



# Service delivery innovation architecture: An empirical study of antecedents and outcomes

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## KEYWORDS

Resource-advantage theory;  
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**Abstract** The research examines service delivery innovation architecture and its role in achieving sustainable competitive advantage of firms. The study develops and empirically examines an antecedent based model of service delivery innovation. We collected data from 203 service sector professionals working in Mexican financial and information technology firms, and tested the proposed relationship. Further, the study investigates the moderating role of customer orientation on innovation driven performance outcomes. Results show that customer orientation strengthens the service delivery–performance relationship. This paper aims to contribute to the strategic planning of service firms by guiding their resource allocation to ensure sustainable growth.

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## Introduction

Globalisation and increasing market competitiveness have driven firms towards innovativeness in their operations to gain sustainable competitive advantage. Firms now compete on the basis of services rather than on the basis of physical products (Gronroos, 2000; Jay Kandampully, 2002)

as it is hard to distinguish between products of competing brands in a given product category. For example, to a customer, there is no apparent difference between an LG and Samsung LED television or an HP and Lenovo laptop; it is the service offered by the manufacturer that manifests true value (Jay Kandampully, 2002). The Fortune<sup>500</sup> lists for industrial and services companies suggest that more of the conventional product based companies have started selling services (e.g., General Electricals) to attain profitability (Dawson & Horenkamp, 2007). Service innovation involves intangible resources for a more radical service logic perspective that challenges the conventional attribute-based view of services delivery designs (Blazevic & Lievens, 2008; Hunt, 2000a, 2000b, 2002). It goes beyond the conventional boundaries of product innovativeness and involves assimilation of improved service processes by means of designing and improvising service delivery systems (Avlontis et al., 2001).

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Firms carrying innovative business architecture reap substantial benefits by providing new solutions to the customer interface, new distribution methods and improved application of technology in the service process, new forms of operation with the supply chain or new ways to manage services (Miles, 2008). This unique architectural approach extends the applicability of service delivery systems and innovations over and above the classical four pronged IHIP (inseparability, heterogeneity, intangibility, and perishability) framework (Lovelock & Gummesson, 2004). To differentiate their businesses from competitors, firms look for competitive advantage in terms of technological upgradation, knowledge integration, and networking of organisational resources (Conner & Prahalad, 1996). Bharadwaj, Varadarajan, and Fahy (1993) discuss the specific combinations of resources (basic, interconnected, and composite) that are unique to service industries with respect to firm competitive advantage. Business partner collaboration, customer co-creation and optimising resource utilisation efforts have improved shareholder value, capability to innovate, and in turn, performance (Karpen, Bove, & Lukas, 2012; Lusch, Vargo, & O'Brien, 2007; Madhavaram & Hunt, 2008; Vargo & Lusch, 2004, 2006, 2008). A number of IT and banking firms have conducted independent research to make their service delivery processes more innovative and efficient (e.g. SAP, Infosys, TCS, HSBC, Deutsche, Citi, JPMorgan, ING Group).

Literature suggests that resource advantage theory of competition (R-A) by Hunt (2000a) and service-dominant logic (SDL) by Vargo and Lusch (2004) are two fundamental approaches to discuss service innovation at firm level. Applying these frameworks, various models have been proposed to measure effectiveness of service innovation (Chen, Tsou, & Huang, 2009; Ordanini & Parasuraman, 2011; Storey & Kahn, 2010). For example, banking firms have led service delivery innovation in the past through online banking, ATMs, international money transfers, and more recently through mobile banking facilities. However, the issue dealt with in previous studies (Madhavaram & Hunt, 2008; Prahalad & Ramaswamy, 2004) is the relationship between operand resources and profitability observed among firms. When one looks at co-creation and knowledge integration as an antecedent of firm innovation, many new research questions arise. Our review found that the previous literature has neglected the potential of operant resources in service development and innovation; hence there is a call for more research in this domain. Although, there is substantial ongoing research on service innovation, the work has not been contextualised in

terms of optimum utilisation of operand and operant resources for firm competitiveness (Beresford, Pettit, & Whittaker, 2005; Storey & Kahn, 2010).

Looking into the gaps detailed above, this paper empirically investigates and puts forward integrated service delivery innovation architecture (ISDIA) for investigating the role of various actors in market competitiveness (Box 1). Further, it explores the role of customer orientation in the context of service delivery innovation process. The study investigates the linkage between market orientation of the firm and its competitive advantage. This paper addresses how firms can effectively harmonise various drivers of service co-creation with firm performance and contributes to the marketing literature by proposing guidelines for development and implementation of innovation models.

This paper contributes to the marketing literature by proposing guidelines on how these models should be developed and implemented in different business contexts based on the proposed framework. In the following sections the theoretical background, conceptual framework, research methodology, and results have been discussed, as also the managerial implications and avenues for future research. The conclusion forms the last section of the paper.

## Reviewed literature

In the research context of service innovation concept evolution, there has been a strong focus on the development of a classification system that can capture the dynamics of service firms. It is established that existing notions of innovation in the manufacturing sector cannot simply be transposed to the service sector (Hipp & Grupp, 2005). Hence, various authors have proposed classification of service innovation deriving core concepts from manufacturing, with a view to obtaining a better understanding of innovation in services. These approaches have tried to demonstrate how their implementation improves firms' competitive advantage. Apart from this taxonomic contribution, theoretical contributions have been made by Hunt and Morgan (1997) to explain the role of various firm level resources in service innovation process. Vargo and Lusch (2004) proposed service-dominant logic approach to explain the phenomenon of new service development (NSD) in service based economies.

The concept of service innovation measurement has gradually evolved over the past many decades. Schumpeter (1939) discussed five core areas of innovation covering product innovation, process innovation, market innovation,

### Box 1. Architectural approach.

Service innovation architecture designs and develops the extended service model that connects the service innovation framework of a firm with its marketing strategy. The terminology of service innovation architecture has been coined by the Object Management Group (OMG). The purpose of service architecture is to demonstrate the implications of innovation activities in terms of financial and non financial outcomes. Although, there is substantial research on service innovation, the work has not been contextualised from the perspective of strategic positioning of firms in competitive markets (Storey & Kahn, 2010). To succeed on this, the marketing discipline must look beyond its conventional boundaries and strive for an interdisciplinary service architecture perspective across the disciplines of marketing, human resource, and strategy.

input innovation, and organisational innovation. Roger (1962) classified innovations as radical and incremental, a typology well accepted in new product or new service development. The taxonomic literature has also been enriched by Gallouj and Olivier's (1997) work on service classification focussing on the black box of the innovation process and specifying innovation by improvement, addition/subtraction, substitution and recombination. Hertog (2000) identified four dimensions of service innovation which include service provider, client interface, service delivery system, and technology options. Avlonitis, Paulina, & Spiros (2001) notably argued for assimilation of the concept of product innovation in service science. He proposed innovation in services at the product (new service development) as well as process level (service delivery innovation).

However, the recent research on service innovation has been dichotomised based on the theoretical underpinning of the resource advantage (R-A) theory of competition by Hunt (1995) and the service dominant logic (SDL) framework by Vargo and Lusch (2004). The determinants under R-A framework have been classified under socioeconomic actors, process flows, value co-creation, and availability of operant resources. The dynamic interdisciplinary resource advantage theory maintains that key growth results from

innovations that stem from the process of competition. The process is facilitated by economic institutions that foster economic growth (Hunt, 2011). Economic growth results from the competitive advantage in the resources – not only in tangible ones, but more importantly in intangible resources. Using the R-A theory the relation between firm output and inherent resources can be explained as  $Output = f \{(\Sigma \text{ tangible resources}), (\Sigma \text{ intangible resources})\}$ . Tangible resources include financial, physical, and legal resources whereas the intangible include human, information, and relational resources.

The service dominant logic (Vargo & Lusch, 2004) advocates consumer as resource integrator. Under the SDL framework the determinants are heterogeneous resources, firm performance, optimum resource utilisation, and endogeneity of resources. It argues that a firm's production output is best explained by customer resource integrating and value producing activities rather than merely its resources (Vargo, 2008). Using the SDL framework, the relation between firm outputs can be explained as,  $Output = f (\Sigma \text{ resource integrating and value producing activities})$ . A range of service innovation models have been advanced in the literature either based on resource advantage or via service dominant framework. Examples of some of these recent contributions are outlined in Table 1.

**Table 1** Contributors to service innovation using resource advantage theory of competition (R-A) or service dominant logic (SDL) framework.

Data and references	Key conclusion
<i>Under service dominant logic framework</i>	
Ordanini and Parasuraman (2011)	Proposes a framework for investigating the antecedents and consequences of service innovation
Storey and Kahn (2010)	Investigates role of organisational proficiency, strategic codification, and technological turbulence in innovation process
Chen, Tsou and Huang (2009)	Investigates the role of technological advancement and collaboration effectiveness
Merz, He, and Vargo (2009)	Parallel to service logic, brand logic views brand in terms of collaborative, value co-creation activities of firms and all of their stakeholders and brand value in terms of the stakeholders' collectively perceived value-in-use.
Ballantyne and Varey (2008)	Posits service as an interactive process and more so that goods also render service and have value in-use.
Gronroos (2006)	Posits SDL as holistic marketing theory. It says that the SDL approach is not only based on grounded theory, it also includes the premises of goods marketing.
<i>Under resource advantage theory</i>	
Sundar Bharadwaj, Terry Clark, Songpol Kulviwat (2005)	Posits a conceptual model arguing that the effect of firm endogenous actions on market growth is mediated by knowledge creation, matching, and diffusion.
Shelby D. Hunt and Dennis B. Arnett (2004)	Says that to achieve competitive advantage and thereby superior financial performance, firms should identify segments of demand, target specific segments, and develop specific marketing mixes for each targetted market segment.
Shelby D. Hunt (2000b)	Contributes to explaining observed differences in quality, innovativeness, and productivity between market-based and command-based economies.
Timothy G. Habbershon and Mary L. Williams (1999)	Provides a theoretical framework to assess the competitive advantages of family firms.

Studies listed in Table 1 on the model estimates of service innovation architecture show a trend in their underlying theoretical framework. Of the two dominant frameworks, R-A theory forms the basis for firms looking into performance parameters based on their resource base (Bharadwaj, Clark and Kulviwat, 2005; Habbershon & Williams, 1999; Hunt, 2000a, 2000b; Hunt & Arnett, 2004). Similarly SDL becomes the basis for more recent papers in the area of service innovation. Apart from empirical investigation (Ordanini & Parasuraman, 2011), it also becomes the basis for much diversified research areas such as brand logic (Merz, He, & Vargo, 2009).

Our literature review suggests that in the context of integrated service delivery innovation models, all the three resource cohorts (technology, collaborative efforts and networking of organisational resources) have not been studied in a single model. Further, the role of customer orientation (CO) has also been understudied, possibly because the study of CO has been found to be beyond the scope of contemporary service innovation models. However, CO has been studied as an antecedent for achieving firm effectiveness and performance but no study has reported its moderating role in the context of firm effectiveness (Paswan, D'Souza, & Zolfagharian, 2009). Hence the proposed framework would be the extension of the existing framework discussed across service innovation architectural design.

### Conceptual framework and proposed research hypothesis

Based on the R-A theory and SDL framework, the architecture of service innovation converges towards three main aspects, namely, collaborative efforts (customer and business partner), technology (technological upgradation and knowledge integration mechanism), and organisational resources (market and innovation orientation). The basic assumption of this architecture is that all the actors play an important role in the market decision process. Accordingly,

innovations in services may be regarded as novel mechanisms of delivery that improve a firm's competitive position and offer great customer convenience (Lovelock & Wright, 2002).

Based on the proposed theoretical background and literature studied, we derive the conceptual model as in Figure 1, in which the prime variable of study is the service delivery innovation within the firm. We studied six constructs under all the three resource levels. Further, service logic defines the capability of a firm to bring in customers (and other external stakeholders such as business partners) in directing the firm's market orientation and using them as mechanisms to foster change in the firm's collaborative competence (Lusch et al., 2007). The direct effect of market orientation has also been studied with firm performance measured in terms of sustainable competitive advantage. By linking up constructs under the two distinct service innovation frameworks (R-A theory and SD logic) with the drivers of innovation architecture, we propose a conceptual framework as in Figure 1.

The research hypotheses have been framed on the basis of the variables studied under the proposed framework for service co-creation. The enablers of service delivery innovation have been studied at the three levels of collaborative efforts (customer and business partner), technology (technological upgradation and knowledge integration mechanism), and organisational resources (market and innovation orientation) in relation to the firm's sustainable competitive advantage. These variables have been further explained in the framed hypotheses.

### Collaborative efforts (customer and business partner)

We adopt the concept of external partner collaboration provided by Faems, Looy, and Debackere (2005), defining it as an interaction process whereby complementary assets are exchanged with external partners. Most contemporary scholars (Hunt, 1999; Vargo & Lusch, 2004) consider

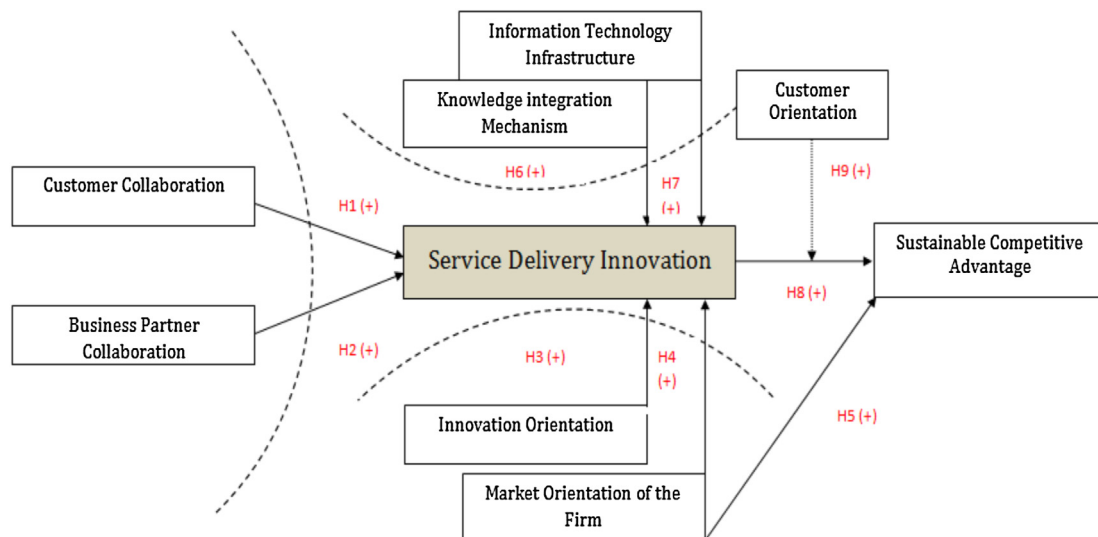


Figure 1 The service delivery innovation research framework.



exchange as an intrinsic activity of the marketing system. The purpose of exchange is to identify resources and have access to those resources that have value potential and benefits. Service dominant logic (Vargo & Lusch, 2004; 2008) emphasises value as co-created by multiple actors (Ordanini & Parasuraman, 2011; Prahalad & Ramaswamy, 2004), rather than viewing value as created by a single actor. Dealing with the concept in the light of SD logic, collaborative processes with customers, partners, and employees are essential to innovation. For example, service firms such as commercial banks work closely with their clients and come up with innovative customised solutions e.g., multilingual ATMs for rural India with audio visuals. Organisation driven customer service strategy enhances product quality (Varadarajan & Jayachandran, 1999). The participation of business partners in the firm's innovation process enhances product marketability and expands external markets for the resulting innovations (Chesbrough, 2003; Fang, 2008; Michael & Mekothe, 2012). Hence we posit:

**Hypothesis 1.** Customer service co-creation leads to service delivery innovation of the firm.

**Hypothesis 2.** Business partner collaboration leads to service delivery innovation of the firm.

### Innovation orientation

Innovation and new product development have been key contributors to firm performance (Alam, 2002). The customer active process of innovation orientation has been explained by various researchers as organisational openness to new ideas and propensity to change through adopting new technologies, resources, and skills (Chen et al., 2009; Chesbrough, 2006; Hurley and Hult, 1998; Zhou, Gao, Yang, & Zhou, 2005). Innovation orientation is defined as the knowledge structure composed of a learning philosophy and functional belief that directs the strategic actions of the firm (Siguaw, Simpson, & Enz, 2006). Examples of firms that are high in innovation orientation include Microsoft, Apple and HSBC among others. These firms are market leaders in their domain. There have been a number of studies on innovation orientation in relation to business performance (Deshpande, Farley, & Webster, 1993; Zhou et al., 2005). Ordanini and Parasuraman (2011) find that innovation orientation contributes to innovation volume, serving as a source of new service ideas. Hence we posit:

**Hypothesis 3.** Innovation orientation leads to greater service delivery innovation of the firm.

### Market orientation

Market orientation is the tendency of a firm to determine needs and wants of target markets and satisfy them through the delivery of appropriate products and services at competitive prices (Kotler & Clarke, 1987:31). Narver and Slater (1990) expanded the scope of market orientation

and redefined it as organisational culture that most effectively and efficiently creates the necessary behaviours to create superior value for buyers and thus superior business performance. However, previous studies have considered market orientation as the central ingredient of a successful innovation process (Kohli & Jaworski, 1990) and hence as decision criteria for the long term profitability of the firm, one that has a direct effect. Examples of firms that are high on market orientation include Walmart, ICICI and FedEx to name a few. However, market orientation of the firm also has an impact on long term sustainability of firms (Hunt, 2002, 2011). Hence we posit:

**Hypothesis 4.** Market orientation leads to greater service delivery innovation of the firm.

**Hypothesis 5.** Market orientation leads to greater sustainable competitive advantage of the firm.

### Knowledge integration mechanism

Literature defines knowledge integration as formal processes and structure that facilitate capturing, analysis and synthesis of knowledge and the dissemination of that knowledge among different functional units (Simon, 1991). Knowledge acquired from outside the organisation (i.e., customers and business partners) often does not become available for innovation purposes due to inadequate mechanisms for integrating and sharing the information throughout the organisation (Chen et al., 2009; Marinova, 2004). Hence, knowledge application requires integration of different functional areas. It suggests that apart from business and customer collaboration, a strong knowledge integration mechanism (e.g., MIS, ERP) is imperative for service delivery innovation. Examples of firms that are highly rated on encouraging knowledge integration include, McKinsey, Cognizant and Infosys to name a few. Hence, we posit:

**Hypothesis 6.** Effective knowledge integration mechanism leads to greater service delivery innovation of the firm.

### Information technology infrastructure

Advancement of information technology (IT) may enhance a firm's ability to share knowledge and help in new service development. Past studies show that effective use of IT facilitates service innovation in organisations (Chen et al., 2009; Valacich, Paranka, George, & Nunamaker, 1993; Wheeler & Valacich, 1996). Based on these early studies, many organisations built knowledge repositories and supported forms of practice communities using various types of IT to promote knowledge sharing and facilitate innovation process (Wasko & Faraj, 2005). In the context of new product development, studies show (Wasko & Faraj, 2005) that updation in IT infrastructure facilitates knowledge sharing in teams and hence new service development. Managers try to put in state of the art IT infrastructure in standardised services to differentiate themselves from the competition. Examples of such firms would be HSBC, Axis, and ICICI in commercial banking and Wal-Mart, that use sophisticated IT backbone to assist in the supply chain of the firm. Hence we posit:

**Table 2** Summary of hypotheses and supporting literature.

Hypothesis	Key supporting literature	Prior testing in the context of service innovation
<b>Hypothesis 1:</b> Customer service co-creation leads to service delivery innovation of the firm.	Prahalad and Ramaswamy (2004) Michael and Mekoth (2012) Ordanini and Parasuraman (2011) Storey and Kahn (2010) Chen, Tsou and Huang (2009)	Previously tested in the context of service innovation (sectoral study) More empirical studies recommended in literature.
<b>Hypothesis 2:</b> Business partner collaboration leads to service delivery innovation of the firm.	Prahalad and Ramaswamy (2004) Michael and Mekoth (2012) Ordanini and Parasuraman (2011) Storey and Kahn (2010) Chen, Tsou and Huang (2009)	Previously tested in the context of Service Innovation (sectoral study) More empirical studies recommended in literature.
<b>Hypothesis 3:</b> Innovation orientation leads to greater service delivery innovation of the firm.	Hurley and Hult (1998) Chesbrough (2006) Hurley and Hult (1998) Ordanini and Parasuraman (2011)	Previously tested in the context of Service Innovation (sectoral study). New in Mexican context.
<b>Hypothesis 4:</b> Market orientation leads to greater service delivery innovation of the firm.	Narver and Slater (1990) Kohli and Jaworski (1990)	New testing in the context of service delivery innovation
<b>Hypothesis 5:</b> Market orientation leads to greater sustainable competitive advantage of the firm.	Kohli and Jaworski (1990) Narver and Slater (1990)	New testing in the context of service delivery innovation and its outcome
<b>Hypothesis 6:</b> Effective knowledge integration mechanism leads to greater service delivery innovation of the firm.	Simon (1991) Marinova (2004) Ordanini and Parasuraman (2011)	Previously tested in the context of service innovation.
<b>Hypothesis 7:</b> Information technology infrastructure leads to greater service delivery innovation of the firm.	Chen, Tsou and Huang (2009)	Previously tested in the context of service delivery innovation.
<b>Hypothesis 8:</b> Service delivery innovation leads to sustainable competitive advantage of the firm.	Storey and Kahn (2010) Bharadwaj, Varadarajan, and Fahy (1993); Prahalad and Ramaswamy (2004)	New testing in the context of service delivery innovation and its outcome
<b>Hypothesis 9:</b> Customer orientation moderates the effect of service delivery innovation on sustainable competitive advantage.	Babakus et al. (2009); Deshpande et al. (1993)	New testing in the context of service delivery innovation and its outcome

**Hypothesis 7.** Information technology infrastructure leads to greater service delivery innovation of the firm.

#### Sustainable competitive advantage

The impact of service innovation and improved delivery systems on firm performance has been studied in multiple cases along with firm financial performance (Lievens & Moenaert, 1999). Storey and Kahn (2010) studied the effect of service performance on sustainable competitive advantage of the firm. Sustainable competitive advantage (SCA) has been conceptualised as that range of outcomes from the firm's innovation activities that enables the firm to achieve superior market performance and resist erosion by competitors (Bharadwaj et al., 1993). Day and Wensley (1988) focussed on two sources of competitive advantage, i.e., superior skills and superior resources. Prahalad and Ramaswamy (2004) suggest that firms combine their resources and skills into core competencies. Firms may succeed in establishing competitive advantage by combining skills and resources in unique ways. Hence we posit:

**Hypothesis 8.** Service delivery innovation leads to sustainable competitive advantage of the firm.

#### Customer orientation

Customer orientation is defined as a set of beliefs that put customer interest first, putting together the interest of all other stakeholders such as owners, managers, and employees, in order to develop a long term profitable enterprise (Deshpande et al., 1993). This perspective includes the more deeply rooted value and belief that the organisation consistently reinforces customer focus. In the present scenario it is defined as an employee's tendency or predisposition to meet customer needs in an on-the-job context (Brown & Lam, 2008).

The role of project manager/team leader is crucial in managing the innovation process as it has a high bearing on decision making. For example, in service firms such as McKinsey and Infosys that primarily work in the business to business (B2B) environment, the role of project manager is crucial to decide on proper resource utilisation. The

operationalisation of firm resources through the innovative capabilities of the manager in turn impacts service innovation outcomes (Babakus, Yavas, & Ashill, 2009; Deshpande et al., 1993). The present study undertakes the moderating role of customer orientation on service delivery innovation and firm sustainable competitive advantage. Hence we posit:

**Hypothesis 9.** Customer orientation moderates the effect of service delivery innovation on sustainable competitive advantage.

Table 2 contains a summary of the hypotheses and supporting literature.

#### Control variables

Looking into the previous work suggested by De-Luca and Gima (2007), technology turbulence has been used as a control variable. It intends to measure the rate of change in the technological upgradation and role of technology in breakthrough service innovation.

## Research methodology

### Research setting

The methodology includes empirical testing of the proposed research framework with the aim to study the effect of service delivery innovation on performance measures across service organisations working in the B2B context. These services have been grouped into explicit and tacit (De-Luca & Gima, 2007) according to whether their respective service is characteristically driven by technology or interpersonal interactions. The proposed model has been tested collecting data from financial sector (explicit services) and IT consulting firms (tacit services) working in the Mexican B2B environment. These firms are based in Guadalajara, Toluca, Monterrey, and Mexico D.F (Mexico City). The purpose of collecting data both from explicit and tacit services was to have better representation of service firms.

Out of explicit services, the banking sector has been chosen on the basis of service complexity, market competition and rate of technology upgradation apart from being of national economic importance (Verma, Plaschka, & Louviere, 2002). Information technology consulting is an upcoming sector in Mexico and contributes significantly

(11.5%) to the service sector GDP. Hence, it made an obvious choice for tacit services.

Respondents were middle and senior level executives working primarily in a team driven culture. In selecting respondents, we paid attention to those working in independent work teams that have a significant impact on the performance of the firm. Similarly, in the banking industry, respondents were team leaders from the service innovation departments. This was done purposefully to explore the firm resource allocation under different projects and their contributions.

### Sampling and data collection

Middle and senior executives, including both men and women, in the age group of 27–45 years, were approached through the company human resources department. Data on the independent and dependent variables was collected through a 7-point Likert response format (LRF) type questionnaire. Out of a total of 500 distributed questionnaires, data was collected from 203 middle and senior executives (97 in financial firms and 106 in IT services) in a total of 33 organisations (14 financial institutions and 19 IT firms). The data was collected in 75 days with a response rate of 40.6%. Questionnaires were initially drafted in English and later translated into Spanish for use in Mexico. The translation of questionnaires both ways (framing questions and responses) was carried out by professional translators (Churchill, 1979). All precaution was taken to retain the original sense of responses made in Spanish. The total number of valid responses was well above the minimum item to sample ratio as suggested by Hinkin (1998), and was subjected to various test and techniques. See Table 3 for a profile of the respondents.

### Operationalisation and measures

All constructs in the study have been measured using multiple items. A 7-point LRF scale was used to capture the variables and indicator items. The scale has been adopted from previous studies and consists of a total of 63 items to operationalise nine construct level variables. All the scales used in the proposed study exceed the .70 benchmark suggested by Nunnally (1978). Before operationalising, we took care that there should not be any parsimony between the scales applied for market orientation and customer orientation. As the variance inflation factor (VIF) values were well under the limit, the scale qualified for the study. However, this was a precautionary measure as in no case does the hypothesis testing OR none of the hypotheses tested capture both the variables simultaneously. The constructs have been operationalised as

- 1) **External partner collaboration (business and customer):** Measured using an adapted scale developed by Gruner and Homburg (2000). The 4 item scale (each) reflects the richness and intensity of customer/business interactions, the frequency of meetings, and the number of customers/business partners collaborating in the service innovation process.
- 2) **Innovation orientation:** Consistent with the earlier studies conducted (Chesbrough, 2006; Hurley and Hult 1998; Zhou et al. 2005) we consider innovation orientation as a determinant of organisational innovation. A

**Table 3** Profile of the respondents.

Demographic	Proportion of sample	
Gender	Male	73%
	Female	27%
Age	>30	29
	30 – 40	76
	40 – 50	61
	>55	37
Management cadre	Middle	191
	Senior	12
Profession	IT	106
	Financial	97

- 5 item scale developed by [Hurley and Hult \(1998\)](#) has been used to measure the same.
- 3) **Market orientation:** We used a multi-item construct developed by [Narver and Slater \(1990\)](#) to measure market orientation. It consists of 15 Likert type items. The reported cronbach  $\alpha$  values for this scale are in the range of .85–.87 ([Bearden & Netemeyer, 1999](#)).
  - 4) **Knowledge integration mechanisms:** The 5-item scale measuring the extent to which a set of formal processes are used to capture, interpret, and integrate knowledge in the service innovation process was developed by [De-Luca and Gima \(2007\)](#) and has been used here. The scale has been used previously by [Ordanini and Parasuraman \(2011\)](#) and reported a cronbach  $\alpha$  value of .84.
  - 5) **Information technology infrastructure:** To measure IT infrastructure, we used a multi-item construct developed by [Wasko and Faraj \(2005\)](#). It consists of 4 Likert type items. The reported cronbach  $\alpha$  values for this scale are in the range of .85–.91.
  - 6) **Service delivery innovation:** SDI has been measured using the 10 items adapted and modified from research on the S-D logic perspective by [Vargo and Lusch \(2004\)](#) and service delivery capacity by [Blazevic and Lievens \(2008\)](#). The scale has already been used in the study by [Chen et al. \(2009\)](#) and reports reliability values of .95.
  - 7) **Sustainable competitive advantage (SCA):** SCA is measured as the combination of a range of outcomes that give the firm long-term benefits ([Bharadwaj et al., 1993](#)). The reported cronbach  $\alpha$  values for this scale are in the range of .87–.93.
  - 8) **Customer orientation:** CO has been measured using a 9 item scale developed by [Deshpande et al. \(1993\)](#). The scale has already been used by [Babakus et al. \(2009\)](#) with the cronbach  $\alpha$  value of .91.

See [Table 4](#) for construct indicator variables and scale reliability values.

#### Examining construct validity

Face validity, convergent validity, and discriminant validity have been assessed using the measurement model approach under confirmatory factor analysis (CFA). For all constructs, convergent validity was assessed using average variance extracted (AVE) criterion of .50 set by [Fornell and Larcker \(1981\)](#). (The AVE values are mentioned in [Annexure-1](#) along with the measured variables.)

Discriminant validity was confirmed for all latent constructs since the square root of each construct's AVE is greater than the bivariate correlation with the other constructs in the model ([Chin, 1998](#)). As the scales have already been tested in different contexts and studied by subject experts, they qualify for face validity (See [Table 5](#)).

#### Analysis plan

In developing our research instrument we followed the procedures for conducting research as proposed by [Hair, Anderson, Tatham and Black \(2006\)](#). We also followed the paradigm of [Churchill \(1979\)](#) to test and validate the questionnaire. Although measurement items were derived from existing well-validated scales, we performed pre-tests by conducting confirmatory factor analysis using AMOS 18.0. It assessed the construct validity ([Durvasula, Andrews, Lyonski, & Netemeyer, 1993](#)).

#### Descriptive statistics

Prior to being administered in the field, the questionnaire was pre-tested and no changes in the wording of the questions were deemed necessary. Before analysing the data, it was tested against normality. Apart from measuring skewness and kurtosis, the data was put through multivariate normality check using Kolmogorov–Smirnov test of normality (Lilliefors significance correction). The result suggests no transformation of data, as results are well under the normality limit ([Burdenski, 2000](#)).

[Table 6](#) details the descriptive statistics for the studied variables and [Table 7](#), the correlation table between the variables and Cronbach's alpha along the diagonal.

#### Common method variance

As the data has been collected on a self reporting format, the constructs have also been tested for any possible systematic errors, such as common method bias ([Podsakoff, MacKenzie, Lee, & Podsakoff, 2003](#)). The remedies for CFA are classified as ex ante and post hoc, based on the treatment. In the study, we mixed the order of the questions to reduce likelihood of common method variance (CMV) as suggested by [Chang, Witteloostuijn, and Eden \(2010\)](#). Scale items were also examined for potential CMV

**Table 4** Construct indicator variables and scale reliability values.

S. No.	Symbol	Construct	Scale reference	Reliability ( $\alpha$ )
1.	CC	Customer collaboration	<a href="#">Gruner and Homburg (2000)</a>	.74
2.	BC	Business partner collaboration	<a href="#">Gruner and Homburg (2000)</a>	.76
3.	IO	Innovation orientation	<a href="#">Hurley and Hult (1998)</a>	.79
4.	MO	Market orientation	<a href="#">Narver and Slater (1990)</a>	.83
5.	KIM	Knowledge integration mechanism	<a href="#">De-Luca and Gima (2007)</a>	.86
6.	IT	Information technology	<a href="#">Wasko and Faraj (2005)</a>	.88
7.	CO	Customer orientation	<a href="#">Deshpande et al. (1993)</a>	.78
8.	SDI	Service delivery innovation	<a href="#">Chen, Tsou and Huang (2009)</a>	.82
9.	SCA	Sustainable competitive advantage of the firm	<a href="#">Bharadwaj, Varadarajan, and Fahy (1993)</a>	.91



**Table 5** Discriminant validity: correlations of constructs and  $\sqrt{\text{AVE}}$ .

Variables	1	2	3	4	5	6	7	8	9
1 CC	<b>.84</b>								
2 BC	.43	<b>.74</b>							
3 IO	.13	.19	<b>.76</b>						
4 MO	.54	.32	.19	<b>.83</b>					
5 KIM	.36	.28	.21	.04	<b>.88</b>				
6 IT	.03	.03	.07	.15	.29	<b>.81</b>			
7 CO	.01	.07	.16	.11	.26	.19	<b>.72</b>		
8 SDI	.13	.18	.18	.23	.27	.42	.38	<b>.77</b>	
9 SCA	.03	.12	.17	.48	.03	.16	.34	.28	<b>.80</b>

\*Bold main diagonal are square root of corresponding AVE; AVE – average variance extracted.

using Harman’s one-factor test (Hair et al., 2006). Method variance can either inflate or deflate observed relationships between constructs, thus leading to both Type I and Type II errors (Podsakoff et al., 2003). Using composite indicators representing nine latent constructs, we first tested a nine-factor measurement model ( $\chi^2 = 177.9$ , RMSEA = .092, NFI = .91, CFI = .94, SRMR = .056), followed by a one-factor measurement model ( $\chi^2 = 912.8$ , RMSEA = .35, NFI = .67, CFI = .51, SRMR = .100). A  $\chi^2$  difference test indicated that the single factor model fit is considerably worse than the proposed nine-factor measurement model ( $\partial\chi^2_{15} = 734.9$ ,  $p < 0.01$ ), suggesting that common method bias may not present a problem in this study (Boyer & Hult, 2005). Together, these two tests indicate no evidence of common method bias in the study; hence we found it suitable to proceed further.

### Model description, results and discussion

The hypothesised relationship as depicted in Figure 1 was tested using the 3 step linear step-wise regression technique. It includes testing of direct relationship between independent and dependent variables apart from testing for the moderating roles of customer orientation. The main effect model has also been explained using the path analysis under structural equation modelling (SEM). The structural model with relevant path coefficients has been depicted in Figure 2. Hypotheses were tested using the following system of equation as

$$\text{SDI} = \alpha_1 + \beta_{11}\text{CC} + \beta_{12}\text{BC} + \beta_{13}\text{IO} + \beta_{14}\text{MO} + \beta_{15}\text{KIM} + \beta_{16}\text{IT} + e_1 \tag{1}$$

$$\text{SCA} = \alpha_2 + \beta_{21} \sum \text{SDI} + e_2 \tag{2}$$

$$\text{SCA} = \alpha_3 + \beta_{31}(\text{SDI} \times \text{CO}) + e_3 \tag{3}$$

The test results of hypotheses 1–4 and subsequently 6 and 7 show the relationship between collaborative efforts, innovation orientation, market orientation, knowledge integration mechanism, and information technology support on service delivery innovation of the firm using regression analysis under technological turbulence as control variable. All the aforesaid relations have been found significant at 95% level of significance (Table 8). Results show that all six variables (three dimensions) have a positive and significant relationship with service delivery innovation. However, the direct effect of market orientation on sustainable competitive advantage under Hypothesis 5 has been found insignificant ( $\beta = .056$ ,  $p < 0.001$ ). The test results of Hypothesis 8 show the relationship between service delivery innovation and sustainable competitive advantage. The relation has been found significant at ( $\beta = .782$ ,  $p < 0.001$ ).

Testing the moderating role of customer orientation in Hypothesis 9 required the creation of interaction variable by multiplying customer orientation with service delivery innovation. Prior to multiplication the test for multicollinearity was done. The VIF was found well under the described limit implicating no effect of multicollinearity. In order to test the hypothesis, moderated regression analysis was performed for each of the variables. Results show significant moderating role of customer orientation on the service innovation–customer orientation relationship ( $\beta = .526$ ,  $p < 0.001$ ). It has also been explained as in Table 9. Also see Figure 3.

**Table 6** Descriptive statistics for the studied variables.

N	Valid	CC	BC	IO	MO	KIM	IT	CO	SDI	SCA
		203	203	203	203	203	203	203	203	203
Missing		0	0	0	0	0	0	0	0	0
Skewness		-.548	-.778	-.683	-.192	-.287	.432	.082	-.871	-1.026
Std. error (Skewness)		.046	.053	.056	.061	.064	.078	.072	.073	.069
Kurtosis		-.032	-.335	-.226	-.113	-.554	-.641	-.811	-.476	-.812
Std. error (Kurtosis)		.056	.095	1.234	.085	.063	.95	.063	.062	.062

**Table 7** Correlation between the variables and Cronbach’s alpha along the diagonal.

	1	2	3	4	5	6	7	8	9
1 CC	.74								
2 BC	.435**	.76							
3 IO	.134**	.196**	.79						
4 MO	.543**	.328**	.195**	.83					
5 KIM	.361**	.284**	.211*	.045**	.86				
6 IT	.035*	.033*	.078**	.156**	.299**	.88			
7 CO	.015**	.079**	.169**	.111**	.261**	.199**	.78		
8 SDI	.132**	.181**	.189**	.238*	.277*	.421*	.382**	.82	
9 SCA	.034**	.124**	.178*	.482**	.035**	.166**	.342*	.285**	.91
Mean	3.56	4.65	4.21	3.89	5.92	4.11	5.62	5.81	5.33
Standard deviation	1.34	1.45	1.22	1.28	1.76	1.99	2.11	1.67	1.04

\*\* Correlation is significant at the .01 level (2-tailed).

\* Correlation is significant at the .05 level (2-tailed).

Note: alpha values are along with the diagonal.

The structural model has also been tested using the structural equation modelling approach. The SEM takes a confirmatory approach to test the dependence relationships and account for measurement errors in the process of testing the model (Byrne, 2001). The assessment of model fit has been done using the various fit indices as in Table 10.

The chi-square/df ratio of 2–3 is taken as good or acceptable fit (Bollen & Paxton, 1998; Hair et al., 2006). The various incremental fit indices include the normal fit index (NFI), comparative fit index (CFI) or the Tucker–Lewis index (TLI), with suggestions for a cut of .90 for a good fitting model (Hu and Bentler, 1999). Further the absolute fit index of adjusted goodness of fit index (AGFI) is greater than the minimal .75 cutoff (Gallagher, Ting and Palmer, 2008). The multiple R square for the model is .59. The path coefficients or standardised regression weights for the predictor relationship are shown in Table 11.

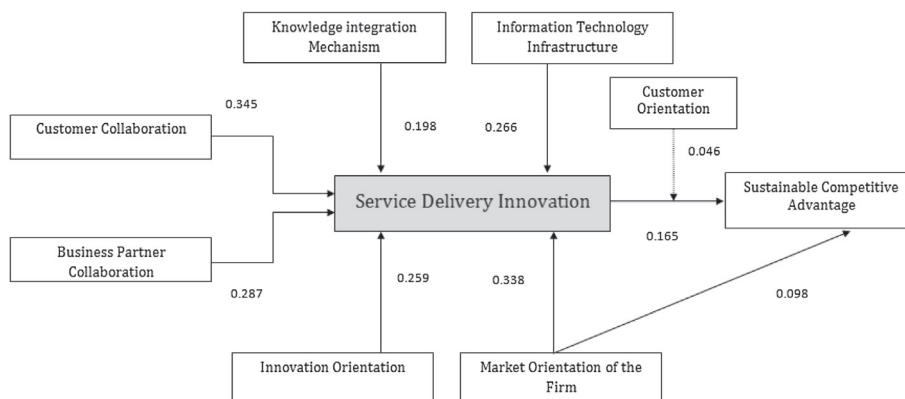
It can be seen from the SEM results that all the direct and indirect relationships have been found significant ( $p < 0.05$ ). The findings are consistent with the earlier studies done by Ordanini and Parasuraman (2011). Overall, this study establishes that market orientation is a theoretically relevant construct for understanding service co-creation efforts. Above results provide useful insights

regarding the management of service co-creation efforts in generating firm performance. Result provides empirical understanding of the concept of service co-creation in the firm new product/service development process. It suggests that firm resources in terms of customer and business co-creation, innovation orientation, market orientation, IT infrastructure, and knowledge integration mechanism play a vital role in the service delivery innovation process. Firms reflecting service delivery innovation enjoy sustainable competitive advantage.

### Managerial implications

This study has several significant implications for practitioners. If a service firm can create an advantage in intangible resources, it can create competitive advantage in the marketplace (Bharadwaj et al., 1993; Prahalad and Ramaswamy, 2004; Storey & Kahn, 2010). The findings, although subject to confirmation and refinement in future studies, offer several preliminary insights for managing the process of service delivery innovation, particularly in complex business environments such as IT and commercial banks.

First, with regard to innovation orientation, project leaders/team managers need to foster innovation



**Figure 2** The path coefficient values in the studied model.

**Table 8** Results of the Least Square (LS) regression.

Hypothesis No	Variable	Parameter estimate	Standard error	P-value	Hypothesis test results
1	Dependent: SDI				H1: Supported
	Intercept	.527	.228	.001	
2	CC	.347	.057	.001	H2: Supported
	Dependent: SDI				
3	Intercept	1.359	.753	.004	H3: Supported
	BC	.287	.609	.003	
4	Dependent: SDI				H4: Supported
	Intercept	3.231	.565	.001	
5	IO	.259	.048	.002	H5: Not Supported
	Dependent: SCA				
6	Intercept	1.223	.043	.004	H6: Supported
	MO	.099	.056	.985	
7	Dependent: SDI				H7: Supported
	Intercept	1.578	.045	.001	
8	KIM	.198	.231	.004	H8: Supported
	Dependent: SCA				
8	Intercept	1.450	.043	.004	H8: Supported
	IT	.267	.021	.002	
8	Dependent: SCA				H8: Supported
	Intercept	1.576	.208	.001	
	SDI	.782	1.497	.001	

\*At 95% significance level.

capability of their team members. Human resources needs to train employees to develop an innovation oriented environment or culture of openness within the organisation to accept any radical ideas for the competitive market. Among service firms, for example, Google Inc. and Yahoo Inc. encourage their employees to innovate and the firms offer compensatory reward points. With regard to market orientation, organisations need to generate information on market intelligence pertaining to current and future needs of their customers, disseminate information within the organisation and show responsiveness to it. This would show the extent to which the company is involved in the customer value creation process. McDonalds is one such example that constantly monitors its market in geographically varied locations and adjusts its marketing mix in response to the market.

Second, to improve performance via innovation outcomes, service managers need to look outside the core organisations. It means they need to look for business and customer collaboration. Our findings suggest that

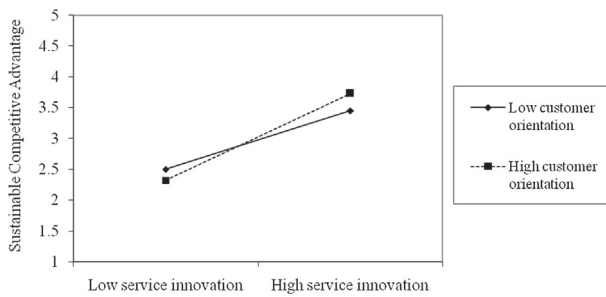
customer collaboration outcores the role of business-partner collaboration in developing delivery innovations. It is unlike that of manufacturing firms wherein business collaborations are the prime source of profit growth. In fact, other findings show that customer collaboration is likely to contribute to service innovation success only when there is business-partner collaboration as well (Chen et al., 2009).

Third, with regard to knowledge integration, IT plays a crucial role in the implementation of service delivery innovation practices, especially in financial firms that offer more standardised services. It helps in differentiating the firms from others and supports flexible service delivery and continual service innovation. To add, robust technological resources can strengthen the firm's focus on formulating relevant IT capability (Chen et al., 2009). Before beginning major service delivery innovation programmes, managers may need to think about implementing, acquiring, and developing operant resources that can increase IT capability and facilitate service delivery innovation.

**Table 9** The result of moderating effect of customer orientation on service delivery innovation.

	Coefficient ( $\beta$ )	<i>t</i>	Sig.	Tolerance	VIF
(Constant)	-.055	-.516	.985		
SDI	.782	1.497	.001	.859	1.164
CO	.311	.197	.534	.943	1.060
SDI* CO	.526	.376	.001	.975	1.025

Adjusted R Square = .173, Sig. F change (.000).



**Figure 3** The Result of moderating effect of customer orientation on service delivery innovation.

Fourth, firms should implement innovation practices in service delivery processes that introduce profitable services and improve their ability to develop different kinds of customer service that lead to competitive advantage. A firm's intangible resources do not simply create competitive advantage but enable it to be more effective in innovation activities and creating a positional advantage in the marketplace (Bharadwaj et al., 1993; Prahalad and Ramaswamy, 2004; Storey & Kahn, 2010; Vargo & Lusch, 2004, 2006, 2008). In addition, customers notice firms' efforts toward customer service, thereby strengthening company positive images and reputations. To sum up, managers who rely on one resource alone may miss some of the benefits to be derived from other operant resources. To achieve a blend of resources, firms need to put in place rewards for sharing information, and documenting lessons learnt from past and ongoing projects. In our particular case, banking and telecommunications are such where operant resources are embedded into the projects such as self-service delivery systems.

### Future research directions

The research on service innovation has suggested a strong linkage between firm resource base, its innovative capabilities and performance outcomes in terms of competitive advantage. Future research directions include exploring how customers identify the core competency of the firm to select their market offering. The research will further substantiate the present findings on how various resources help in achieving innovative capabilities.

Service firms, just like companies in the manufacturing sector, tend to emphasise the adoption of service innovation over product innovation. Research indicates that organisational innovations are least in focus in service firms (Paswan et al., 2009). Hence, there is more scope to study the usefulness of intangible resources in the service industry over and above manufacturing firms. Specifically, it is emphasised that innovation in service firms varies according to the degree of innovativeness in the project

development process. Innovation literature claims that service firms need to formalise and design the service innovation process in order to take charge of their innovativeness. Managerially, the service innovation process is complex to formalise because of the nature of resources involved in the process. A formalised innovation process would have to include all available intangible firm resources necessary to undertake the innovation process. However, studies have also shown that formalised innovation processes are relatively rare in service firms, especially in comparison with manufacturing firms.

Previous studies have also shown that the innovation in service firms could come from a number of actors working in an organisation's external and internal network. Hence, service firms that want to be innovative need to think of themselves as part of innovation networks in which they interact and exchange resources, knowledge and ideas with various actors in their environment, such as customers, suppliers, or other stakeholders (Hertog, 2000; Miles, 2008). We propose to study these organisational factors in combination with various intangible resources suggested in this study so as to broaden their practical application.

Another promising area of research in service innovation is employee motivation to contribute to innovation. So far research has focussed mainly on highlighting the importance of various collaborating actors within the company. However, the role of employee motivation is yet to be studied in the service innovation process. The present study may also be extended to discuss the role of managers' motivation in the implementation of service delivery innovation.

Our conclusion is that there is a need for further research about managing innovation in services, which specifically tries to understand the world of the practitioners who carry out innovation as part of their everyday work. We derived our theoretical understanding from Hunt (2000a, 2000b) and identified our resources under various categories. The future scope of this work suggests testing of these resources as second order constructs i.e., at the level of various aspects. We therefore suggest an agenda for further research based on the findings in our study. Suggestions for future research have been based on the identified gaps between existing research and problems raised by practitioners in operationalising service innovation. They include [1] conducting micro studies on service innovation, [2] viewing innovation in the context of everyday operations, and [3] focussing on cross functional and cross national studies.

### Concluding thought

This research builds upon previously conducted research (Chen et al., 2009; Ordanini & Parasuraman, 2011; Storey & Kahn, 2010) and refines our understanding of how operant

**Table 10** Structural Equation Modelling (SEM) model fit summary.

$\chi^2/df$	AGFI	PGFI	NFI	TLI	CFI	PNFI	RMSEA	RMR
3.99	.761	.72	.91	.92	.95	.82	.043	.059



**Table 11** Path coefficients from the Structural Equation Modelling (SEM) analysis.

Hypothesised relationship		Estimate	P-value	
Service delivery innovation	←	Customer collaboration	.345	.002
Service delivery innovation	←	Business partner collaboration	.287	.000
Service delivery innovation	←	Innovation orientation	.259	.004
Service delivery innovation	←	Market orientation	.338	.050
Service delivery innovation	←	Knowledge integration mechanism	.198	.007
Service delivery innovation	←	Information technology upgradation	.266	.005
Sustainable competitive advantage	←	Service delivery innovation	.165	.000
Sustainable competitive advantage	←	Customer orientation	.046	.001
Sustainable competitive advantage	←	Market orientation	.098	.984

resources drive the service innovation process. A firm's intangible resources do not help in creating sustainable competitive advantage alone but also enable more effective innovation activities and creating a positional advantage in the marketplace (Bhardwaj et al., 1993; Hoffman, 2000). The present research suggests that a firm's resource utilisation strategy enhances its long term potential by driving the proficiency of its service innovation processes. Research shows that delivery innovation acts as a mediator for the relationship between various intangible resources (called operant resources under the SDL framework) and the firm's competitive advantage. This demonstrates the importance of operant resources in a firm's resource base.

Our research highlights resource advantage theory and service dominant logic perspective to study service delivery innovation, linking innovation drivers in terms of intangible resources and firm sustainability. We discussed drivers of service innovation with a specific focus on service delivery innovation (Chen et al., 2009; Merz et al., 2009; Ordanini & Parasuraman, 2011; Storey & Kahn, 2010; Vargo & Lusch, 2004, 2006, 2008) and investigated its relationship with other variables from the SDL and R-A theory perspective (Hunt, 2000a, 2000b; Madhavaram & Hunt, 2008). Further, the overall impact of service delivery innovation in sustainable competitive advantage was assessed.

Our research represents an inaugural attempt to develop a comprehensive and theoretically robust framework for the understanding of all types of intangible resources (Hunt, 2000a, 2000b; Madhavaram & Hunt, 2008) and consequent service delivery innovation in terms of sustainable competitive advantage (as suggested by R-A theory). Our simultaneous investigation of multiple potential drivers of service innovation and their effects on competitive advantage facilitates a fine grained understanding of service innovation that has been possible through empirical findings. Our findings substantiate previous research in the field (Ballantyne & Varey, 2006; Bharadwaj et al., 2005; Chen et al., 2009; Cova & Salle, 2008; Gronroos, 2006; Hunt & Arnett, 2004; Merz et al., 2009; Ordanini & Parasuraman, 2011; Patrick, Davey, Muller, & Davey, 2013; Storey & Kahn, 2010) and contribute to several literature streams (Baker, Parasuraman, Grewal, & Voss, 2002; Vargo & Lusch, 2004, 2006, 2008). With this study, it is evident that the hierarchy of operant resources (Madhavaram & Hunt, 2008; Hunt, 2000a, 2000b) has helped marketers

conceptualise service innovation capability. Henceforth, research on developing service delivery innovation should focus on intangible resource utilisation.

Assessment of moderating role of customer orientation contributes to the existing service innovation literature (Babakus et al., 2009; Brown & Lam, 2008). Various reviews have produced similar empirical evidence regarding customer orientation linkages to innovation and performance, especially in the service domain (Kelly, 1992). Our study offers a clearer understanding of the effects of customer orientation in a project management role. Insights from our study extend the findings of Blazevic and Lievens (2008) on the links between customer orientation, innovativeness, and performance and reveal that customer orientation in interaction with service delivery innovation moderates sustainable competitive advantage. Collectively, these findings offer new insights to understand the role of project managers' customer orientation in achieving competitive advantage.

Importantly, our study contributes to the evolving literature on SDL. Our analysis suggests that this new service perspective offers a potentially useful platform for integrating various firm resources, thus reinforcing or challenging their role in the innovation process (Hunt, 2000a, 2000b; Madhavaram & Hunt, 2008). In particular, our findings offer empirical support to the fundamental premises suggested in the current SDL framework. The framework presented in the paper emphasises the strategic importance of utilising a shared understanding of innovation enablers to guide operant resources towards value creation activity. This framework presents a roadmap for marketing researchers to explore the connection between various enablers of service innovation i.e., firm resources and their strategic allocation that is necessary for the implementation and execution of a firm's competitive advantage.

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## Annexure 1

## Likert Response Format (LRF) Questionnaire (originally distributed in Spanish)

Latent construct	Sample estimates	T-statistic
Customer collaboration [CC] (adapted from Gruner and Homburg, 2000) AVE = .705		
Q1. We interact with customers beyond the standards of the service industry.	.886	6.04
Q.2 The perceived intensity of customer interaction is high.	.771	7.04
Q3. The frequency of meetings with customers is high.	.849	12.05
Q4. The number of customers with whom we interact is high.	.721	5.33
Business-partner collaboration [BC] (adapted from Gruner and Homburg, 2000) AVE = .547		
Q1. We interact with business partners beyond the industry standards.	.672	34.23
Q.2 The perceived intensity of business-partner interaction is high.	.693	33.04
Q.3 The frequency of meetings with business partners is high.	.732	14.44
Q4. The co-creation is the basis of interaction with the client.	.769	20.05
Innovation orientation [IO] (adapted from Hurley and Hult 1998) AVE = .577		
Q1. Our company pays close attention to innovation.	.621	6.05
Q2. Our company emphasises the need for innovation for development.	.756	9.11
Q3. Our company promotes the need for development and utilisation of new resources.	.821	11.28
Q4. Our company penalises those persons who do not give ideas for new innovations. (R)	.711	14.41
Q5. People are encouraged for new ideas.	.758	7.49
Knowledge integration mechanisms [KIM] (adapted from De-Luca & Gima, 2007) AVE = .774		
Q1. My firm encourages regular formal reports and memos that summarise learning	.673	32.60
Q2. My firm encourages information sharing meetings.	.744	28.40
Q3. My firm encourages face-to-face discussions by cross-functional teams	.783	19.66
Q4. My firm encourages formal analysis of failing service development projects	.845	24.02
Q5. My firm encourages formal analysis of successful service development projects.	.826	21.80
IT infrastructure support [ITIS] (adapted from Alavi & Leidner, 2001) AVE = .656		
Q1. Our team is provided with IT support for collaborative work regardless of time and place.	.782	35.01
Q2. Our team is provided with IT support for communicating among team.	.756	26.04
Q 3. Our team is provided with IT support for searching and accessing necessary information.	.711	16.02
Q 4. Our team is provided with IT support for systematic storing.	.674	14.06
Market orientation [MKTOR] (adapted from Narver & Slater, 1990) AVE = .688		
Q1. Our team member regularly shares information within our business concerning competitor's strategies.	.567	14.80
Q2. Our business objectives are driven by customer satisfaction.	.611	6.07
Q3. We monitor our level of commitment and orientation to serving customers' needs.	.619	5.78
Q4. Our strategy for competitive advantage is based on our understanding of customer needs	.743	7.82
Q5. Our business strategies are driven by our beliefs about how we can create greater value for customers.	.759	8.40
Q5. We measure customer satisfaction systematically and frequently.	.686	9.21
Q6. We give close attention to after-sales service.	.693	14.70
Q7. Our salespeople share information within our business concerning competitors' strategies.	.688	13.20
Q8. We respond to competitive actions that threaten us.	.743	22.80
Q9. We target customers and customer groups where we have, or can develop, a competitive advantage.	.845	33.10
Q10. The top management team regularly discusses competitors' strengths and strategies.	.866	37.45
Q11. Our top managers from every function visit our current and prospective customers.	.678	12.16
Q12. We communicate information about our successful and unsuccessful customer	.591	6.08
Q13. All of our business functions are integrated in serving the needs of our target markets.	.762	4.72
Q14. All of our managers understand how everyone in our company can contribute to creating customer value.	.827	12.86
Service delivery innovation [SDI] (adapted from Blazevic & Lievens, 2008) AVE = .592		
Q1. Our company emphasises offering new service channels for customers to order new services.	.562	22.51

(continued on next page)

<i>(continued)</i>		
Latent construct	Sample estimates	T-statistic
Q2. Our company emphasises offering new service channels to adjust customer complaints.	.653	17.80
Q3. Our company emphasises offering innovative approaches to deliver new services.	.674	14.67
Q4. Our company emphasises offering new service channels to provide after-sales service.	.742	14.20
Q5. Our company emphasises the conformance of new service channels with existing service channels.	.690	21.90
Q6. Our company emphasises offering existing customer service and consultation via new service channels.	.750	22.79
Q7. Our company emphasises offering new service channels to deliver existing services.	.782	15.31
Q8. Our company emphasises offering new service platforms to easily introduce new services for customers.	.811	9.03
Q9. Our company emphasises offering new service platforms to easily develop and implement new services.	.622	22.90
Q10. Our company emphasises offering new service platforms to enhance service delivery capability of the firm.	.789	12.40
Customer orientation [CO] (adapted from <a href="#">Todd Donovan, Brown, &amp; Mowen, 2004</a> ) AVE = .518		
Q1. I enjoy anticipating the needs of customers.	.687	13.60
Q2. I take pleasure in making every customer feel like he/she is the only customer.	.774	24.05
Q3. Every customer problem is important to me.	.711	22.06
Q4. I thrive on giving individual attention to each customer.	.795	09.77
Q5. I generally know what customers want before they ask.	.854	11.39
Q6. I am inclined to read the customer's body language to determine how much interaction to give.	.522	27.33
Q7. I enjoy delivering the intended service on time.	.672	6.02
Q8. I find a great deal of satisfaction in completing tasks precisely for customers.	.832	15.07
Q9. I enjoy having the confidence to provide good service.	.651	19.66
Sustainable competitive advantage [SCA] (adapted from <a href="#">Bharadwaj, Varadarajan, &amp; Fahy 1993</a> ) AVE = .64		
Q1. This business innovative practice has been successful in making the business more competitive.	.589	33.40
Q2. New service delivery systems have been successful in establishing new markets.	.721	27.85
Q3. The new service development programme has been successful in ensuring the long-term viability of the business.	.788	22.70
Q4. The new service delivery systems have been successful in achieving better utilisation of resources.	.672	19.55
Q5. Innovative service delivery has been successful in leverage sales of other products and services.	.694	18.50
Q6. Successful implementation of innovative delivery systems has been successful in bringing new clients to the business.	.549	21.40
Q7. The new service delivery systems have been successful in retaining existing customers.	.795	22.49

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