative activity.

Some limitations must be acknowledged here. The use of a cross-sectional design and the use of single respondents is a limitation on account of key informant bias. Future studies could consider the use of multiple respondents as key informants within a single firm. Also, future studies could examine this phenomenon using a longitudinal approach. A temporal approach could reveal more insights into the firm's entrepreneurial stance, and in particular the degree of adaptiveness and dynamic capabilities and the interrelationships therein.

Conclusion

The study extends the service innovation literature by examining the interplay of capabilities for knowledge accumulation and integration in a POSF context. Our choice of the POSF context not only facilitated examining the complexities involved with knowledge management processes in the SI process but also provide evidence to support the SI-based SCA. For practitioners, the findings provide a feasible path to outperform competitors suggesting the need to build and nurture a set of dynamic capabilities which provide the required new knowledge combinations needed to deliver solutions to customer problems thereby creating an inimitability barrier to its closest competitors. Policy planners will benefit by insightful findings on the role of service innovation in SCA.

Table 1: Summary statistics – Australian and US sample

Construct		Items in scale	Mean	SD	AVE	Cronbach's alpha/ CR	(a)	(b)	(c)	(d)	(e)	(f)	(g)	Parameter estimates
Australian sample														
SE	(a)	4	3.3	0.72	0.55	0.73/0.83	0.55							0.67-0.77
ELC	(b)	6	3.6	0.72	0.73	0.93/0.94	0.15	0.73						0.83-0.89
CLC	(c)	6	3.6	0.79	0.67	0.90/0.92	0.21	0.26	0.66					0.77-0.85
KIC	(d)	6	3.2	0.71	0.53	0.85/0.87	0.37	0.30	0.34	0.57				0.68-0.81
ISI	(e)	6	3.2	0.70	0.59	0.86/0.90	0.20	0.06	0.09	0.21	0.59			0.66-0.85
SSI	(f)	6	3.1	0.73	0.56	0.85/0.89	0.22	0.08	0.11	0.32	0.65	0.56		0.71-0.80
SCA	(g)	4	3.5	0.86	0.73	0.88/0.91	0.28	0.08	0.13	0.25	0.27	0.27	0.73	0.83-0.88
US sample														
SE	(a)	4	3.6	0.75	0.54	0.71/0.82	0.54							0.70-0.78
ELC	(b)	6	3.8	0.72	0.60	0.87/0.90	0.16	0.60						0.69-0.81
CLC	(c)	6	3.8	0.78	0.63	0.88/0.91	0.24	0.46	0.63					0.69-0.82
KIC	(d)	6	3.5	0.79	0.58	0.85/0.89	0.18	0.45	0.46	0.58				0.64-0.83
ISI	(e)	6	3.4	0.78	0.56	0.85/0.89	0.16	0.21	0.23	0.30	0.56			0.68-0.80
SSI	(f)	6	3.2	0.79	0.57	0.85/0.89	0.09	0.21	0.23	0.35	0.54	0.57		0.68-0.83
SCA	(g)	4	3.6	0.82	0.68	0.84/0.89	0.22	0.31	0.31	0.37	0.23	0.22	0.68	0.79-0.85

Australian sample: N=192; US sample: N=261

Values in the shaded diagonal represent the average variance extracted (AVE) for each construct. The squares of the correlation estimates are presented in the lower triangle of the matrix. The squared correlation estimate should be lower than the AVE for discriminant validity to be established between two constructs; SE – Service Entrepreneurship; ELC – Episodic Learning Capability; CLC – Client-focused Learning Capability; KIC – Knowledge Integration Capability; ISI – Interactive Service Innovation; SSI – Supportive Service Innovation; SCA – Sustained Competitive Advantage; S.D. – Standard deviation; CR – Composite reliability.

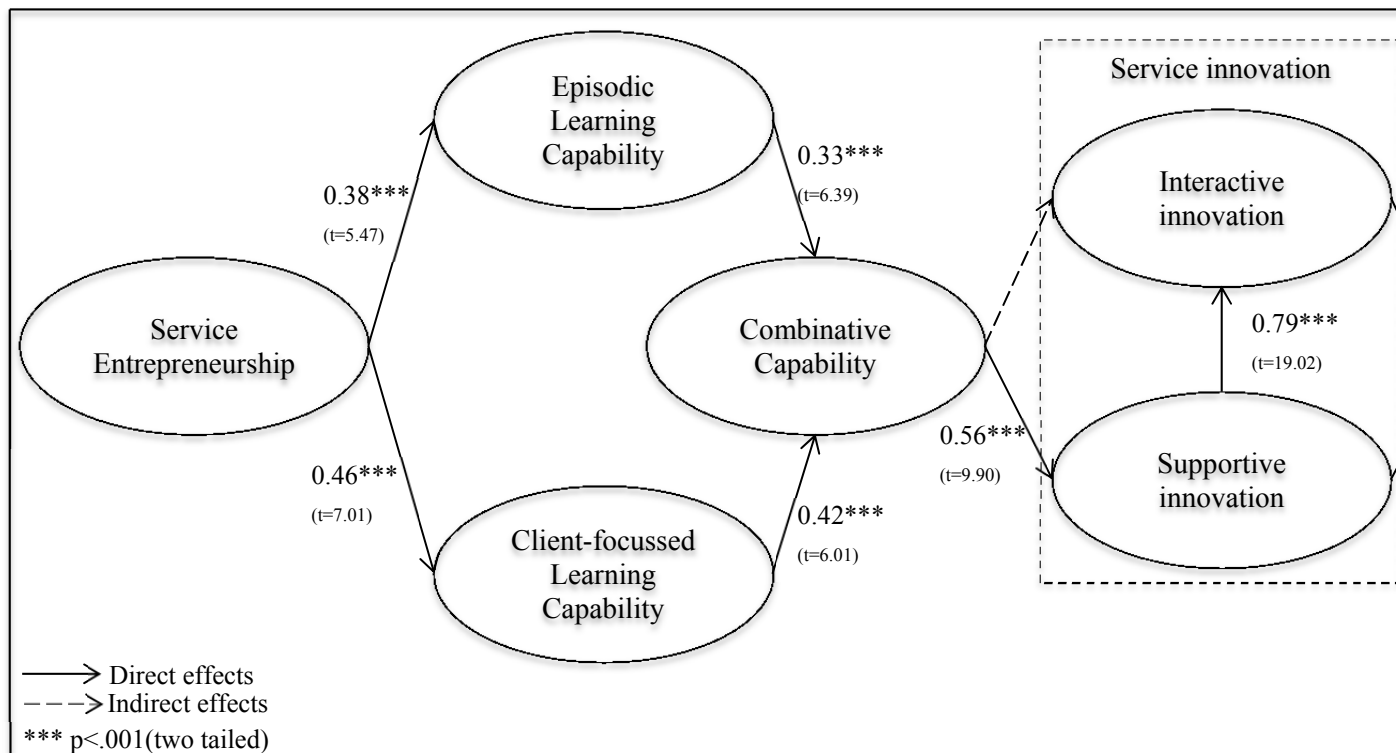
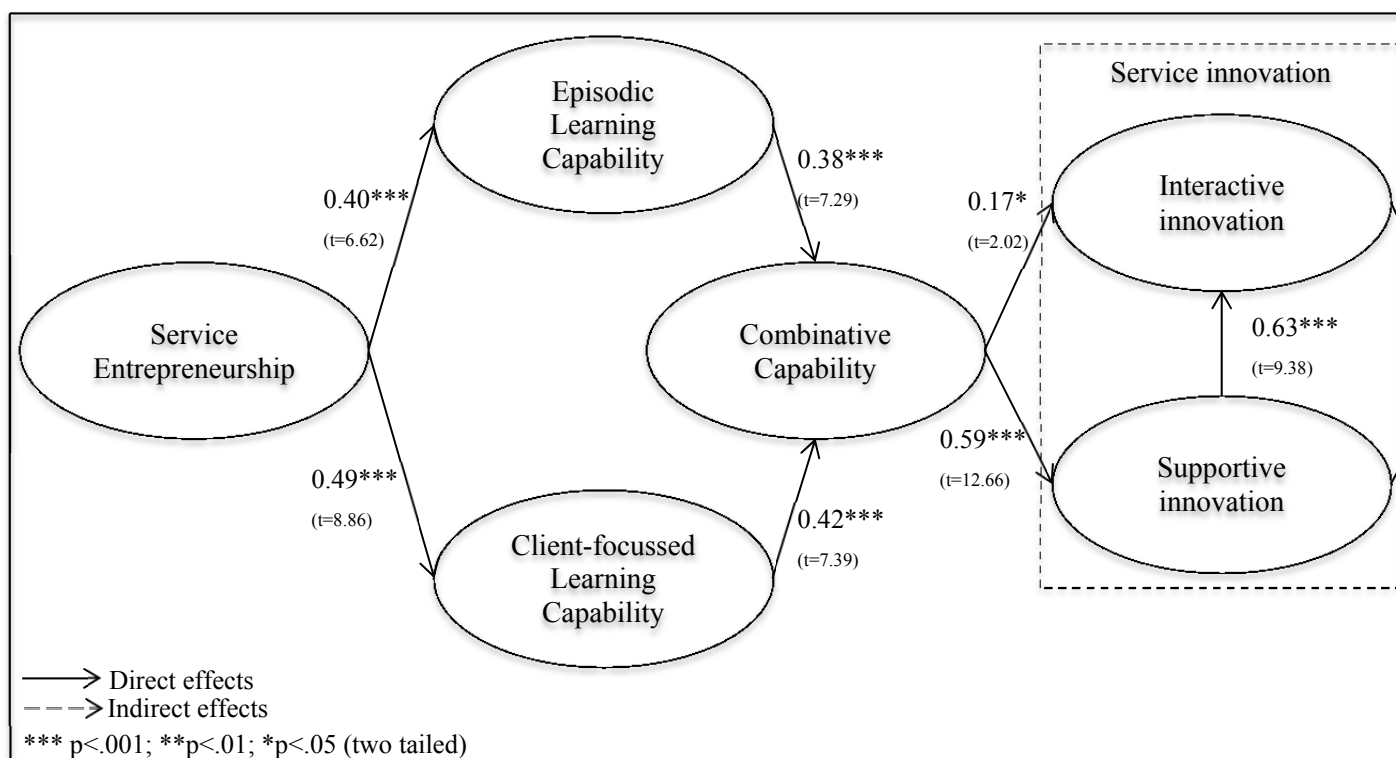
Figure 2: Structural model: Australia

Figure 3: Structural model: US**Table 2: Hypotheses Tested**

	Australia	United States
H1: Service entrepreneurship → episodic learning capability	Supported	Supported
H2: Service entrepreneurship → client-focused learning capability	Supported	Supported
H3: Service entrepreneurship → knowledge integration capability	Not supported	Not supported
H4: Episodic learning capability → knowledge integration capability	Supported	Supported
H5: Client-focused learning capability → knowledge integration capability	Supported	Supported
H6: knowledge integration capability → Interactive service innovation	Not supported	Supported
H7: knowledge integration capability → Supportive service innovation	Supported	Supported
H8: Supportive service innovation → interactive service innovation	Supported	Supported
H9: Interactive service innovation → sustained competitive advantage	Supported	Supported
H10: Supportive service innovation → sustained competitive advantage	Supported	Supported

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