A Multi-Dimensional Perspective on Service Innovation in the IT Services Industry

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Innovation in service manifests itself in multiple dimensions - a change in the service offering or changes in any of the organizational processes delivering that service. Service firms need to demonstrate a variety of dynamic capabilities to design new services and deliver them. An exploratory case study, based on a major innovation in an IT service engagement, is used to bring out the multiple dimensions of service innovation. Further, it brings out the role played by dynamic capabilities in realizing that innovation. This implies that service firms would require flexibility in the delivery mechanism, to be able to innovate successfully.

INTRODUCTION

Over the last two decades, the service sector has grown by leaps and bounds. In the developed economies, the service sector has overtaken the manufacturing sector in terms of turnover. The developing economies are catching up as well. This growth is partly driven by innovation in service (Coombs and Miles 2000, Gallouj 2002). Side by side there has also been an increase in research focus on service management, service marketing and service innovation. The emergence of service dominant logic, as distinctly different from goods dominant logic (Vargo and Lusch 2004, Michel et al. 2008, Lusch et al. 2008) and the need felt for a multi-disciplinary, comprehensive 'service science' (Spohrer and Maglio 2008, Ostrom et al. 2010) has fuelled research growth in the field of service.

With the growth of research in service, research on strategic management of innovation in service is picking up and some frameworks for analyzing have been proposed (Frei 2008, Möller et al. 2008, den Hertog et al. 2010, Rubalcaba et al. 2012). Frameworks considering some dimensions of service innovation and organizational capabilities have been brought forward by some authors (Froehle and Roth 2007, Oke 2007, den Hertog et al. 2010). However, empirical studies validating these conceptual frameworks have been few. (Droege et al. 2009, den Hertog et al. 2010). Further, these frameworks analyzing service innovation are largely sector agnostic although there are significant differences in

service innovation behavior in firms across sectors (Tether 2003). Hence, there are immense research opportunities in sector specific exploration of service innovation (Droege et al. 2009).

The current study adds to the growing body of research in two ways. Through a case study in the IT service industry, it brings out the diverse manifestations of an innovation and the underlying dynamic capabilities of the service firm that are at play in realizing that innovation, thereby validating empirically the linkages between service innovation and dynamic capabilities. It also highlights nuances particular to the IT service industry, indicating directions for an IT service industry- specific framework for analyzing innovation in service.

The paper is organized in the following way. In the beginning the context is set by establishing the crucial role played by innovation in service. The challenges faced in research of service innovation is deliberated upon. Next the various distinct aspects of service innovation are explored through a survey of current research. This is followed by a review of the literature that explores the organizational capabilities required for creating and realizing innovation in service. Proposed frameworks for analyzing service innovation are briefly evaluated. This is followed by a brief discourse on the IT service industry in order to set the context for the case study. The case study, which delves into a specific instance of innovation in the IT service industry, follows. The case is analyzed, uncovering the different manifestations of innovation and also the dynamic capabilities of the IT service provider firm that created this innovation. In doing so, the sector specific idiosyncrasies, relevant for the study of innovation and the dynamic capabilities associated with them, are highlighted. The study is concluded by summarizing the findings from the case study, highlighting the managerial implications and spelling out the limitations of this study.

LITERATURE REVIEW

Service Innovation: A Brief Background

Service is generically defined as making a bundle of capabilities and competencies available for providing a solution (Gadrey et al. 1995). This definition fundamentally differentiates service from producing goods. Producing service entails organizing a solution to a problem rather than supplying goods. Producing service necessitates making available, a set of capabilities and competencies (human, technological, organizational) at the disposal of a client, for providing the solution (Gadrey et al. 1995). Thus, the experience the customer goes through in the service encounter lies in the core of the design and delivery of the service.

Study of innovation in services had been historically neglected and marginalized, relegated to ‘Cinderella status’ (Miles 2000), despite the growing dominance of service in the economies around the world in terms of share of revenue and employment. This is notwithstanding the fact that the service firms have also been engaged in continuous stream of innovations in order to remain competitive. There are a few things about service that one needs to understand.

Customer experience is central to service, as services are largely intangible and simultaneously consumed and co-produced. This puts delivery processes and, in many cases, human interactions between providers and consumers in central position of service value creation. In that context, the standard innovation protocols for tangible products do not seem to work well for services (Bitner et al. 2008). In such a context, innovation in services may often be in the service delivery process or in the organization that delivers it (Howells et al. 2007).

There are similarities in new product development and new service development, but there are significant differences too. R&D is more important for new product development, whereas, the willingness of an organization to change current skills and routines is more important for new service design (Nijssen et al. 2006). Innovation protocols and prototypes that work well for physical goods need to be substantially modified to be applicable for service (Bitner et al. 2008). Much of the observations based on technological advances producing innovation in tangible products are therefore not applicable in the case of service innovation.

In service, the dichotomy between product innovation and process innovation tends to blur (Tether 2005). This is endemic in the nature of service, since, rather than supply of a (service) product, the service experience of a customer is brought about by a set of capabilities and competencies of the service provider organization (Gadrey et al. 1995). Service is normally measured based upon their dynamic management, customer perceptions, expectations and outcomes. Many of these are metrics are not absolute (Wilson et al. 2012).

Product (service) innovation by itself is inadequate in maintaining customer loyalty in contexts that involve sustained relation with the customer e.g. in B2B scenario. The other 'organizational' dimensions, which are a part of the service experience, also have to adapt to changing environment (Verdu´-Jover et al. 2004). Continuous and creative innovations therefore are a key strategy for long term success of the firm (Kandumpully 2002). However, innovations in service tend to be imitated very quickly. Innovation therefore has to be in a service firm's DNA in order to continually innovate to remain competitive (Arias Aranda and Molina-Fernández 2002).

Multiple Dimensions of Innovation in Service

The multi-dimensional aspect of innovation in services has been addressed by various authors in different ways. Building a classification system for innovations is one such approach. Sirilli and Evangelista (1998) distinguish between product and process innovation. In a similar vein, Howells et al. (2007) identify technological and organizational as two major dimensions, each being further subdivided into four sub-divisions. The broad technological area covers changes to the actual service and the means to produce and deliver the service. The organizational dimension covers changes in organizational structure and people and the relation with customers and other businesses (Howells et al. 2007). Van der Aa and Elfring (2002) as well identify technological and organizational aspects of innovation.

A more direct foray into the multi- dimensional aspect of service innovation had been through the exploration of modes of service innovation by Gadrey et al. (1995). They identified innovation in service products, architectural innovations, modification in existing services and innovation in process and organization of existing services as key innovation types. The pentathlon framework proposed by Oke and Goffin (2001) is another attempt to uncover the multi- dimensional aspect of innovation. The dimensions of innovation strategy, creativity/ideas management, selection and portfolio management, implementation management and human resource management were proposed to drive the management of innovations (Oke and Goffin 2001). Djellal and Gallouj (2005) explore multiple 'trajectories' on the path of service innovation, logistical and information processing, methodology, 'pure service' and relational, to name a few. The concept of evolutionary pathways that companies follow on the innovation route has also been explored by Sebastiani and Paiola (2010). Chae (2012) explored the evolutionary processes for service innovation and proposes eight different strategic orientations of firms towards service innovation. Sundbo (2003) explored product innovation, process innovation, organizational innovation and market innovation dimensions and later included dimensions of technological innovation and widened service in their framework. (Sundbo et al. 2007). A more generic approach had been the four dimensional framework of service innovation, that identifies new service concept, new client interface, new service delivery system and technological options as key dimensions (den Hertog 2000). This framework was later extended to include additional dimensions of new business partners and new revenue model and link these to dynamic capabilities required to drive these dimensions (den Hertog et al. 2010).

Capabilities Required for Service Innovation

While manifestation of innovation in multiple dimensions is one aspect of innovation in service, the other important aspect is the factors that determine the success or failure of a firm's ability to generate such innovations. Most of the research in this area focus on the capabilities required for new service design (Froehle et al. 2000; Lievens and Moenaert 2000, 2000; van Riel et al. 2004; Froehle and Roth 2007). Notable among them is the seminal article by Froehle and Roth (2007). These authors map the previously identified success factors on new service design into two groups, 'Resource oriented NSD (New Service Design) practices' and 'Process oriented NSD practices'. They postulate that in order to

succeed at innovation, firms need to focus on both these groups. While the latter group of factors guide a service firm through its process of new service development, the former group of factors focus on the physical, intellectual and organizational resources that give an organization its NSD capability. This study empirically concludes that both sets are essential.

These studies mainly focus on capabilities required for innovations in the service 'product' itself. The capabilities required to innovate in the organizational dimensions mentioned earlier are not addressed adequately by these studies (Droege et al. 2009). Djellal and Gallouj (2001) did explore different development activities related to the different dimensions of innovation but they did not link these to the success of service innovation. Oke (2007) had ventured into these internal dimensions of service innovations through a survey based research, concluding that a clearly defined innovation strategy, creativity and ideas management and an active human resources management significantly influenced a firm's success at service innovation, more so for radical innovations.

Linking service innovation to organizational capabilities or, more specifically, presence of certain organizational resources and capabilities as an antecedent to service innovation is emerging as a field of study. Service science approach for business model innovation that changes service value proposition, leveraging organizational resources of people, technologies, organizations and information have been proposed (Maglio and Spohrer, 2013). Service dominant logic paradigm has also been used to analyze service innovation (Edvardsson and Tronvoll, 2013, Lusch and Nambisan, 2015). Such frameworks focus on reconfiguration of resources in organizations, interplay between actors and changes in the schemas in the service value creation process to bring about innovation in service.

Den Hertog (2000) addressed innovation aspects internal to service firms as 'Service delivery system/organizational innovation'. This idea was further refined and elaborated subsequently (den Hertog et al. 2010). In their seminal theoretical article, they identify six dimensions of service innovation. Only one of these, new service concept, deals exclusively with the service product. New customer interaction and new business partner dimension focuses on the interaction and networking concepts of the service creation. New revenue model explores innovations in the remuneration model of the service value. Two dimensions are built in to handle the innovations in the delivery systems, one technological and the other personnel, culture and organizational aspects. Further, they propose that in order to be able to generate a stream of service innovations that will keep the firm competitive, a set of dynamic capabilities will be required. In the context, they define 'dynamic service innovation capabilities' as

> 'those hard to transfer and imitate service innovation capabilities which organizations possess to develop, (re-)shape, (dis-)integrate and (re-)configure existing and new resources and operational capabilities. These are needed to successfully offer clients a new service experience or new service solution and market these successfully in a sustainable fashion and hence swiftly adapt to a firm's changing environment. These dynamic service innovation capabilities are aligned with firm strategy, market dynamics and firm history.'

The six dynamic capabilities that they identified are – a) signaling user needs and technological options, b) conceptualizing c) (un)-bundling capability d) co-producing and orchestrating e) scaling and stretching and f) learning and adapting. den Hertog (2010) hypothesize that service firms that are more successful in continually innovating demonstrate higher degrees of at least some of these capabilities.

The six-dimension framework for analyzing service innovation proposed by den Hertog et al. (2010) is sector agnostic. In reality, each service sector has its own nuances and significant difference in innovative behavior in firms have been empirically observed across different service sectors and adaptation of the generic framework to the idiosyncrasies of that sector becomes necessary (Tether 2003). For example, large scale deployment of staff at offshore countries, away from the clients, is a typical phenomenon in the IT service industry and being able to optimally manage such teams distributed across geographies and time zones is a vital industry specific requirement, to be considered in any service innovation framework for that industry. Such industry specific requirements cannot be addressed by generic frameworks but calls for sector specific studies. Some notable ones had been from Djellal and Gallouj (2005), who a framework exploring multiple sources of innovation and main organizing principles driving innovation in hospitals. Ko and Lu (2010) identify five dimension of innovation

competencies in the communication industry. Perks et al. (2012) explored the micro level innovation processes in the motor insurance industry. den Hertog (2000) uses a four dimensional framework to analyze innovation in the knowledge intensive business service (KIBS). Kindström et al. (2013) also focus on dynamic capabilities as microfoundations to bringing about service innovation in KIBS. Corrocher et al. (2009) explore the multiple modes of innovation and their linkages to determinants of innovation like firm strategy. However, there is still a great deal of exploratory work left to be done, in the area of sector specific studies of service innovation (Droege et al. 2009).

The IT Service Industry

Today, IT enabled processes are the transactional backbones of all corporate entities. IT enabled data and information analysis facilitates decision making at all levels in the organizations today. Due to the high degree of technical specialization required for providing IT services, such services are quite commonly 'outsourced', that is, procured from organizations that specialize in providing such services. In the new knowledge economy, the IT service providers function as key enablers of firm strategy.

The IT services industry is characterized by rapid changes. These changes are multi- dimensional. Some of these are technological. For example, the software products on which IT applications are built undergo frequent upgrades, new products continually enter the market with a high rate of obsolescence. There are other fundamental changes brought about by such radical concepts as open source software and software as a service, which require revolutionary changes in the way software products are priced. Changes in regulatory environment, like the one brought about by the Sarbanes-Oxley Act of 2002, create changes in corporate governance and hence information management practices. The web 2.0 in the first decade of this century and now the social media applications has redefined the way businesses use IT and, consequently, the nature of IT services. The business model of providing IT services change frequently, driven by continual cost pressures and global distribution of skilled resources. This has led to multiple changes in project delivery models, starting with outsourcing to offshore locations initially and now to multi center and even multi country delivery. Cost pressures have forced innovative pricing models for IT Services, like volume based pricing and learning curve based price reduction.

As identified in the analysis of the industry by various authors, though the switching costs to clients is high in the short run, in many situations there are multiple incumbent vendors providing service to the same client and there is intense rivalry amongst them to corner business opportunities. Given that background, clients look for key differentiators among the service providers to allot work. The IT Service Climate, which includes service vision as a key ingredient, has been identified as a cause of client satisfaction (Jia and Reich 2011).

Such an environment necessitates that organizations in the IT services industry need to constantly innovate to remain competitive (Asikainen and Mangiarotti, 2016). Hence, it is of prime importance for organizations in the IT services industry to gain an understanding of the different aspects of service innovation and the organizational capabilities required to ensure successful management of service innovation.

Since the advent of Web 2.0, information technology has transcended the role of an enabler of functional level strategies. It has now taken up the role of a key dynamic capability for enabling key business level strategies of the firm (Drnevich and Croson 2013). Mobile applications and cloud based platforms have enabled new business models. The firm level business strategies are becoming more and more dependent on its IT innovation posture. For good business performance, the IT innovation profile of the firm has to match its innovation posture (Fichman and Melville 2014). With increasing levels of IT Service outsourcing by firms, it is contingent upon the IT Service provider organizations to match up to the IT innovation capability expectations of their client organizations.

There had been a number of studies on the role played by IT service in bringing about innovation in service (Nambisan, 2013) and it is considered a key capability to enable innovation in service (Lusch and Nambisan, 2015). However, studies on innovation, specifically in the IT service industry, have been few. Chae (2014) explores innovation in this industry using complexity theory and proposes an evolutionary process for innovation in this industry through variation, selection and retention. Asikainen and

Mangiarotti (2016) analyze the effect of open innovation in the IT service industry. However, studies need to be conducted on the antecedents of service innovation in this industry and the strategic capabilities needed to sustain such innovations.

A CASE STUDY OF IT SERVICE INNOVATION

Scope of Current Study

This study uses the case study approach to explore one particular instance of a major innovation in an IT service outsourcing engagement. This exploratory study aims to bring out the multiple dimensions of innovation so inextricably linked to bring about an innovation in a service offering. It also explores the dynamic capabilities of the service provider firm that enabled it to create and realize this service innovation.

Case study method is widely accepted as a method to understand relevant concepts and gain understanding of contextual relationships (Eisenhardt 1989). Case study method also adds reality to research theory (Siggelkow 2007). Particularly in situations like the current one, where the existing propositions are not well established, case studies are used to anchor research (Eisenhardt and Graebner 2007). The case study, in the context of this research, is an 'instrumental' case study. An instrumental case study is used where the researcher wants to get deep insights into a specific issue (Stake 1995). The subject case is expected to contribute to a greater understanding of a single instance of an innovation in a particular service and the multiple changes associated with that innovation.

The current study had been a longitudinal case study, over a period of two years. Senior level managers from the service firm, the customer firm as well as the other collaborating firms providing the complex service detailed in the case study were interviewed. The interviews were semi structured and started by exploring the ways in which the service transformation was delivered. Follow up questions included how the underlying organization processes, resources and routines had to be changed. Insights into dynamic capabilities at work emerged inductively from the fieldwork.

Case Background

The case discussed in this paper is on innovation in a specific IT service delivered for a global telecom multinational, headquartered in the Nordics. The company, hereafter referred to as 'client', is a provider of communication technology and services. Their offering comprises of services, software and infrastructure within information and communication technology for telecom operators and other industries, including telecommunications and IP networking equipment, mobile and fixed broadband, operations and business support solutions. The company is a technology leader in its field, holding more than 30,000 patents. It employs more than 110,000 professionals and conducts business with customers in more than 180 companies. Its turnover was around $27 billion in 2013.

The client had an extremely complex enterprise resource planning (ERP) application that was the transactional backbone of their organization worldwide. The organization philosophy of being an early mover in the technology space encompassed the IT infrastructure as well. The ERP solution was heavily customized to accommodate interfaces with a host of non- ERP applications. All cutting edge new release products from ERP were tried out and the organization had an annual budget in excess of $300 million for maintaining its IT infrastructure, continuously upgrading its applications and bringing in new functionalities requested by business users. The company had a strong, centralized IT management that handled maintenance of its IT applications, networks and datacenters. This team was responsible to ensure that the IT applications were aligned to the strategic objectives and provided the right kind of business enablers. This team was also responsible for managing major long term outsourcing contracts for IT support services. The cost of development of new functionalities was transferred to the business unit raising the request.

The client had a multi-vendor strategy for IT services outsourcing. The entire IT hardware and datacenter services were provided by a US based global, full-service multinational IT major. The maintenance of all the ERP applications and majority of the non-ERP applications was outsourced to

another US based global, full service IT major, henceforward referred to as 'provider'. Enhancement projects were awarded on a case by case basis and apart from these two vendors, another US based IT major, two of the Indian pure-play IT majors and local boutique consulting firms were in the fray. Apart from outsourcing service contracts, the client had close to 500 subcontractors on its roll, performing various roles in the IT area.

Service Innovation Objectives

The service studied was that of the ERP releases. ERP releases were a bi-annual affair in the client ERP application. A typical release would include close to 150 new developments, bringing in new functionalities into the application. Though the main provider would execute most of the release work, other vendors would also develop enhancements that would share the same release calendar. There used to be significant rise in problem tickets immediately after the 'go-live' of a release. This caused dissatisfaction amongst the business users. Further, since the releases were bi-annual, there used to be a significant delay between the identification of need for an enhancement and realization of that. This led to 'short cuts', enhancements being moved across bypassing the release regime and, consequently, inadequately tested.

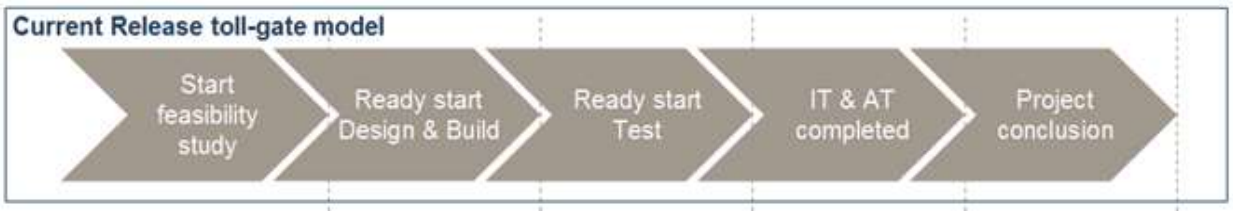
The client, together with the provider, set up a team to fundamentally change the release method. The objectives were to improve the application stability post release, to reduce the lead time for enhancement delivery and lower the overall cost. This called for an innovation in the overall ERP release service offering.

Development of the New Service

Service concept is the value that is created by the service provider in conjunction with the customer (Frei 2008). In the IT Service industry, this is popularly known as the 'Service Offering'. For example, in the 'incident resolution' service offering, a technical resource from the service provider analyzes an incident of malfunction of an IT application reported by a client staff; provides a solution that is tested and approved by the client staff; and ensures that the solution rectifies the malfunction and the client can resume regular business transactions. A new service concept is, at a very fundamental level, a new idea to address some need of a customer (den Hertog et al. 2010).

In this particular case, the need was articulated clearly in the objectives behind the redesign of the ERP release service. The client had a well-defined ERP release mechanism in place, symbolized by a 'tollgate' model that identified the phases of the project and the exit criteria from each phase.

FIGURE 1
RELEASE TOLLGATE MODEL



A typical ERP release would take place once in six months and contained 150-200 Change Requests (CRs). CRs followed a well-defined life cycle. Each CR would begin with an initial design phase, in which consultants (from IT vendors) would take inputs from client business users and work out a solution, typically along with a prototype. After the acceptance of the design, the CR would be taken up for 'build'. The build would be followed by integration and regression testing by the provider of the release service and acceptance testing by client business users. On successful completion of testing and remediation of defects, the CRs would cutover to 'production' where after these functionalities would be available to general business users. The 'go-live' was typically followed by a 4 week 'warranty' period.

In the toll-gate model vendors used to work on a 'time and material' contract, where vendors would get paid hourly, based on the actual number of hours worked. There were pre-negotiated rate cards for the hourly rates of the provider staff of each vendor. The rates were differentiated on the basis of the skills of the resources and their location. Thus, the hourly rates charged by a senior IT architect located at the project site could be 8-10 times higher than that of a junior application developer working from an offshore location.

Usually it was customary for the same key provider staff to be working on a particular CR through its entire lifecycle. They were often augmented by additional developers or consultants with complementary skills, if required. The provider was required to track the hours worked by each resource type, specifically on the design, build, test and deploy phases, for each CR. This tracking was essential, since client IT organization charged back the costs of development of new functionalities to the business unit that asked for it.

Apart from the cost of the individual CRs, a release project typically had overhead costs not directly attributable to specific CRs. These included the project management effort, system administration, test management and administrative support staff. The provider organization had to deploy 3 full time support staff just to track and report the labor hours and bill to client according to relevant rate card rates.

The modified ERP release service fragmented the overall lifecycle of the CRs into two distinct phases, the design phase and the drop phase. The design phase focused on capturing the user requirements and providing an initial solution, along with a prototype. The drop phase picked up the initial design and refined it, built the solution following rigorous development standards, tested all the CRs for a release together and managed the cutover. Thus, the development lifecycle of a CR was split into a loosely structured design, which may have a variable time span, depending upon the complexity of the requirement, followed by a much more rigid and time boxed drop phase. While the drop was envisaged as a service to be provided by a single vendor in a low cost, 'factory mode' service, the design work, decoupled from the drop, could be provided by any vendor or even by in-house IT staff of the client.

The new design-drop model addressed a few key needs articulated by the various client stakeholders. Since the drops were quarterly, these were quicker vehicles for enhancements. Half of the CR lifecycle was executed on a factory mode, so overall lifecycle costs were lowered. Since all the CRs in a release were tested together by a single service provider in the drop cycle, the number of post go-live defects reduced significantly. In this way, the innovation in the release service addressed key needs of the client. However, the new release model was an outcome of a number of innovative changes in other aspects of the service, like collaborating with client as well as other service providers, modified staffing and pricing models and delivery methods and processes. These specific dimensions of innovation are discussed in greater detail.

New Delivery Processes and Methods

Delivery of new service requires 'new delivery system'. New processes and methods have to be brought in and new organizational structures may have to be created to enable the service workers to be able to deliver the new services properly.

The new design-drop model for the ERP releases called for an overhaul of the service delivery methods and entirely new processes. The ERP releases were operating in a 'tollgate' method, where the overall lifecycle was divided into major phases. The 'tollgates' spelt out the exit criteria from each phase, to launch into the next phase of the overall work breakdown structure. The lifecycle of individual CRs was tightly coupled with the tollgates of the entire release. In the new model, the CRs were broken into two major phases, the design phase and the drop phase. The same tollgates applied to individual CRs. However, during the design phase, the tollgates were applicable to individual CRs and not to the collection of all CRs in a release. This meant that more complex CRs could be allotted increased time for requirement finalization, design and prototypes. Whatever CRs were ready with these activities at the first tollgate of the drop phase, i.e. 'ready to start build', would form the scope of a particular release. Thus, the innovative design-drop model of the ERP release called for a change in the delivery method.

New Service Delivery Partners

Ability to manage and orchestrate various business partners for not only co-designing a new service but also sustained co-producing of it, has been identified as a key dynamic capability for sustained firm performance (Teece 2007).

In the new delivery model the design phase of the work on a CR could be allotted to any vendor while the provider was the 'single source' for the drop phase work. This change called for an entirely new handover process, for transfer of the CRs from the design vendor to the provider. The new process involved the codification of the knowledge gleaned during the design phase of work and a walkthrough session between the vendors. The quality of the releases depended considerably upon the quality of this handover. Hence adequate governance structures, comprising of design vendor, provider as well as client managers, coupled with effectiveness monitoring mechanisms had to be set up.

In the earlier release service, the provider team was responsible for end-to-end delivery of the CRs. In case some other vendors were awarded contracts for some of the CRs, those vendors would also deliver end to end, aligning to the same release calendar. However, with the new design-drop cycle, the build, test and deploy phases of the CR lifecycle were 'single sourced' to the provider, while the requirement gathering, design and prototype phases could be delivered by any other vendor as well. This necessitated collaboration between the design vendor and the drop vendor, for the end-to-end delivery of the CRs through the overall release cycle.

Thus, successful delivery of this innovation in service called for a coordination and orchestration between these various partners. Collaborating with new business partners for delivery of an innovative service is a key dimension in innovation in service (den Hertog et al. 2010). The collaboration between partners can be at multiple levels and asset layer, complementary layer, knowledge sharing layer and governance layer has been proposed (Grover and Kohli 2012). In this context, knowledge-sharing layer is of particular relevance. The design-drop model essentially involved a transfer of knowledge from the design phase vendor to the drop phase vendor. The coded knowledge from the requirement gathering and design phases had to be passed on to the provider for subsequent development, testing and deployment phases. The multi-vendor situation meant that conflict was endemic, since orders for the design phase were open to competition. However, an appropriate governance layer had been put in place that ensured a smooth transition of CRs from design to the drop phase.

Technological Innovations in the Service Delivery Processes

The focus of the design-drop ERP release model was on cost reduction, not only in the delivery phase but also in the maintenance phase of the software lifecycle. Further, the releases were time-boxed projects, with no slack in the project plan. As such, ensuring width and depth of testing in a very short time available for testing was extremely critical. As explained earlier, the ERP application landscape at the client was extremely complex. Adequate regression testing, in a short time span, to ensure that the new CRs do not adversely impact the already available functionalities was a major challenge. This challenge was handled through another technological innovation, with the use of automated testing. The end-to-end regression testing scenarios were recorded using automated testing tools. During the regression testing cycle, multiple execution of the automated test scripts using a variety of datasets ensured width of testing in a short time.

Without the usage of this new technology to speed up testing (and without compromising the quality), the overall objective of the new service offering would have been impossible to meet. Thus, adoption of new technology has worked as a key enabler of service innovation in this case. This is consistent with the observation made by Hipp et al (2005) that technical developments are used by service organizations to innovate and improve their service products and delivery processes.

New Business Model

One of the primary objectives of the innovative design-drop release model was to reduce the overall cost of the release and that of the individual CRs. This was achieved by an innovation in the business model. A business model consists of key interlocking elements of client value proposition, profit formula,

key resources and processes that together create and deliver value (Johnson et al. 2008). It serves as the vehicle that converts an innovative idea into economic value (Chesbrough and Rosenbloom 2002).

In this case, the cost structure of the release was fundamentally altered by the fragmentation into the design and drop phases. The design phase involved the higher end work of crystalizing requirements, designing and prototyping the solution and required highly skilled resources. However, the drop phase involved development, testing and deployment, which required resources of comparatively lower skill levels.

Since the design and drop phases were differentiated into projects separated by different contracts, the resources deployed to deliver the CRs changed in the design and drop phases. Lower cost drop phase resources lowered the overall cost of each CR. This was notwithstanding the fact that an additional activity of handover of CRs from design phase to drop phase resources had to be brought in.

A change in the revenue model for the drop phase was also initiated by the provider. This was through a 'blended hourly rate' instead of a rate card. The typical resource mix of a release was taken as a standard and the average hourly rates calculated. This was taken as the single, blended hourly rate irrespective of the skill level or location of the resource. The immediate benefit was the simplification of the reporting and billing and a reduction in the cost of two of the support staff as a direct consequence.

The blended rate also helped in driving down the overall cost of the releases. In the new revenue model, the project management team at the provider organization had the flexibility of changing the resource mix at offshore and client site, depending upon the need of the project. No prior approvals were necessary from client. Hence the focus was on minimizing the cost of the release. The benefits therein were partially passed on to the client through a reduction in the blended hourly rate for the release.

The long-term benefit of this change in revenue model was manifest in an increased maturity in the outsourcing relationship. The earlier release model had been more of a staff augmentation model, where the provider staff worked under the direct management of the client. The design-drop model meant a factory model of operation in the drop phase, where the provider organization was responsible for project deliverables and not merely providing skilled resources. Thus, the focus of the client IT management shifted from monitoring the output of individual provider resources to the overall quality of the delivery as per contract. These attributes of an outsourcing relationship has been identified as some of the key indicators for the degree of maturity of client-vendor relationship (Simon et al. 2009).

New Staffing Model

The new design-drop release model brought about changes in the staffing model as well. As indicated earlier, the de-coupling of the unstructured, higher end design work from the more repetitive, routine development and testing work meant that the drop phase required lower skill level in the staff. Over a period of 2-3 releases, many of the senior, more experienced resources of the provider organization were deployed in separate design phase projects.

However, the innovation in staffing model was manifest in the location of the drop phase resources. In the previous release model, at least 45% of the team was co-located with the client. In the new model, the offshore content of the work steadily increased. The overall work breakdown structure was analyzed and tasks requiring more interaction with the client personnel were specifically identified. It was observed that more interactions with the client team were required during the acceptance-testing phase. Also, the handover of the CRs from the design phase team required intense interaction with the design phase teams, which were mostly co-located with the client.

The new design-drop model reduced the release timeline from bi-annual to quarterly. There was a significant overlap between successive releases. Thus, when a particular drop was into acceptance testing, the following drop was taking handover of CRs from the design projects. This period of 3-4 weeks was identified as a period requiring extensive interactions between the provider staff and the client staff for testing and between provider staff and the staff of the design projects. Key staff members from the drop team were brought into the client location from offshore for this brief period. This improved the quality of these interactions and, consequently, the quality of the drop delivery. The offshore location for most of the drop staff for majority of the project duration helped keep the overall costs of the drop low. This move

towards a judicious mix of offshoring depending upon the specific activities in the project plan was an innovation in the staffing model. Right percentage of offshoring has been identified as a key feature that improves the maturity of the offshore delivery model (Simon et al. 2009).

In the current study, changes in the staffing model is a key ingredient in bringing about the innovation. The six dimensional model proposed by den Hertog et al. (2010) includes 'new delivery system: personnel, organization and culture' as one of the dimensions. However the current study indicates that innovation in the staffing model is important enough for the IT service industry, to be considered as a separate dimension in itself.

Benefits Accruing from the Innovation

The innovation in the service studied here generated a number of benefits, both for the client and the service provider. For the client, the immediate benefit was a drop in the number of problems that were observed in the applications after the CRs 'went live', by as much as 60%. Since the new 'Design-Drop' model significantly reduced the number of parallel projects and ensured that all the CRs were tested together intensively, the quality of the release improved significantly. The new model separated the design phase from the drop phase of a CR, which created the provision for more complete design and prevented last minute design changes. This too impacted the quality.

Segregation of the design phase from the drop phase enabled the client to choose the most appropriate IT service provider to do the design work. Further, the drop phase did not need as high end consultants as the design phase and an elaborate handover mechanism meant that the drop phase could be delivered by junior consultants. This reduced the cost of delivering a single CR by 5-20%, notwithstanding the additional handover activities that were not required before. Further, the new blended rate helped the provider organization to gradually increase the percentage of work delivered from offshore. Each of the first four releases in the Design-Drop model saw an average reduction in costs by 8-10 percent on an average. A part of this benefit was passed on to the client through reduction in the blended rate for a release; the other part was retained as profits.

For the client business users, the biggest benefit came from the reduced lead time for a new requirement to be available for use. The Design-Drop model reduced the duration between two successive releases from six months to three months.

This instance of innovation in service impacted all the stakeholders positively and increased customer loyalty.

SERVICE INNOVATION IN IT SERVICES INDUSTRY: A MULTIDIMENSIONAL FRAMEWORK

The IT services industry is a rapidly changing industry and in order to be successful in this industry the players have to innovate. This is not limited to launching a service innovation once, but to be able to continually churn out innovations in services offered, to sustain competitive advantage. Ability to innovate is itself a capability that organizations possess in a varying degree. It is this capability to innovate that creates the firm wide behaviors leading to systematic innovation activities within the firm (Lawson and Samson 2001). The innovation capability again is multidimensional and organizations that consciously and systematically develop and invest in these capabilities have a better likelihood of attaining a sustained stream of innovations.

Den Hertog et al. (2010) posited that innovation in service is manifest in multiple dimensions. More often than not, these dimensions are inter-related and planned changes in one of the dimensions cause changes in other dimensions as well. The same phenomenon was observed in the current study as well. Some of these dimensions were visible to the clients in the form of new service offerings or new pricing models. Others like new delivery methods and tools, new staffing models and new business partners work in the back end to produce the visible components of the innovation. All the dimensions together brought about the new service experience for the customer, which is at the heart of service innovation (Gronroos 2007).

The framework in den Hertog et al. (2010) is however silent about which of the six dimensions play dominant role in a particular industry. In the next few sections we present learnings from the present case study and how that extends the knowledge about service innovation in the IT Services Industry.

Sensing User Needs

den Hertog et al. (2010) articulates the process of service innovation in following way:

> *"Actually a deep understanding of how the relevant context of a firm is changing and being able to sense user needs well in advance and translate this into a search routine for a new service is hypothesized to be key here." (den Hertog et al. 2010).*

In the context of the case study, it was crucial for the provider firm to sense the root causes of dissatisfaction of the client user community with the existing bi-annual ERP releases. While client dissatisfaction with the high number of maintenance incidents immediately after a release 'going live' was apparent, the other issues were less so. The primary client stakeholders for the provider organization were the core IT managers and they were directly responsible for the performance of the IT system. However, latent dissatisfaction regarding the long lead times for any new functionality to be made available was not with this group but with the client business function managers. As mentioned earlier, the cost of development of CRs was transferred by the IT department to the business function requesting them. Hence, concerns about high costs of CR development was again, on the business function managers. The provider organization had little, if any, direct interaction with those groups. However, through their network of informal relationships, the provider organization was able to sense these latent requirements and respond with an innovation model of release. This signaling was not a passive activity but rather an open-ended, broad process that can be managed in a repeatable manner, a key component for a dynamic capability (Zollo and Lomi 2007).

Creating a New Service Offering

Innovations in service are intangible ideas of new service or modification of existing service and, as such, quite difficult to design, prototype or test. Owing to the intangibility of the service, customers are unable to assess upfront what their experience of the innovation in service would be (Gallouj and Weinstein 1997). Moreover, the innovation process for services has much stronger customer involvement than a product innovation due to its shared process character (Alam 2002, Magnussen et al. 2003). Thus, the process of innovation in service does not lend itself to easy codification. Creating a new service offering that would be a new service experience for the customer, consequently, is a dynamic capability.

In this case study, the provider organization had not developed the design – drop model in isolation. A core team, comprising of key personnel from the provider organization and the client organization was formed. Other vendors were also consulted, for development of the design handover process. The provider organization was required to work with multiple stakeholders, at times with conflicting interests, as shown below:

TABLE 1
STAKEHOLDER ANALYSIS

Stakeholder group	Role in ERP release	Interested in	Role in innovation	Change in role in design - drop
Business process owners	Ultimate consumers of functionalities developed	Reduced cycle time, post release quality	design and prototype approval criteria	Interim approval of design/prototype
IT Managers	Overall release project management	Schedule adherence, costs, quality	Modification of method, along with provider	Participation in project governance
Other vendors	Parallel projects with no overlap, apart from adhereing to same release milestone	Protecting their share of business of CR development	Initiative handover method, along with provider	Handing over CRs to drop team
Provider organization	Providing skilled resources to work under client management	Protecting their share of business of CR development, gaining control over the release program	Modification of method, along with management of the innovation	Management of the drop phase of the release

The provider organization was required to demonstrate the abilities of breakthrough thinking and successfully challenge and modify the current practices to be able to come up with the new design – drop model.

In the previous ERP release model, the provider organization was delivering the CRs assigned to them, throughout the entire lifecycle. In the new design – drop model, the lifecycle of a CR was fragmented and the provider became responsible for delivering a part of the lifecycle of some CRs that were initially being handled by other vendors. This was precisely what van der Aa and Elfring (2002) call new configuration of existing elements and Normann (2002) calls unbundled and rebundled. This ability of service firms to bundle or unbundle its composite services, based on the requirements of the situation, has been categorized as a dynamic capability by den Hertog et al. (2010).

Co-producing and Orchestrating

Many service offerings in the IT service industry are combinatorial in nature. For example, implementation of a business application goes hand in hand with the training of the core users of the application. Hence innovation in service frequently has to be of a combinatory nature (Gallouj and Weinstein 1997). Service innovators are required to identify potential alliance partners with complimentary capabilities and engage in such networks. One such organization may be called upon to be part of various such networks simultaneously. They must be able to manage and orchestrate these various partners so that eventually they are able to not only co-design new service offerings but also be able to co-produce them, along with the customers, on a sustainable basis (Teece 2007). While management of strategic alliances is a subject in itself, in the context of service innovation, specific areas are in focus. These are collaborative organizational learning and collaborative agility, both of which are core dynamic capabilities that aid innovation (Agarwal and Selen 2009). Collaborating organizations should have the capability of codification of tacit knowledge at least to a level that is understandable to the partners. Identifying the synergies between partners and the ability to modify internal organizational routines to leverage the complementary capabilities of partners swiftly are foundations of the coproducing and orchestrating capability.

In the design – drop model, end to end successful delivery of a CR was contingent upon collaboration and coordination between the teams handing the design and drop phases of that CR. Often, these teams were from competing firms. The drop team of the provider organization had to come up with an appropriate method for codification of the explicit and tacit knowledge of the new functionality requirements and both design and drop teams had to ensure that this knowledge is most efficiently passed on from the design team to the drop team. An appropriate governance mechanism was also set up to resolve conflicts.

Learning and Adapting

Ability to reflect upon the initial pilot of the new or modified service, identify opportunities for improvement and refine the service design and delivery has been described as a key dynamic capability for successfully realizing service innovation (den Hertog et al. 2010). Such analysis needs to encompass all aspects of service, including the service product and the service delivery organization dimensions. This becomes even more challenging, considering that service is often co-produced, involving actors beyond the boundaries of the service provider organization, including, at times, even competitors.

This process of learning and adapting was institutionalized in the design –drop model delivery method by the provider organization. After the completion of each milestone of a release project, representatives of all stakeholders were required to participate in 'lessons learnt' sessions where learnings from the previous phase of the project were harvested and incorporated into the design – drop method. This practice helped in further refining the service delivery.

Reskilling and Redeployment

One of the critical success factors in the ability of organizations to be able to launch a stream of service innovations is its flexibility in human resources. The innovation posture of an organization is dependent on its innovation resource profile (Fichman and Melville 2014). In case of IT service organizations, the most critical resource is human capital. Hence, the innovation ability of an IT service firm is heavily dependent on the extent its human capital is flexible to support innovation. This flexibility is manifest in two ways, the ability to pick up new skills and the ability to redeploy human capital to assignments that are the best fit to the skills of individuals. This flexibility in human resource management enables a firm to reorganize the skill profile of its employees to fit a new or modified demand (Neuman and Wright 1999).In the current study, the provider organization was required to change the skill profile of the resources that were deployed in the drop model. As explained earlier, the drop phase work was low cost, consistent quality, factory model of service delivery and, as such, needed low cost low skilled resources. The provider organization needed to get such resources quickly and find other roles for its high end, high cost resources who had been deployed in the earlier release model. This required a different level of organizational capability – one that would let the organization maintain its operational capability to deliver the service, despite the changes. Such capabilities in organizations, that influence the operational capabilities in organizations, have the essential characteristics of dynamic capabilities (Helfat and Winter 2003).

COMPARISON OF ORGANIZATIONAL DYNAMIC CAPABILITIES

The service innovation framework proposed by den Hertog et al. (2010) explores dynamic organizational capabilities that enable a firm to repeatedly introduce innovations in its service. These are actually a higher order of capabilities, which enable the firm to modify its operational capabilities (Bruni et al. 2009). Such capabilities let the firm modify its service offerings, the processes and methods of service delivery and the skills deployed by its staff to deliver the innovative service.

In the current case study that explores a single instance of service innovation, dynamic capabilities are visibly at work. The provider organization displayed such capabilities in identifying latent client requirements and then working with multiple stakeholders in designing the new service offering. The integrated ERP release service was fragmented and phases of the release bundled into separate offerings, to be delivered by separate teams. Further, during the service delivery lifecycle, the design and drop teams, often from competing firms, orchestrated end to end delivery of CRs, improvising conflict resolution mechanisms on the way. Learning and adapting capabilities were in display, in the lessons learnt sessions for refining delivery methods. An IT service sector specific dynamic capability, enabling the provider firm to change the team delivering the service, had been displayed. This change was driven by the modified skill requirements and cost structure. IT service delivery is heavily dependent on the personnel delivering the service and flexibility in staffing deployment would be a key to bring about any innovation in the service. Further study needs to be conducted to explore this dynamic capability.

CONCLUSION

Innovation in service is a phenomenon that is fundamentally different from any product innovation. The innovation in the service that starts out as a new service concept manifests itself in multiple dimensions. The new service offering may be accompanied by a new business model. The new business model of the service value creation may involve a new revenue model and cost structure. Concomitant changes may be required in the service delivery processes and organizations of the service provider organization to be able to deliver the new service offering.

The current study focuses on a single instance of service innovation in the IT service industry. Not all dimensions of service innovation were manifest in that instance. Nor were all the dynamic capabilities proposed by den Hertog et al. (2010) displayed. More specifically, dynamic capabilities that enable a firm to replicate a single pilot of service innovation to a firm wide practice of the new or modified service, could not be studied. Despite such limitations, the current study takes one step forward in validating a generic service innovation framework and proposes potential changes that would adapt the generic framework to the idiosyncrasies of the IT service industry.

As seen in the case study, a new service calls for a modification in the processes underlying the delivery of the service. The skill profile of the resources engaged in the service delivery processes may also need change. The role of skilled staff being fundamental in a service system, an innovation on the service may call for changes in the core-staffing model as well. Service firms need to display a variety of dynamic capabilities that would enable it to sense changing customer requirements and respond to that by modify the service offerings and the systems, processes, methods and partners involved in delivery of the innovative service.

From a managerial standpoint, this study has a number of implications. First, customer centricity in the new service experience indicates a need for a greater degree of customer involvement in development of the new service concept into a concrete service offering. In the case study, the new design – drop model was jointly developed by the client and the provider. Hence, sensing shifting client needs and responding to that is a crucial capability in the service innovation context.

Secondly, design of the new service would essentially require a relook into the dimensions of the delivery mechanism. As observed in the case study, multiple changes in the service delivery processes were called for, to deliver the new service. Organizational flexibility to accommodate such changes in delivery processes is necessary to ensure smooth delivery of the new service. Further, firms need to be able to fragment composite services and recombine them effectively to create innovative services. Also, being able to identify new partners to deliver innovative services and effectively reconcile conflicts of interest can become crucial for realizing innovation.

Thirdly, skills of the staff involved in the delivery and the staffing models, in all probability, would need modifications as well. The modification in the service may require a change in the skill profile of the human resources responsible for execution. Further, as seen in the case study, the staffing model, which includes not only the skill profile of the staff but also their physical location during the service delivery lifecycle, needed extensive modification to meet the objectives of the new service. Service organizations need to possess the capabilities of retraining and redeploying their staff in the most effective manner.

Finally, to ensure the economic viability of the new or modified service, the overall business model, including revenue streams and cost structure, may have to be redesigned. As observed in the specific instance of the new service offering developed in the case study, the revenue model changed from a rate card based consumption driven model to that of a single, blended rate, which lowered the overall costs - a key objective of the new service.

If an organization aims at generating a stream of innovations in its services, it would need to build the capabilities that would enable it to address the multiple dimensions that are associated with the innovation in service.

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