

Enabling Innovation in Information Technology Outsourcing: An Empirical Study

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Abstract

Information technology outsourcing has become a pervasive and important phenomenon in business organizations and there is substantial evidence about its benefits and pitfalls. Initially, firms used outsourcing as a way to lower costs, gain access to expertise and focus on core activities. Recently, there is a shift in focus and more firms are outsourcing to attain innovative products and services. However, current research is still unclear about how innovation can be achieved through outsourcing. Drawing predominantly from the dynamic capability theory, the objective of this paper is to explore how absorptive capacity unfolds as a process within and between firms when client firms outsource their information technology services with expectations of innovation generation. In this paper, we propose a research model that links absorptive capacity to innovation generation. We draw on three case studies to focus on how absorptive capacity, as a process, impacts innovation generation. Results show that assimilation and transformation stages are critical in generating radical innovation while acquisition and exploitation play a key role in incremental innovation. The implications of these findings for both researchers and practitioners are discussed.

Keywords

Information technology outsourcing, radical innovation, incremental innovation, case study, theory building.

INTRODUCTION

Information Technology (IT) outsourcing can be defined as “the delegation, through a contractual arrangement, of all or any part of the technical resources, human resources, and the management responsibilities associated with providing IT services to an external vendor” (Clark, Zmud, and McGray, 1995). The decision to outsource IT-related activities, be they operational, system development, or business process activities, has three main objectives: to reduce costs, to improve service quality, and to place greater focus on core business activities (Bahli and Rivard, 2003, 2005).

Over the last few years and as budgets tighten, businesses are outsourcing IT services and the creation of new products and services as a way to slash costs, speed development time and tap into top talent outside the company. Clearly, companies are shifting from focusing only on costs saving to realizing value (Fifarek et al. 2008). According to Forrester Research (2010), sixty-six percent of IT decision makers surveyed said that “pursuing outsourcing or off-shoring” is likely to be one of their IT organizations’ top technology priorities over the next 12 months. When coupling the move toward greater outsourcing with these executives’ the top business priority over the next 12 months is growing overall company revenue (53 percent), it seems apparent that outsourcing is increasingly seen as a holistic business strategy rather than just an IT cost-cutting measure. Almost three-quarters (74 percent) of CIO Survey respondents believe that if they don’t innovate and embrace new technology, their company will lose market share.

As enterprises return to expansion, they will prioritize revenue growth over cost cutting by focusing on maintaining competitive advantage (xx) and with the emergence of IT outsourcing as a ubiquitous business imperative, in addition to the increased global competition and role of technology in bridging firm boundaries, firms are realizing the importance of IT innovation in ultimately realizing and sustaining a competitive advantage (Swanson and Ramiller, 2004).

There has been substantial research in the area of innovation, which is widely regarded as a powerful weapon to create competitive advantage (Kotlarsky et al. 2009; Gatignon et al. 2002, Langlois and Robertson 1992). Quin (2000) stated that “when everyone around is innovating how do you stay ahead? The answer: by outsourcing innovation”. Nonetheless, most studies on IT outsourcing have neglected innovation, a phenomenon that is at the core of the Schumpeterian view of economic exchange (Cacciatori and Jacobides 2005).

Innovation is defined as a new product or service that a firm creates for a market (Li and Atuahene_Gima, 2001), an organization's invention of a novelty and its exploitation within and/or outside an organization (Damanpour and Wischnevsky, 2006). Given the emphasis placed on the potential benefits of outsourcing for innovation in IS literature surprisingly few empirical studies have actually been conducted to date. With regards to ITO, there is the "CIO's Exclusive Outsourcing and Innovation Survey" (Overby, 2007). Two main findings arise from this survey of 290 senior technology executives. First, only 24% of executives believe that outsourcing contributes to IT innovation. Second, significantly more executives are dissatisfied with the levels of innovation generated. Hence, there is a gap between outsourcing benefits sought and achieved.

Against this backdrop, we draw on the dynamic capabilities perspective to explain such gap. Dynamic capability perspective (Teece et al. 1997) focus capabilities that are directed toward enabling firms to reconfigure their resource base and adapt to changing market conditions in order to achieve a competitive advantage (Zahra and George 2002). More specifically, in recent years researchers have used absorptive capacity (ACAP) as a dynamic capability pertaining to knowledge creation and utilization that enhances a firm's ability to gain and sustain a competitive advantage. ACAP, a concept first proposed by Cohen and Levinthal (1990), refers to the ability of the firm to recognize and acquire external knowledge, assimilate that knowledge, and apply knowledge in a commercially viable way. As such, the concept of ACAP can explain why some firms are able to effectively leverage information while others falter in their ability to apply knowledge for commercial purposes (McKelvie et al. 2007). This paper aims at filling a gap in IT outsourcing literature by examining the following research questions:

1. *What is the impact of absorptive capability on innovation generation for IT outsourced activities*
2. *How absorptive capacity, as a process, effect innovation generation?*

In this paper, we build on prior research in the area of absorptive capacity and innovation and attempt to contributes in two ways. First, this study attempts to examine the impacts of absorptive capacity as a process of four dimensions, acquisition, assimilation, transformation and, exploitation) on innovation generation in IT outsourcing arrangements. Second, this study examines which of the absorptive capacity dimensions is critical to which dimension of innovation generation. To this end, we present the theoretical foundation for postulating these propositions. Next, we present the methodology used to collect and analyse data. The results of these analyses are presented in Section 4. Discussion of the findings and their implications for research and practice is presented in Section 5. Concluding remarks close the paper.

THEORETICAL FOUNDATION

Based on the prior research, we conceptualize absorptive capacity into its four dimensions and their effect on innovation generation. Our conceptualization is depicted as the research model in Figure 1. Next, we will develop the propositions of our research model theorizing these effects.

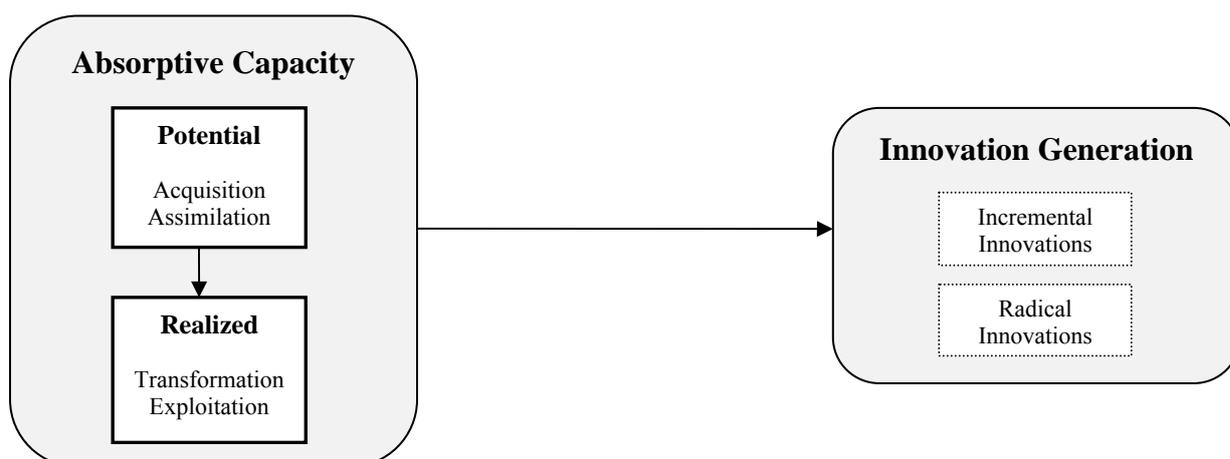


Figure 1. Research Model: Absorptive capacity affecting innovation generation

Radical and incremental innovation

Innovation can be defined as “a technology, strategy, or management practice that a firm is using for the first time, whether or not other organizations or users have previously adopted it, or as a significant restructuring or improvement in a process (Nord & Tucker, 1987).” The degree of service or product innovation ranges from a totally new innovation to a service involving a minor adaptation or improvement of an incremental nature (Garcia and Calantone 2002). Several innovation types have been proposed (Berry et al. 2006; Paswan et al. 2009; Henderson and Clark 1990), but because this study is concerned with the greatest and least degree of service innovation, we differentiated innovation generation into incremental and radical innovation. Such a differentiation has been frequently used in innovation research (Roy and Sivakumar 2012; Olsen and Sallis 2006; Song and Thieme 2009).

Incremental service innovation is related to client firm led strategies that focus on manifest needs and is posited to be the most common form of innovation (Bell et al. 2002). Incremental innovations are those where there are no changes in core concepts or in the linkages between core concepts and components. In addition, the development of incremental innovation tends to limit the range of potential innovation itself, because it relies on client' current view of the service market (Becheikh et al. 2006). On the other hand, it is widely argued that if a firm is consistently producing innovative technology that is market changing, market defining, and spawns new technology in the future, they are valued more in their marketplace (Narver, et.al. 2004). Radical innovation is defined as fundamental changes in new services that represent revolutionary changes in service benefits (Berry et al., 2006). Radical innovations involve changes on both the core concepts and the linkages with components. This type of innovation requires a completely new set of knowledge as compared with incremental innovation (Henderson and Clark, 1990). To sum up, incremental service innovation describes a new value creation through the incremental addition of existing values, while radical service innovation creates brand new values through innovative concepts (Cromer et al. 2011).

Absorptive Capacity

The concept of absorptive capacity (ACAP) is based on the idea that learning is cumulative and what you come to learn is a function of what you already know (Cohen and Levinthal 1990). Absorptive capacity refers to the set of organizational routines and processes, by which firms acquire, assimilate, transform, and exploit knowledge to produce dynamic organizational capabilities (Zahra and George 2002). Absorptive capacity is considered a dynamic capability that influences the IT supplier's ability to create and deploy the knowledge necessary to build other organizational capabilities (Jansen et al. 2005). In this paper, we advance that that absorptive capacity, as a process, serves not only as a valid dynamic capability but also as an enabling mechanism and a vehicle by which innovation be achieved.

Absorptive capacity has become one of the most significant constructs in the last twenty years precisely because external knowledge resources are so important. Since the publication of Cohen and Levinthal's (1989) work on absorptive capacity, numerous theoretical and empirical studies have analyzed firms' capacity to absorb knowledge (Camison and Fores, 2010). Nonetheless, despite the growth of the absorptive capacity literature in a variety of research fields, certain important gaps still remain especially in ITO literature. Several studies showed that accessing technological knowledge held beyond the focal firms' boundaries improved their innovativeness (Uttlie and Pavlou 2006). Absorptive capacity requires a substantial research capability to understand, interpret and to appraise knowledge that has been placed upon the shelf-whether basic or applied. The extent to which a firm can screen, value, and utilize externally sourced technologies depends on the level of its absorptive capacity (Cohen and Levinthal, 1990). Absorptive capacity, therefore, allows a firm to identify and value new knowledge that originates from beyond its boundaries, and to assimilate and integrate the new knowledge with the firm's existing knowledge (Rothaermel and Alexandre 2009).

Zahra and George (2002) divide absorptive capacity into potential absorptive capacity and realized absorptive capacity. The former captures knowledge acquisition and assimilation, which refer to a firm's capacity to identify and acquire externally generated knowledge (Rothaermel and Alexandre 2009). Firms focusing on acquisition and assimilation of new external knowledge are able to continuously renew their knowledge stock (potential absorptive capacity), but they may suffer from the costs of acquisition without gaining the benefits of exploitation. Realized absorptive capacity refers to a firm's to the capacity to transform and exploit the knowledge for commercial purposes. Conversely, firms focusing on transformation and exploitation (realized absorptive capacity) may achieve short-term profits through exploitation but fall into a competence trap (Zahra and George 2002). In this paper, as suggested by Zahra and George (2002) and Jansen et al. (2005), we follow the linear relationship between acquisition, assimilation, transformation, and exploitation of knowledge absorption. Prior research affirms that firms with a higher level of absorptive capacity exhibit higher internal

technological competence (Nicholls-Nixon and Woo 2003). When a firm possesses an adequate level of absorptive capacity, it tends to not only be more sensitive to opportunities that present themselves in their technological environments, but also more proactive in exploiting those opportunities through combining internal and external sources of knowledge (Cohen and Levinthal 1990).

Both practitioners and academics increasingly recognize that competitive advantages no longer rely on internal knowledge alone, but rather originate from absorbing external knowledge (Gebauer et al. (2012). The process of acquiring, assimilating, transforming, and exploiting external knowledge tend to convert external knowledge into product or service innovations (Lichtenthaler, 2009). Indeed, the ability to innovate has become increasingly central as studies have revealed that innovative firms tend to demonstrate higher profitability, greater market value, super credit ratings, and higher survival probabilities (Czarnitzki and Kraft 2004). Innovation strives for incremental or radical new products and services. Such product and service innovations are characterized by their newness, (Brentani, 2001).

When it comes to linking absorptive capacity to innovation, the literature typically uses one directional approach –within one firm. In this study, we use a reciprocal perspective of absorptive capacity for both the client and the service provider. Such conceptualization supplements and reinforces the originally defined absorptive capacity. In ITO context, we assume that service providers increasingly build innovation capacity by tapping into external knowledge sources. Cohen and Levinthal (1990) argued that sustaining an ACAP over time requires investments, but results in the ability to not only exploit new, valuable developments, but also to envision better their emergence. On the other hand, since most of IT activities outsourced to a third-party service provider have are increasingly complex and embedded highly dynamic linkages, client firms are required to have a high level of absorptive capacity. This mutual complementarity of form our testable propositions for academic investigation and managerial application. The above discussion suggests the following propositions:

Proposition 1: *The level of absorptive capacity is positively related to innovation generation.*

Proposition 2: *The type of generated innovation varies depending on the stage level (acquisition, assimilation, transformation and, exploitation) of absorptive capacity.*

METHOD

Sampling and data collection

The methodology employed in this paper was a case research study. Sources of data included three case studies and 19 IS executives and managers and documentary evidence about the clients and service providers. All three sites are in Canada. Due to confidentiality reasons, we omit the real names of these firms. We derived propositions from the theoretical framework adopted and we then compare the deductions (the predictions) of each proposition against case data. These propositions not only reflect important theoretical issues, but also begin to tell us where to look for relevant evidence. Hence, as emphasized by Lee (1989), rigorous explanatory case research presumes that the theory of interest is stated explicitly in the first place and that predictions following from the theory are also explicitly stated by the researchers. As was shown by Dubé and Paré (2003), all of the explanatory case studies they reviewed in top journals in the area explicitly stated the theory of interest, while 94% stated the various predictions deducted from the theory itself. By replicating the case through pattern-matching, a technique linking several pieces of information from the same case to some theoretical proposition (Campbell 1975), multiple-case design enhances and supports the previous results. This helps raise the level of confidence in the robustness of the method. Following the guidelines set by Yin (1994), each interview was structured as follow: general introduction about the project, identification and assessment of the four dimensions of absorptive capacity, and the type of innovations generated in the ITO arrangement. At the end of the interview, the interviewees were asked about any relevant information being missed. Each interview took about 60 to 90 min. All interviews were transcribed.

Case Alpha is a Canadian bank provides comprehensive financial services to consumers and small and medium sized enterprises globally. The bank, with more than 19000 employees, manages assets of over 156 billion CAD and some 448 branches. Over the last few years, the bank has been outsourcing the traditional help desk operations, desktop services, etc. in addition to web-based applications to service provider SP1. Case Beta is a Canadian company from the insurance sector, which is very IT intensive. Case Beta is very large in terms of size, structure and turnover. It is the sixth largest life and health insurance company in Canada. It insures over 1.5 million Canadians, employs more than 2,000 people and manages over \$17 billion in assets. Case Beta has outsourced network management activities and web based development applications to service provider SP2. Case Gamma is the eleventh largest airline in the world with passenger

and freight operations to more than 160 destinations on five continents. The airline employs 33,000 people worldwide serving 31 million customers annually with a fleet of more than 300 aircraft maintained at major facilities across North America. Case Gamma has been outsourcing IT operations and application development to service provider SP3.

The qualitative data collected was then analyzed using a pattern-matching logic. In conducting the analysis, we used a combination of inductive and deductive analysis. Indeed, we attempted to identify core themes inductively by carefully reviewing the data from each interview. Subsequently, each theme was assessed using a deductive approach where the data were analyzed according to an existing framework. Once the various patterns and themes were established through inductive analysis at each level of our research constructs and propositions, the final, confirmatory stage was deductive in testing and affirming the authenticity and appropriateness of the inductive content analysis which included assessing deviate data that did not appear to fit the research propositions. Table 1 presents the demographics characteristics of the three cases.

Table 1 Demographic characteristics of respondents (N=132)

Characteristics	Alpha	Beta	Gamma
Respondents involved in outsourcing	CIO Director, Client Services and Operations, Project coordinator (2)	IT Vice president Analyst (3), Technical Support (1), Project Manager (2)	IT manager (2) Project managers (3) Project coordinator (3)
Contract duration	10 years	7 years	7 years
Contract size	600 million CAD	250 million CAD	1.4 billion CAD
People transfer	Yes	No	Yes
Type of industry	Banking	Insurance	Airlines
Types of IT activities outsourced	Operations, support and applications development	Network management, Web, application development	Operations and Application Development of IT services and products
Service provider	SP1	SP2	SP3

Data Analysis and Results

Following the guidelines by Yin (1994), we used a pattern-matching logic to analyze the data. Pattern-matching is possible as long as a different pattern is stipulated for each variable proposed which is indeed the case for each of the model's constructs. We began with a first-level coding whereby we summarized segments of the data reported by the interviewees. These codes consisted of tags or labels for assigning units of meaning to the information gathered from the study. We largely restated the facts and statements that recurred the most in order to stay as close as possible to the data. As a second step, we conducted what is referred to as pattern coding which is a way of grouping the initial set of codes into a smaller number of sets, themes, or constructs (Miles and Huberman 1994). Table 2 shows a moderate SP1-ACAP and high Alpha-ACAP. Alpha's respondents have confirmed that that innovation provided by SP1 is mostly aimed at improving operations efficiency rather than e.g. the inclusion of value-added products or services. SP1 respondents confirmed struggling developing some applications due to significant rotation of its personnel assigned to Alpha's projects. SP1 shows a high level of ACAP for operations since the company has a strong record servicing similar clients for similar transactions but a moderate ACAP for application development. SP1 has provided an incremental innovation generation to Alpha on operation services. These findings from our first case study validate our propositions.

Table 2 Cross-cases analysis results

Constructs	Alpha	SP1	Beta	SP2	Gamma	SP3
ACAP	High	Moderate/ High	Low	High	High	High
<i>Acquisition</i>	High	High	Medium	Medium	High	High
<i>Assimilation</i>	High	High	Medium	Medium	High	High
<i>Transformation</i>	Medium	Medium	Low	Medium	Medium	High
<i>Exploitation</i>	Medium	Medium	Low	Medium	Medium	High
Innovation Generation	Incremental		Incremental/ Radical		Incremental/ Radical	

A major IT outsourced project was undertaken by Alpha with a major SP2 who took responsibility, among other things, of developing a management system for the sales force network of Beta. Salespeople, among other activities, can communicate instantly with the main central system and respond to their clients requests 24/24 h. This project was considered a strategic initiative by Beta. SP2 shows a high ACAP and innovation generation was observed as stated by VP information technology: “It is essential that our business-critical applications are accessible at all times. That’s why we needed a partner we could trust and why we decided to do business with SP2”. Innovation generation was radical for Beta in a sense that these applications have changed the way the sales force interacts.

Gamma and SP3 has signed a large (1.4 billion) 7-year IT outsourcing contract, under which SP3 managed Gamma’s entire global IT infrastructure, including application development and maintenance. Both parties show a high ACAP. Incremental innovation shows mainly on the the management and support of the technology infrastructure. A radical innovation shows on mobile and security application development. The agreement expands the IT outsourcing relationship in that both parties started working together on pursuing new business opportunities in the areas of customer service and leading-edge travel industry solutions. For that matter, the parties established a joint project management office, and the jointly-developed solutions will be offered to other companies through a marketing alliance created between Gamma and SP3.

From this summarized analysis, we conclude that (1) multiple-case design replication enhances and supports our results and helps raise the level of confidence in the robustness of the method. Guided by the suggestion of Dubé and Paré (2003), the level variation in outsourced transaction characteristics provides a better understanding of our research propositions. (2) the level of specificity and uncertainty of outsourced IT transactions is conditioned by the level of the supplier’s ACAP as of their impact on innovation generation; (3) innovation generation mediates the relationship between transaction attributes and innovation performance.

DISCUSSION AND CONCLUSIONS

This paper contributes to the IS literature on ITO and innovation by examining how absorptive capacity impacts innovation generation in ITO setting. We draw on dynamic capability theory to test two research propositions. 1) what is the impact of absorptive capacity on innovation generation for IT outsourced activities?; 2) how absorptive capacity, as a process, effect innovation generation? Our within and cross-case analysis uncover the process by which innovation emerge for the client firm. Prior research has shown the holistic impact of absorptive capacity of a single firm. The most salient result is that innovation, incremental and/or radical, differs in relation to the absorptive capacity stage of development (acquisition, assimilation, transformation, and exploitation). The preliminary results show that the two critical stages of absorptive capacity are the transformation and exploitation stages. When both the client firm and service provider show high rating on these two stages, innovation emerge.

This research has important practical implications. We demonstrate that absorptive capacity can be seen as a multidimensional construct, as suggested by Zahra and George (2002). This conceptualization is supported by a growing agreement in the literature that ACAP should be measured by potential and realized ACAP. Moreover, this study shows that ACAP construct needs to be tested as a process rather than composite of four dimensions. This study contributes to the practice of ITO by stressing which ACAP stages are important for innovation

generation. Depending on the absorptive capacity stage level of the contracting parties absorption capacity, client organizations may or may not be able to achieve their innovation objectives. In this regard, we expect that our findings offer new insights into the management of ITO projects.

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