INFORMATION TECHNOLOGY OUTSOURCING SUCCESS: A MODEL OF DYNAMIC, OPERATIONAL, AND LEARNING CAPABILITIES

Research-in-Progress

Forough Karimi-Alaghehband
HEC Montréal
3000 Chemin-de-la-Côte-Ste-Catherine
Montréal, CANADA
Forough.karimi-alaghehband@hec.ca

Suzanne Rivard
HEC Montréal
3000 Chemin-de-la-Côte-Ste-Catherine
Montréal, CANADA
Suzanne.rivard@hec.ca

Abstract

Grounded in dynamic capabilities perspective, our study offers a model of IT outsourcing success. We distinguish between three sets of IT outsourcing capabilities. We first define IT outsourcing dynamic capabilities as the ability of an organization to purposefully extend, create or modify its information technology resources through an outsourcing arrangement. We define IT outsourcing operational capabilities as the ability of the client firm to manage/execute IT outsourcing arrangements. IT outsourcing learning capabilities are defined as the capacity to acquire external knowledge on IT outsourcing and accumulate experience. We theorize on the relationships between these capabilities and propose a model of their impact on IT outsourcing success. A cross-sectional survey of organizations across different industries will provide the data and a structural equation modeling (SEM) approach will be used to analyze the data.

Keywords: Dynamic capabilities perspective, IT outsourcing success, IT outsourcing dynamic capabilities, IT outsourcing operational capabilities, IT outsourcing learning capabilities

Introduction

Information technology outsourcing (ITO) has become an inevitable part of the modern enterprise (Bapna et al. 2010) and is predicted to grow at an average rate of 4.4% from 2010 to 2015 (Gartner 2011). Over the years, two main ITO research streams have formed. The first examines the determinants of ITO decisions (e.g., Karimi-Alaghehband et al. 2011; Lacity and Willcocks 1995), while the second focuses on the management of outsourcing relationships (e.g., Choudhury and Sabherwal 2003; Ho et al. 2003; Kern and Willcocks 2000). The present study falls into the second stream of research, as it is concerned with the antecedents of ITO success.

Extant literature that belongs to this stream of research has mainly focused on antecedents of ITO success that are operational in nature. For instance, studies have found that that ITO success is influenced by contract characteristics (e.g., Lee et al. 2004), level of trust, commitment and partnership quality (e.g., Han et al. 2008), degree of knowledge sharing (Lee 2001), and the extent of outsourcing (e.g., Grover et al. 1996). A number of studies, however, have emphasized the strategic role of IT outsourcing and portray it as an essential component of information systems (IS) strategy. For instance, IT sourcing has been studied as a decision about the organizations' boundary, which ideally should be aligned with business strategy (Aubert et al. 2008). It has also been portrayed as a means 'to progress from managing costs to making strategic IT investments' (Ross and Beath 2006, p.182) and as a means of transition between different stages of enterprise IT architecture maturity. This literature also refers to strategic benefits of IT outsourcing, either via business process improvement and business transformation (Lacity et al. 2009) or via its alignment with business strategy (Lee 2006).

The present study adopts the perspective that IT outsourcing has both strategic and operational contributions. In line with this, it proposes a conceptual model wherein overall ITO success – defined as the degree to which an organization achieves its IT outsourcing related goals – has two key antecedents: successful reconfiguration of IT resources and successful delivery of IT services. Anchored in the dynamic capabilities perspective (Eisenhardt and Martin 2000; Helfat et al. 2007; Teece et al. 1997), the model first posits that dynamic capabilities will lead to successful reconfiguration of IT resources, which is the strategic antecedent of ITO success. Second, the model posits that operational capabilities will lead to successful delivery of IT services, which is the operational antecedent of ITO success. While extant ITO research mainly focuses on ITO operational capabilities (e.g., vendor management capability, contract management capability) (e.g., Han et al. 2008, Ranganathan and Balaji, 2007), our model offers dynamic ITO capabilities and hypothesizes on the relationship between them and success constructs. Moreover, the model posits that a third type of capabilities, ITO learning capabilities, affect strategic and operational success through dynamic and operational capabilities.

The contribution of this study therefore is twofold. First, it offers a more comprehensive explanation of ITO success than extant models, as it takes into account both operational and strategic antecedents of success. Second, the model it offers is strongly grounded in theory, that of dynamic capabilities.

The rest of the manuscript is organized as follows. The next section introduces the dynamic capabilities perspective. We then present our model, along with our conceptualization of the constructs. The method section is presented next. The paper concludes with a section on expected contributions.

Dynamic Capabilities Perspective

Dynamic capabilities, which has been put forth to explain firms' performance and competitive advantage, refer to "the firm's ability to integrate, build, and reconfigure internal and external competencies [assets and resources] to address rapidly changing environments" (Teece et al. 1997, p.516). This study adopts Helfat et al.'s definition, "the capacity of an organization to purposefully extend, create, or modify its resource base" (Helfat et al. 2007, p.1), as it includes elements common to most extant definitions and focuses on resource reconfiguration, which is the heart of the dynamic capabilities perspective (DCP). DCP entails two other types of capabilities: operational capabilities and learning capabilities.

Dynamic capabilities are processes that act upon resources (Eisenhardt and Martin 2000). While dynamic capabilities can involve several types of organizational processes, it has been suggested that all dynamic capabilities entail the following: sensing, search and selection, and orchestration (Helfat et al. 2007; Teece 2007). Sensing capability refers to the ability to explore the external environment

and identify new opportunities. Through "constant surveillance of markets and technologies" (Teece et al. 1997, p.520), firms can detect new business opportunities. Search and selection includes "all processes and activities concerned with searching for and identifying alternative solutions to a problem and sharing them among the members of an organization" (Zott 2003, P.104). Orchestration involves envisioning how to implement a change (Helfat et al. 2007; Teece 2007; Zott 2003), including how to alter and coordinate the resources of the firm. Operational capabilities "enable firms to perform their ongoing tasks of making a living"; they "pertain to the current operations of an organization" (Helfat et al. 2007, p.82). Unlike dynamic capabilities, which have common underlying processes, operational capabilities are context-dependent. Finally, learning capabilities, which refer to mechanisms or processes through which firms accumulate experience, are said to enable firms to perform their activities better and more quickly (Teece et al. 1997). Firms learn and modify their processes through two mechanisms: learning by doing and deliberate learning through knowledge management (Zollo and Winter 2002).

A DCP-based Model of ITO Success and ITO Capabilities

Figure 1 illustrates the proposed research model. The model posits that ITO success has two antecedents: successful reconfiguration of IT resources (strategic success) and successful ITO delivery (operational success).
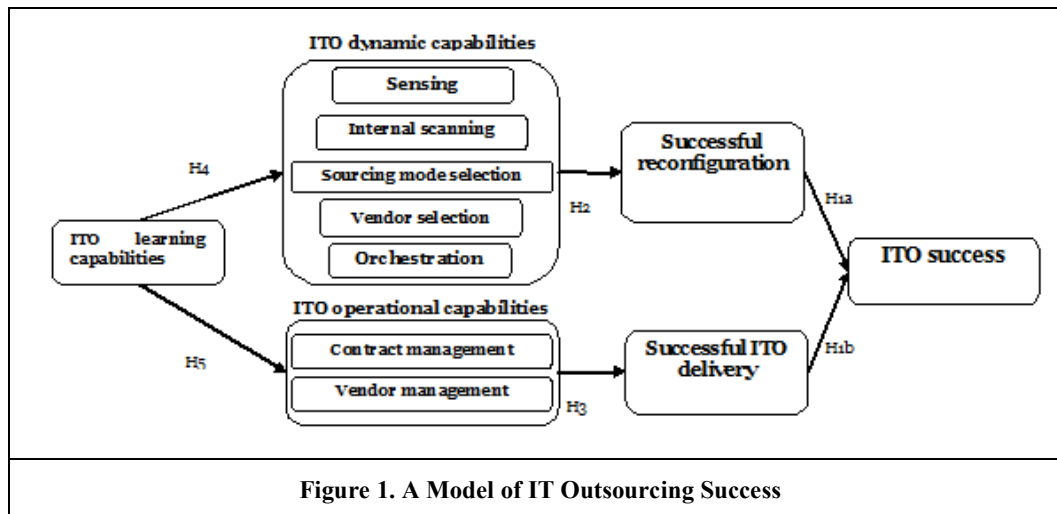

Figure 1. A Model of IT Outsourcing Success

ITO success at the firm level has often been conceptualized as the level of satisfaction with economic, strategic and technological benefits from outsourcing part or all of the IT activities of a firm (Grover et al. 1996; Saunders et al. 1997). While this study's conceptualization of ITO success is also at the firm level, it pertains to the overall realization of the objectives rather than focusing on the three dimensions (economic, strategic and technological). Therefore, ITO success is defined here as *the degree to which an organization achieves its predefined and/or emergent goals from its IT outsourcing arrangements*, irrespective of the nature of the goals.

The model posits that firms that make effective changes in their portfolio of IT resources – i.e., achieve successful reconfiguration, defined as *the extent to which an organization has effectively extended, modified, and created its IT resources through IT outsourcing arrangements* – are more likely to reach their ITO objectives. Successful reconfiguration therefore is not an end in itself; rather, it is a means to reach overall ITO goals. Moreover, the model hypothesizes that firms that have their terms of contracts met (e.g., receive timely and on budget services) or in other words achieve successful delivery- defined as *the degree to which the terms of the contracts between a firm and its suppliers are met-* are more likely to achieve their objectives from IT outsourcing. Yet again, successful delivery is not an end in itself; rather it contributes to reach a range of different ITO goals. Therefore, we propose that both operational and strategic aspect of IT outsourcing should be carried out successfully for IT outsourcing objectives to be realized (i.e., ITO success achieved).

Successful reconfiguration is the extent to which the new profile of IT resources (e.g., IT services/offerings) is effective and satisfactory. As Eisenhardt and Martin (2000) note, success will be achieved if dynamic capabilities indeed create a winning configuration of resources. In alliance-based capabilities (where a firm creates a joint venture with a partner), a successful reconfiguration entails creating an idiosyncratic combination of resources of the firm and its partner that could serve as the basis for a competitive advantage (Helfat et al. 2007). In acquisition-based capabilities (where a firm acquires another firm), successful reconfiguration refers to an effective combination and the deletion of the resources within the target and the acquiring firms to create a new profile of resources (Helfat et al. 2007). The IS literature suggests that the choice of IT governance mechanisms used to obtain IT competencies that support or initiate business strategies(Henderson and Venkatraman 1999) helps align IT resources with business strategy. Therefore, by acquiring new IT competencies (i.e., resources) firms can reconfigure current IT resources to align them with their business initiatives. To the extent that this new portfolio is effective (i.e., strategic success or successful reconfiguration has been achieved), the ITO arrangements will be deemed successful. Therefore:

H1a: *Successful reconfiguration of IT resources through IT outsourcing will be positively associated with IT outsourcing success.*

We propose the second antecedent of ITO success as successful delivery. The ITO literature makes extensive use of this conceptualization as a dependent variable at the contract level: perception of the performance of new contractors regarding service level agreements (SLAs) (Ho et al. 2003); level of satisfaction with: (1) the overall cost, (2) the quality of the output and service, and (3) responsiveness to problems and inquiries (Poppo and Zenger 2002); satisfaction with vendor performance (Koh et al. 2004; Saunders et al. 1997); and the quality of the vendors' services and deliverables (Aubert et al. 1996; Domberger et al. 2000). Although the ITO literature has examined contract performance at the project (i.e., contract) level, we conceptualize successful delivery at the firm level and from the clients' perspective (all other constructs of the model are also at the firm level and from the clients' perspective). This is in line with DCP, under which patterns of performance are not accidental; rather, they are the product of routines, practices and adaptations (Zollo and Winter 2002). Hence, to the extent that most of a firm's SLAs across different contracts are completed on time and within budget or in other words operational success has been achieved, it is more likely that firms perceive their ITO arrangements as successful. Therefore:

H1b: *Successful IT outsourcing delivery will be positively associated with IT outsourcing success.*

IT Outsourcing Dynamic Capabilities

We define ITO dynamic capabilities as *the ability of an organization to purposefully extend, create or modify its IT resources through outsourcing arrangements*. Dynamic capabilities include key processes: sensing, search/selection, and orchestration (Helfat et al, 2007). In the ITO context, a specific conceptualization of search/selection capability calls for differentiating between sourcing mode search/selection, and vendor search/selection. When referring to relational capabilities (i.e., alliance-based and acquisition based capabilities), DCP includes an additional capability, that of assessing current internal resources and compare them to the desired level of resources. We call this capability "internal scanning." The model posits that the ability of a firm to reconfigure its IT resources depend on the extent to which it possesses these capabilities.

Sensing capability. Sensing includes exploring activities regarding "information about what's going on in the business ecosystem" (Teece 2007; p.1324), and external scanning of the environment to detect/identify new business opportunities (Helfat et al. 2007). In the ITO literature, the "investigate" phase of ITO (Cullen et al. 2005) includes activities that pertain to sensing (e.g., collecting intelligence on market conditions and suppliers). Sensing has also been conceptualized in terms of the client's "proactive efforts" to learn about the ITO market (Sia et al. 2008, p.418). Proactive sensing has been defined as "maintaining vigilance by constantly scanning the environment to anticipate the need to create or generate new capabilities" (Tan and Sia 2006 ,pp. 193-194). We therefore define sensing as *the extent to which a client organization is able to or has developed routines for scanning the environment to identify new outsourcing opportunities, and to become vigilant of the ITO market conditions*. Based on DCP, sensing enables a firm to gain and sustain a competitive advantage. Firms need to be aware of their environment in order to be informed about market changes (e.g., changes in customers' preferences). In an ITO context, firms that are able to scan the market to be aware of IT suppliers, the type of activities that are outsourced in similar and different industries, and other types of intelligence related to ITO are well informed about how to use ITO to make changes to their IT resources. Therefore when the need arises (e.g., when the current portfolio of IT resources cannot

respond to business needs), these firms are vigilant about market opportunities and offerings and, therefore, more likely to successfully make effective changes in their portfolio of IT resources.

Internal scanning capability. This capability refers to "the ability to assess a firm's existing resource base relative to desired new resources and capabilities" (Helfat et al. 2007, p.81). In the ITO literature, it has been suggested that any external acquisition should occur after extensive evaluation of the firm's existing IT resources (Grover et al. 1996). Teng et al. (1995) found that the high levels of discrepancy in the performance of IT resources positively influences the ITO decision. It has also been found that the level of perceived discrepancies between actual and desired IT resources (Cheon et al. 1995; Teng et al. 1995) and poor levels of IT performance (Barthelemy and Geyer 2004; Loh and Venkatraman 1992) positively influence the decision to outsource. We therefore define the internal scanning capability as *the extent to which a client organization is able to or has developed routines for evaluating the adequacy of its IT resources*. Firms that possess this capability can identify whether their current IT resources are adequate (could respond to their business needs). Therefore, these firms make informed decisions about what they can acquire from the market to compensate for the inadequacy of their internal resources. Consequently, firms with an internal scanning capability are more likely to effectively change their portfolio of IT resources through ITO arrangements.

Sourcing mode selection capability. The search and selection capability refers to being able to look for and find new solutions to organizational problems (Zollo and Winter 2002). In acquisition-based capabilities, search and selection refers to first assessing whether the acquisition is the right sourcing mode and, second, detecting and evaluating target firms for acquisition (Helfat et al. 2007). In an ITO context, the selection of the sourcing mode has been conceptualized as achieving a fit between the sourcing mode and the type of IT activity at hand (Karimi-Alaghehband et al. 2011; Schwarz et al. 2009). IT activities that are strategic to the firm are found to be outsourced less often than IT activities that are considered commodities (Aubert et al. 2004). We therefore define sourcing mode selection capability as *the extent to which a client organization is able to or has developed routines for determining an appropriate sourcing mode for a given IT activity*. As per DCP, the ability to choose the right mechanism for obtaining the required resources will enable firms to create the desired portfolio of resources. Firms that possess this capability are able to assess whether a given IT activity should be kept in-house, outsourced, offshored, or performed using a combination of different modes. Choosing an appropriate sourcing mode for a given IT activity makes it more probable that a firm will make the desired changes to the type of resources it uses. For example, development of a new application could be both outsourced and offshored. Offshoring the development of an application that requires constant communication between users and developers may result in an application that has little resemblance to users' needs. Therefore, firms that possess the sourcing mode selection capability are more likely to change their IT resources in a way that meets the business's needs.

Search and selection of vendors capability. Based on DCP, in alliance-based or acquisition-based capabilities the search/selection refers to identifying a list of potential firms and choosing a firm for the creation of an alliance or a merger (Helfat et al. 2007). In ITO literature, the vendor selection process has been studied as one of the measures comprising the vendor management capability (Han et al. 2008; Lee et al. 2009a). We therefore define search and selection of vendor capability as *the extent to which a client organization is able to or has developed routines to search for and select ITO vendors*. In the ITO literature, vendor selection has been studied as a process that influences ITO success (Lacity et al. 2010; Michell and Fitzgerald 1997). Also, in order for firms to succeed in their IT offshoring relationships they should invest in vendor selection processes, such as scans of offshore market vendors and evaluations and assessments of vendors (Ranganathan and Balaji 2007). Dutta et al. (2011) argue that only a carefully selected vendor with a set of resources complementary to the client's can help the client compensate for the inadequacy of its own IT resources. This is in line with DCP, which suggests a firm's ability to search for and select partner firms whose resources complement the firm's resources will lead to the creation of the desired portfolio of resources. Therefore, firms with the ability to search for and select IT vendors are more likely to effectively reconfigure their IT resources.

Orchestration capability. This capability entails having the managerial processes required to coordinate resources to carry out a change. (Helfat et al. 2007; Sharma and Shanks 2011). In alliance-based capabilities, orchestration includes synchronizing the tasks/resources of the firm with those of the partner (Helfat et al. 2007). In an ITO context, it refers to integrating newly acquired IT resources (e.g., the services/activities of an IT supplier) with current IT resources (e.g., the systems/services of the IT department). Especially in a multi-vendor context, this integration occurs through the coordination of work by different vendors (Bapna et al. 2010; Lee et al. 2009b; Levina and Su 2008). As Bapna et al. (2010) note, although multi-sourcing is becoming representative of modern

organizations, the ability to reap its potential benefits remains a challenge for client firms. If a client firm has a single vendor, the ability to coordinate/integrate the resources and activities of that vendor with internal IT functions remains a challenge (Lacity et al. 2010; Ranganathan and Balaji 2007). We therefore define orchestration capability as *the extent to which a client organization is able to or has developed routines for coordinating the work of one or more vendors and integrating their resources and activities with the current IT department's resources and activities.* As DCP suggests, firms that possess an orchestration capability could reconfigure their resources using the resources of their partner firms in order to create a winning combination of their own resources and that of their partners. In the ITO context, firms that possess an orchestration capability are able to plan the coordination of the activities of vendor(s) with the internal IT function's activities and plan the integration of the resources of vendor(s) with the internal IT function's resources. Consequently, firms that possess an orchestration capability are more likely to reach the desired portfolio of IT resources and activities. We therefore hypothesize:

H2: *The extent to which a firm possesses IT outsourcing dynamic capabilities will be positively associated with the extent to which the firm has successfully reconfigured its IT resources through IT outsourcing.*

IT Outsourcing Operational Capabilities

Operational capabilities "enable firms to perform their ongoing tasks of making a living" and therefore "pertain to the current operations of an organization" (Helfat et al. 2007, p.82). We define ITO operational capabilities as *the ability of the client firm to manage/execute ITO arrangements.* Because operational capabilities are context-specific, they should be identified either based on the literature of the context of interest or on practitioners' opinions, or both. Based on our review of the ITO literature, our consultation with two experienced ITO practitioners and an in-depth case study of a firm heavily involved in ITO, we introduce two operational capabilities: contract management and vendor management capabilities.

Contract management capability. This capability includes the processes through which firms operationalize requirements in the form of detailed service descriptions and SLAs and negotiate the price of the IT solutions/services to be acquired (Ranganathan and Balaji 2007). Contract preparation and negotiation have been found to be one of the main building blocks of the ITO lifecycle (Cullen et al. 2005) and one of the core IS capabilities (Willcocks et al. 2007). Characteristics of ITO contracts (duration and type) are also found to impact different outcomes of IT outsourcing (Lee et al. 2004). An inability to design and negotiate desired contracts leaves the client with a deal that has little resemblance to the one it expected (Cullen et al. 2005; Ranganathan and Balaji 2007). By preparing drafts of SLAs and of the price framework in advance (i.e., designing what the firm needs), firms can protect themselves from accepting vendors' standard contracts as a result of limited negotiation time and fast-approaching deadlines (Cullen et al. 2005). Argyres and Mayer (2007) argue that contracting is a managerial (i.e., organizational) capability through which managers assign roles and responsibilities to the parties and decide how parties should communicate. We therefore define contract management capability as *the extent to which a client organization is able to or has developed routines for writing and negotiating contracts with vendors.* Firms that are able to write clear service descriptions, specify SLAs that reflect their business needs, and negotiate the desired SLAs and their pricing with vendor(s) create solid ground for monitoring and measuring the performance of their vendors, and are therefore more likely to be satisfied with the performance and deliverables of the vendors.

Vendor management capability. This capability is one of the main building blocks in the ITO management lifecycle and includes helping vendors to improve and solve problems collaboratively (Cullen et al. 2005; Dibbern et al. 2004). Vendor management is also one of the core IS capabilities suggested in order to receive added value from IT suppliers (Willcocks et al. 2007). Firms that are effective in carrying out their IT offshoring relationships have been found to invest in their governance structures and monitoring routines, while ineffective firms failed to invest in such routines and structures (Ranganathan and Balaji 2007). Detailed task description and collaborative work with vendors have also been found to be important aspects of vendor management in software development outsourcing (Poston et al. 2010). Moreover, vendor management capability, which refers to monitoring and evaluating vendor performance, was found to positively affect one of the main determinants of ITO success: partnership quality (Han et al. 2008; Lee and Kim 1999). Lee et al. (2009a) found that vendor management capability not only directly and positively influences ITO success, but also has a moderated effect on ITO success through the vendor's capabilities. Based on

the ITO literature we deem that vendor management capability has two dimensions of monitoring/evaluating performance, and also managing the relationship with vendors (e.g., effective communicating). We therefore define vendor management capability as *the extent to which a client organization is able to or has developed routines for implementing ITO contracts, monitoring the activities of IT vendors and managing its relationships with IT vendors.* Firms that possess vendor management capability monitor and evaluate the performance of vendors, both regarding SLAs and business satisfaction, communicate effectively, and solve problems collaboratively with vendors. Therefore, these firms actively engage in their ITO arrangements and take corrective action before problems escalate. Consequently they are more likely to be satisfied with their vendors' performance/ deliverables.

H3: *The extent to which a firm possesses IT outsourcing operational capabilities will be positively associated with the extent to which ITO delivery is successful.*

IT Outsourcing Learning Capabilities

In DCP, learning capabilities have been conceptualized as mechanisms through which firms accumulate experience and therefore perform their activities better and faster (Teece et al. 1997). In alliance-based capabilities, effective knowledge management processes enable a firm to learn from its partner and consequently manage an effective alliance (Helfat et al. 2007). Through learning capabilities, firms also correct and modify other processes and capabilities, including their dynamic and operational capabilities (Zollo and Winter 2002). ITO research has examined the influence of knowledge sharing on ITO success (Lee 2001; Lee and Kim 1999) and on the decision to continue offshoring (Dedrick et al. 2011). Learning from the external environment (e.g., gathering insight from experts) is also considered an important task in the ITO lifecycle (Cullen et al. 2005). From a learning-by-doing perspective, the client firm's experience with IT outsourcing (i.e., learning how to manage future ITOs) has been found to be an important factor in ITO success (Gopal et al. 2003; Lacity et al. 2010). Learning is conceptualized as the assimilation of feedback and the realization of a need to create new capabilities (Sia et al. 2008; Tan and Sia 2006). Also, as firms gain experience working with suppliers, they learn how to more clearly define responsibilities and expectations in contracts and how to better plan for contingencies (Mayer and Argyres 2004).

Therefore, we define learning capability as: *the extent to which a client organization is able to or has developed routines for acquiring external knowledge on how to carry out IT outsourcing as well as for accumulating and employing experience from prior IT outsourcing relationships.* Firms with ITO learning capability are able to accumulate experience and knowledge and use it as they carry out new ITO arrangements. For example, through its learning capability (from its own experience) a firm might realize that improvements are needed to its vendor evaluation process and then, using the expertise of a consultant, actually improve the process. Therefore, firms with learning capabilities are able to improve their other processes (e.g., vendor selection capabilities), which suggests a mediated effect on reconfiguration through dynamic capabilities. This is also in line with DCT where dynamic capabilities occur or arise from prior learning and experience (Helfat et al., 2007; Zollo and Winter, 2002). Also, learning capabilities could lead to more efficient execution of ITO operational capabilities (e.g., contract management) and therefore lead to successful delivery. We therefore hypothesize:

H4: *The extent to which a firm possesses IT outsourcing learning capabilities will be positively associated with the extent of its IT outsourcing dynamic capabilities.*

H5: *The extent to which a firm possesses IT outsourcing learning capabilities will be positively associated with the extent of its IT outsourcing operational capabilities.*

Method

The model will be tested using data from a cross-sectional survey. The unit of analysis for the study is the organization. We will choose large firms across different industries that have outsourced some or all of their IT activities. We will use a number of control variables (e.g, size, industry type, scope of ITO and experience with ITO). Following the literature on dynamic capabilities (Capron and Mitchell 2009; Lichtenthaler 2009), our target population will be IT senior managers (e.g., CIOs). IT senior managers are better informed about ITO capabilities that lead to success and about ITO success itself. We used, and will use partial least squares (PLS) regression to analyze the data, since it supports studies that are more exploratory in nature (Gefen et al. 2000).

Measures

Measures of all capability constructs, ITO success, and of successful reconfiguration have been developed from the conceptual definitions and based on dynamic capabilities perspective (Helfat et al. 2007; Eisenhardt and Martin, 2000; Teece et al., 1997; Zollo and Winter, 2002). The measures of successful delivery are adapted from Ho et al. (2003) and Poppo and Zenger (2002). For the wording of the measures, we used previous studies of dynamic capabilities and learning organizations (e.g.,Pavlou and El Sawy 2006). The content of all items (either new or adopted) has been validated by a panel of experts (IT managers or CIOs experienced with ITO). The measures were further validated using a card sorting technique (Moore and Benbasat 1991). We conducted a pre-test (Churchill 1979) before administrating the survey (please see the appendix for results of the pre-test).

To alleviate the common method variance susceptibility caused by method-method pairing before data collection, we applied some of the suggestions made by Sharma et al., (2009) and Podsakoff et al., (2003) (e.g., using different scales for items of different constructs, using psychological distance). Therefore, we measured the items using three different scales: five-point Likert scale, seven-point Likert scale, and five-point semantic differential items. In addition, we used measures of IS strategy (innovative, conservative, no strategy) (Chen et al. 2010), work experience, and education to create psychological distance between questions of different constructs. IS strategy items are related to the IT domain at the organizational level, however they are not related to IT outsourcing; therefore they are suitable for providing a psychological distance especially between the questions of independent variables and dependent variables (Podsakoff et al., 2003).

Expected Contributions

Introducing ITO dynamic capabilities contributes to the literature on dynamic capabilities. To our knowledge, ITO capabilities have not been conceptualized and measured as dynamic capabilities. We believe that they can be conceptualized and measured as such, since firms use IT outsourcing arrangements to purposefully create, extend and modify their IT resource bases. Based on this new conceptualization, this study offers a model that contributes to the literature on IT outsourcing by focusing on both operational and strategic determinants of IT outsourcing success. Therefore, it offers a more comprehensive explanation of ITO success than extant models.

Appendix: Reliability and Validity Test of the Constructs

We assessed the validity of the constructs by checking whether average variance extracted (AVE) of each construct was greater than 0.5. The table below shows that this holds for all the constructs (the smallest AVE is 0.55). Also, to assess discriminant validity at the construct level, we compared the square root of AVE of a construct with the correlations of that construct with all other constructs. If square root of AVE is greater than all the correlations there is indication that discriminate validity at the constructs level exists.

We also assessed the validity of each item by checking whether each of the item loadings was greater than 0.7 and the T-test of each loading significant [bootstrap procedure with 500 resamples was used to test for loading's significance (Chin 1998)]. This holds for all of the items. Also, each item should not highly and significantly load on the other constructs (i.e., non existence of high cross loadings). Results shows that all the loadings on the intended constructs are higher than loadings on other constructs, which indicates discriminate validity at the item level

Construct	No. of items	AVE (test of convergent validity)	Composite reliability	Max corr. with another construct- (test of discriminant validity)
Orchestration capability	4	0.62	0.87	0.61< sqrt.AVE=0.79
Successful configuration	4	0.77	0.93	0.66< sqrt.AVE= .88
Successful delivery	4	0.55	0.83	0.71< sqrt.AVE=0.74
Learning -experience accumulation	3	0.61	0.83	0.67< sqrt.AVE=0.78
Sourcing mode selection capability	4	0.63	0.87	0.51< sqrt.AVE=0.79
Contract management capability	5	0.60	0.88	0.62< sqrt.AVE=0.75
Internal scanning capability	3	0.58	0.81	0.66< sqrt.AVE=0.76
Sensing capability	4	0.54	0.82	0.66< sqrt.AVE=0.73
Vendor selection capability	4	0.64	0.88	0.63< sqrt.AVE=0.80
learning- acquisition of external knowledge	4	0.57	0.84	0.67< sqrt.AVE=0.75
ITO success	3	0.68	0.86	0.66< sqrt.AVE=0.82
Vendor management capability-relationship dimension	4	0.56	0.83	0.61< sqrt.AVE=0.75
Vendor management capability-evaluation dimension	3	0.65	0.84	0.63< sqrt.AVE=0.80

References

Argyres, N., and Mayer, K., J. . 2007. "Contract Design as a Firm Capability: An Integration of Learning and Transaction Cost Perspectives," *Academy of Management. The Academy of Management Review* (32:4), pp. 1060-1077.

Aubert, B., Beaurivage, G., Croteau, A., and Rivard, S. 2008. "Firm Strategic Profile and IT Outsourcing," *Information Systems Frontiers* (10:2), p. 129.

Aubert, B., Rivard, S., and Patry, M. 2004. "A Transaction Cost Model of IT Outsourcing," *Information & Management* (41:7), pp. 921-932.

Aubert, B.A., Rivard, S., and Patry, M. 1996. "A Transaction Cost Approach to Outsourcing Behavior: Some Empirical Evidence," *Information & Management* (30:2), May, p. 51.

Bapna, R., Barua, A., Mani, D., and Mehra, A. 2010. "Cooperation, Coordination, and Governance in Multisourcing: An Agenda for Analytical and Empirical Research," *Information Systems Research* (21:4), pp. 785-795.

Barthelemy, J., and Geyer, D. 2004. "The Determinants of Total IT Outsourcing: An Empirical Investigation of French and German Firms," *The Journal of Computer Information Systems* (44:3), pp. 91-97.

Capron, L., and Mitchell, W. 2009. "Selection Capability: How Capability Gaps and Internal Social Frictions Affect Internal and External Strategic Renewal," *Organization Science* (20:2), pp. 294-312.

Chen, D., Mocker, M., Preston, D., and Teubner, A. 2010. "Information Systems Strategy: Reconceptualization, Measurement, and Implications," *MIS Quarterly* (34:2), pp. 233-259.

Cheon, M.J., Grover, V., and Teng, J.T.C. 1995. "Theoretical Perspectives on the Outsourcing of Information Systems," *Journal of Information Technology (Routledge, Ltd.)* (10:4), pp. 209-219.

Chin, W.W. 1998. "The Partial Least Squares Approach to Structural Equation Modeling," in *Modern Methods for Business Research*. G. A. Marcoulides (ed.), Mahwah, NJ: Erlbaum, pp. 295-358.

Choudhury, V., and Sabherwal, R. 2003. "Portfolios of Control in Outsourced Software Development Projects," *Information Systems Research* (14:3), Sep, pp. 291-314.

Churchill, G.A. 1979. "A Paradigm for Developing Better Measures of Marketing Constructs," *Journal of Marketing Research* (16:1), pp. 64-73.

Cullen, S., Seddon, P.B., and Willcocks, L.P. 2005. "IT Outsourcing Configuration: Research into Defining and Designing Outsourcing Arrangements," *The Journal of Strategic Information Systems* (14:4), pp. 357-387.

Dedrick, J., Carmel, E., and Kraemer, K. 2011. "A Dynamic Model of Offshore Software Development," *Journal of Information Technology* (26:1), pp. 1-15.

Dibbern, J., Goles, T., Hirschheim, R., and Jayatilaka, B. 2004. "Information Systems Outsourcing: A Survey and Analysis of the Literature," *Database for Advances in Information Systems* (35:4), pp. 6-102.

Domberger, S., Fernandez, P., and Fiebig, D., G. . 2000. "Modelling the Price, Performance and Contract Characteristics of IT Outsourcing," *Journal of Information Technology* (15:2), pp. 107-118.

Dutta, D., Gwebu, K., and Wang, J. 2011. "Strategy and Vendor Selection in IT Outsourcing: Is There a Method in the Madness?," *Journal of Global Information Technology Management* (14:2), pp. 6-26.

Eisenhardt, K.M., and Martin, J.A. 2000. "Dynamic Capabilities: What Are They?," *Strategic Management Journal* (21:10/11), October, pp. 1105-1121.

Gartner. 2011. "Forecast Analysis: IT Outsourcing, Worldwide, 2010-2015, 4q11 Update." Retrieved 1 May 2012, from http://www.gartner.com/DisplayDocument?id=1881228&ref='g_fromdoc'

Gefen, D., Straub, D.W., and Boudreau, M. 2000. "Structural Equation Modeling Techniques and Regression: Guidelines for Research Practice," *Communications of AIS* (4:7), pp. 1-79.

Gopal, A., Sivaramakrishnan, K., Krishnan, M.S., and Mukhopadhyay, T. 2003. "Contracts in Offshore Software Development: An Empirical Analysis," *Management Science* (49:12), pp. 1671-1683.

Grover, V., Cheon, M.J., and Teng, J.T.C. 1996. "The Effect of Service Quality and Partnership on the Outsourcing of Information Systems Functions," *Journal of Management Information Systems* (12:4), Spring, p. 89.

Han, H., Lee, J., and Seo, Y. 2008. "Analyzing the Impact of a Firm's Capability on Outsourcing Success: A Process Perspective," *Information & Management* (45:1), pp. 31-42.

Helfat, C., Finkelstein, S., Mitchell, W., Peteraf, M., Singh, H., Teece, D., and Winter, S. 2007. *Dynamic Capabilities: Understanding Strategic Change in Organizations*, (1 ed.). Malden, MA: Blackwell Publishing.

Henderson, J.C., and Venkatraman, H. 1999. "Strategic Alignment: Leveraging Information Technology for Transforming Organizations," *IBM Systems Journal* (38:2/3), p. 472.

Ho, V., T. , Ang, S., and Straub, D. 2003. "When Subordinates Become IT Contractors: Persistent Managerial Expectations in IT Outsourcing," *Information Systems Research* (14:1), pp. 66-125.

Karimi-Alaghehband, F., Rivard, S., Wu, S., and Goyette, S. 2011. "An Assessment of the Use of Transaction Cost Theory in Information Technology Outsourcing," *The Journal of Strategic Information Systems* (20:2), pp. 125-138.

Kern, T., and Willcocks, L. 2000. "Exploring Information Technology Outsourcing Relationships: Theory and Practice," *The Journal of Strategic Information Systems* (9:4), pp. 321-350.

Koh, C., Ang, S., and Straub, D., W. . 2004. "IT Outsourcing Success: A Psychological Contract Perspective," *Information Systems Research* (15:4), pp. 356-373.

Lacity, M., Khan, S., Yan, A., and Willcocks, L. 2010. "A Review of the IT Outsourcing Empirical Literature and Future Research Directions," *Journal of Information Technology* (25:4), pp. 395-433.

Lacity, M.C., Khan, S.A., and Willcocks, L.P. 2009. "A Review of the IT Outsourcing Literature: Insights for Practice," *The Journal of Strategic Information Systems* (18:3), pp. 130-146.

Lacity, M.C., and Willcocks, L.P. 1995. "Interpreting Information Technology Sourcing Decisions from a Transaction Cost Perspective: Findings and Critique," *Accounting, Management and Information Technologies* (5:3-4), pp. 203-244.

Lee, J.-N. 2001. "The Impact of Knowledge Sharing, Organizational Capability and Partnership Quality on IS Outsourcing Success," *Information & Management* (38:5), pp. 323-335.

Lee, J.-N. 2006. "Outsourcing Alignment with Business Strategy and Firm Performance," *Communications of AIS* (2006:17), pp. 1124-1146.

Lee, J.-N., Han, H., Lee, J., and Seo, Y. 2009a. "The Fit between Client IT Capability and Vendor Competence and Its Impact on Outsourcing Success," in: *Americas Conference on Information Systems*. San Francisco, California.

Lee, J.-N., heng, C.S., and Lee, J. 2009b. "Multi-Vendor Outsourcing: Relational Structures and Organizational Learning from a Social Relation Perspective," *International Conference on Information Systems*, Phoenix, Arizona.

Lee, J.-N., and Kim, Y.-G. 1999. "Effect of Partnership Quality on IS Outsourcing: Conceptual Framework and Empirical Validation," *Journal of Management Information Systems* (15:4), pp. 29-61.

Lee, J.-N., Miranda, S.M., and Kim, Y.-M. 2004. "IT Outsourcing Strategies: Universalistic, Contingency, and Configurational Explanations of Success," *Information Systems Research* (15:2), Jun, p. 110.

Levina, N., and Su, N. 2008. "Global Multisourcing Strategy: The Emergence of a Supplier Portfolio in Services Offshoring," *Decision Sciences* (39:3), pp. 541-570.

Lichtenthaler, U. 2009. "Absorptive Capacity, Environmental Turbulence, and the Complementarity of Organizational Learning Processes," *Academy of Management Journal* (52:4), p. 822.

Loh, L., and Venkatraman, N. 1992. "Determinants of Information Technology Outsourcing: A Cross-Sectional Analysis," *Journal of Management Information Systems* (9:1), pp. 7-24.

Mayer, K., J. , and Argyres, N., S. . 2004. "Learning to Contract: Evidence from the Personal Computer Industry," *Organization Science* (15:4), pp. 394-410.

Michell, V., and Fitzgerald, G. 1997. "The IT Outsourcing Market-Place: Vendors and Their Selection," *Journal of Information Technology* (12:3), pp. 223-237.

Moore, G.C., and Benbasat, I. 1991. "Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation," *Information Systems Research* (2:3), pp. 192-222.

Pavlou, P., and El Sawy, O. 2006. "From IT Leveraging Competence to Competitive Advantage in Turbulent Environments: The Case of New Product Development," *Information Systems Research* (17:3), pp. 198-227.

Poppo, L., and Zenger, T. 2002. "Do Formal Contracts and Relational Governance Function as Substitutes or Complements?," *Strategic Management Journal* (23:8), pp. 707-725.

Poston, R., Simon, J., and Jain, R. 2010. "Client Communication Practices in Managing Relationships with Offshore Vendors of Software Testing Services," *Communications of the Association for Information Systems* (27), pp. 129-148.

Ranganathan, C., and Balaji, S. 2007. "Critical Capabilities for Offshore Outsourcing of Information Systems," *MIS Quarterly Executive* (6:3), pp. 147-164.

Ross, J.W., and Beath, C.M. 2006. "Sustainable IT Outsourcing Success: Let Enterprise Architecture Be Your Guide," *MIS Quarterly Executive* (5:4), pp. 181-192.

Saunders, C., Gebelt, M., and Hu, Q. 1997. "Achieving Success in Information Systems Outsourcing," *California Management Review* (39:2), pp. 63-79.

Schwarz, A., Jayatilaka, B., Hirschheim, R., and Goles, T. 2009. "A Conjoint Approach to Understanding IT Application Services Outsourcing*," *Journal of the Association for Information Systems* (10:10), pp. 748-781.

Sharma, R., and Shanks, G. 2011. "The Role of Dynamic Capabilities in Creating Business Value from IS Assets," in: *AMCIS 2011 Proceedings* Detroit, MI.

Sia, S., Koh, C., and Tan, C. 2008. "Strategic Maneuvers for Outsourcing Flexibility: An Empirical Assessment," *Decision Sciences* (39:3), pp. 407-443.

Tan, C., and Sia, S.K. 2006. "Managing Flexibility in Outsourcing1," *Journal of the Association for Information Systems* (7:4), pp. 179-206.

Teece, D. 2007. "Explicating Dynamic Capabilities: The Nature and Microfoundations of (Sustainable) Enterprise Performance," *Strategic Management Journal* (28:13), pp. 1319-1350.

Teece, D., Pisano, G., and Shuen, A. 1997. "Dynamic Capabilities and Strategic Management," *Strategic Management Journal* (18:7), pp. 509-533.

Teng, J.T.C., Cheon, M.J., and Grover, V. 1995. "Decisions to Outsource Information Systems Functions: Testing a Strategy-Theoretic Discrepancy Model," *Decision Sciences* (26:1), pp. 75-103.

Willcocks, L., Reynolds, P., and Feeny, D. 2007. "Evolving IS Capabilities to Leverage the External IT Services Market. Mis Quarterly Executive," *MIS Quarterly Executive* (6), pp. 127-145.

Zollo, M., and Winter, S.G. 2002. "Deliberate Learning and the Evolution of Dynamic Capabilities," *Organization Science* (13:3), May-Jun, pp. 339-351.

Zott, C. 2003. "Dynamic Capabilities and the Emergence of Intraindustry Differential Firm Performance: Insights from a Simulation Study," *Strategic Management Journal* (24:2), pp. 97-125.