TOWARDS A THEORY OF CONTROLS IN INFORMATION TECHNOLOGY
OUTSOURCING SUCCESS: A MULTIMETHOD STUDY

by

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(Chair of the committee)

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(date) March 9, 2009

*We also certify that written approval has been obtained for any proprietary material contained therein.
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Towards a Theory of Controls in Information Technology Outsourcing Success: A Multimethod Study

Abstract

by

PANKAJ NAGPAL

The dissertation draws on theory of organizational controls to understand the salient controls that the buyer, or focal firm can use to succeed in outsourcing initiatives. I use multimethod research to study ‘buyer side’ (or focal firm) success factors in large scale, complex outsourcing initiatives. The research design consists of sequential exploratory theory generating qualitative study, and theory validating quantitative study. This design triangulates data and theory across distinct data collection methods and analyses. The research design strengthens inferences of causality in cross sectional (although independent) samples.

In the first study, I use the inductive, positivist case study method in the spirit of Eisenhardt, to carry out a field study on the antecedents of success in large scale IT outsourcing. The study involves interviews with Chief Information Officers at successful focal firms, and a leading US based global vendor. The case study theoretically triangulates interview data with extant conceptualizations of well known constructs to formulate an extended model of success in IT outsourcing. The study suggests environmental and firm level predictors for selective sourcing, which has been viewed in the extant research to be superior to total outsourcing, although the conditions that lead to successful selective sourcing are not well understood. Inductively derived configurations
of focal sourcing firms suggest *gestalts* of sourcing related capabilities that are difficult to
develop in isolation.

In the second study, I develop a model of Information Technology (IT) outsourcing success that draws on the field study and a review of organizational controls literature. To this end I identify a set of salient organizational mechanisms as predictors for outsourcing success. These mechanisms are exercised by focal firms in the successful management of large strategic outsourcing arrangements. Data from a survey of senior focal firm executives is used to validate the model. The analysis finds support for most of the hypothesized predictors. In addition, I investigate the impact of architectural modularity on outsourcing success and business performance. I argue that the salient organizational mechanisms related to outsourcing constitute a dynamic capability labeled as **IT Sourcing Capability** among focal firms.
Chapter 1. Towards a Theory of Controls in Outsourcing Success

1. Introduction and motivation

Information Technology (IT) outsourcing (also referred to as sourcing in some recent literature) 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, & McGray, 1995). Over the last decade, a steady growth of IT outsourcing has taken place so that it has reached $297 billion for 2007. At the same time, research interest in outsourcing has grown, with increasing number of papers and variety of topics addressed (Gonzalez, Gasco, & Llopis, 2006). A number of research questions have been addressed through a variety of research methods. Early literature focused on the antecedents of outsourcing (Hui & Beath, 2001) and drew heavily on transaction cost economics (Nagpal, 2004a). In this literature, ‘why to outsource’ was the key research question that interested scholars (Gonzalez et al., 2006). The literature on the antecedents of outsourcing continued to grow in the nineties and early part of the 2000, until interest in the topic has trailed off recently. In contrast, the literature on the outcomes of outsourcing is quite recent. This stream covers outcomes for the client (or focal firm), the vendor or industry. Outcomes for the focal receiving firm have been researched by Grover et al (1996), and Lee and Kim (1999). A small number of papers have covered vendor outcomes (Heckman & King, 1994).

At the same time, the expected outcomes of outsourcing have shifted beyond cost savings to include the creation of innovative IT applications and acquisition of new
capabilities (Linder, 2004a). Given the new types of ‘partnerships’ as a means to realize strategic gains in IT outsourcing, “outsourcing can be more than a tool for cutting costs and improving organizational focus. Increasingly, it is a means of acquiring new capabilities and bringing about fundamental strategic and structural change” (Linder, 2004a). However, the expected outcomes of outsourcing have remained elusive and highly uncertain. For example, market research indicates that a majority of client firms are not satisfied with their outcomes of outsourcing (Cohen & Young, 2006). Academic and practitioner findings hint at the specific local “firm effect” in outsourcing, i.e., differential industry and firm level outcomes of IT outsourcing with the use of similar IT outsourcing arrangements. First, there are industry level differences in the impact of IT outsourcing (Han, Kauffman, & Nault, 2005), which are supported by the impact of specific dyadic buyer–vendor characteristics (Grover, Cheon, & Teng, 1996; Lee & Kim, 1999). In spite of limited success rate (CIO, 2003), there is a lack of research that systematically explains success factors for large scale outsourcing. In this dissertation, later references to outsourcing refer to IT outsourcing.

Outsourcing has been divided into five major functions: application development and maintenance, systems operations, network management and maintenance, end user support, and IS planning and management (Grover et al., 1996). We are interested in the firm level impact when significant portion of IT functions is outsourced and involves customized components (as different from ‘commodity’ nature) and hence need relatively complex outsourcing arrangements. This would typically include application development (for example) where task and outcome ambiguity are high and coordination challenges are significant. Here it is difficult to directly realize economies of scale or
determine the market price of the outsourced elements (Grover et al., 1996). Typical characteristics of such arrangements are multiple vendors and functions demanding complex governance arrangements on the part of focal firm. This is in sharp contrast to outsourcing elements of network infrastructure—network management or desktop maintenance, or specific business process elements (BPO) like credit card payments which are highly modular and where clear performance standards can be established. These functions can therefore be managed with more ease through relatively specific contracts and standard forms of service level agreement. These types are also easier to understand using classic micro-economic theories, as often the difference in cost is the main driver and criterion for outsourcing. Indeed, much of the IS literature on outsourcing has mainly focused on the latter types of simpler elements of outsourcing using concomitant economic theories (Hui et al., 2001).

In order to address the inherent complexity of focal firm’s actions in strategic outsourcing arrangements, we draw on the theory of organizational controls. As reviewed in more detail in the following sections, this literature has studied a range of formal and informal ways in which a buyer firm can motivate the controllee, i.e., vendor organization, to act in a manner which is in line with the objectives of the controller, i.e., the focal firm (Ouchi, 1979). Choudhury and Sabherwal (2003) and Kirsch (2004) have examined the use of portfolios of formal and informal controls in IT outsourcing. However, this literature has been more interested in the antecedents in contrast to the consequences of control. In fact, some scholars claim that there is limited empirical evidence on the connection between the choice of organizational controls and performance (Kirsch, Sambamurthy, Ko, & Purvis, 2002). Yet, much of the literature on
the antecedents of portfolio choice rests on an implicit assumption that some choices of the ‘portfolio of controls’ will improve the odds of succeeding with outsourcing. Drawing on these insights, organizational control theory appears to be a promising theoretical lens to study factors affecting outsourcing outcomes. Therefore, we will delve into the rich portfolios of controls used in managing outsourcing behaviors and how they link to sourcing success, in the following chapters.

In the following chapters, we draw on organizational control theory and use multi-method research to address issues of “buyer side” success factors in outsourcing. The buyer firm is referred here as the client, or the focal firm. Multimethod research is followed in this study in order to develop and test a theory through a sequential research design in a field with little explanatory theory (Tashakkori & Teddlie, 2003). Second and third chapters relate to qualitative and quantitative study, respectively.

The remainder of this chapter is organized as follows. Next, we review the relevant IT outsourcing and control literatures that influenced this study. The detailed research questions and methods are proposed in section 3. In section 4, we summarize the main results of each individual study. We conclude by discussing the relationships across different results obtained through multi-method research, and by making suggestions for future research.

2. Literature review

In this section, we briefly review the extant research on IT outsourcing and success, followed by a review of research on organizational controls and their impact. These literatures are discussed in greater depth in the following chapters.
Literature on outsourcing in other disciplines, mainly in Operations and Supply Chain, has considered optimal performance as a sequencing problem (Aydinliyim, 2007). In this game theoretic approach, a number of buyers schedule an optimal work schedule on the vendor ‘machine’. Similarly, outsourcing in Supply Chain discipline has been linked to cost savings and flexibility, as seen in the case of (for example) Cisco, Motorola, and Nike (Cohen and Agrawal, 1999). Supplier choice and supplier relations have been of interest in this literature. Analytical models on demand requirements and production cost consider supplier selection and ‘optimal’ schedule of purchases (Sadrian & Yoon, 1994). In addition, trade-offs between long and short term purchases (Cohen & Agrawal, 1999) have been modeled. In particular, the contract has been of great interest, as reviewed in Tsay (1999). Hence trade-offs among different types of contracts are the focus of this literature. However, IT outsourcing is different in several respects. First, IT is integral to business processes and high level strategy, given that IT and business strategy need to be aligned (Armstrong & Sambamurthy, 1999). Secondly, IT systems have lacked modularity, and hence are difficult to modularize and contract out to different suppliers, as is possible for automotive industry, for example. It is also more difficult to specify the interfaces across the modules, where the modules are defined.

2.1. Outsourcing and its antecedents

A review of the extant research shows that Transaction Cost Economics (TCE) has been a dominant lens in the study of IT outsourcing (Hui et al., 2001) though it shows limited explanatory power: the “logic” of production costs overwhelms transaction costs in IT services (Nagpal, 2004b). Key constructs of TCE, and in particular, its notion of asset specificity, have a limited role in explaining outsourcing decisions. One reason
for this is that TCE may be more relevant in studying monolithic, all-or-nothing outsourcing contracts and related transactions. Given the variety of objectives which includes cost as well non cost factors such as agility (Linder, 2004a) in current outsourcing, the logic of costs alone seem to offer limited value.

2.2. Outsourcing Success and business performance

The literature on success in outsourcing includes a large body of practitioner research, papers in practice oriented journals, and some papers in IS research. Building on work in IT strategy, Venkatraman suggested that the strategic approach to IT, whether focused on cost minimization or business capability augmentation, has an impact on the choice of outsourcing (Venkatraman, 1997). The move from a cost center to a value center involves a concomitant move to the acquisition of new capabilities to be successful in outsourcing. ‘IT value center’ has different objectives, and success criteria. In this structure, the IT organization becomes an integrator to deliver “business solutions”. The limitation of such research is that current outsourcing practices are not focused exclusively on either cost or value; they need to address both (Ross & Beath, 2007). Similarly, Quinn (1999) gives a list of ‘techniques’ for successful outsourcing, which includes recruiting a specialized group of sourcing professionals and new executive roles such as ‘Chief Sourcing Officer’ (Quinn, 1999). Though this research anticipated the need to create effective organizational mechanisms to control outsourcing at the enterprise level, a lack of overarching theory is a limitation of this research.

In the IS literature, research on antecedents of outsourcing success has assumed a vendor, or dyadic view point. In this vein, the researchers focus on dyadic characteristics
such as vendor service quality (Grover et al., 1996) and partnership quality (Lee et al., 1999). This stream draws on resource dependence and transaction cost economics in explaining how service and partnership quality will influence sourcing success. A key assumption is that outsourcing success depends significantly on vendor behaviors. Grover et al proposed service quality and partnership quality as the antecedents of sourcing success. Building on their work, Lee et al proposed a ‘process model’ with a detailed conceptualization of partnership quality, with trust as a key indicator. In addition, they hypothesized the determinants of partnership quality, which include dyadic factors such as communication quality.

Business performance has been defined as “organizational effectiveness of a firm or business unit in terms of its financial and operational performance relative to its competitors”. (Venkatraman & Ramanujam, 1986). As a significant portion of IT investment is currently outsourced (Vallis & Murphy, 2008), at least in firms which utilize outsourcing, there is a need to test the link between success in large scale outsourcing, and firm level performance. In some ways, sourcing success is analogous to IT investment: just as it was important to link IT investment to firm level effects in the nineties, success in large outsourcing contracts needs to be linked to firm performance.

2.3. **Organizational controls and outsourcing**

Organizational control refers to attempts by an individual or organization to motivate another individual or organization to act in a manner in line with the objectives of the controller (Ouchi, 1979). It is widely understood that managers exercise a range of controls to govern IS development activities in insourced arrangements (Kirsch, 1997).
This work has been followed by research on the use of different controls in outsourcing (Choudhury & Sabherwal, 2003; Kirsch et al., 2002). Kirsch et al (2002) attempted to understand the variety of controls used in outsourcing, and the antecedents of formal and informal controls used by the focal firm. This research stream has stressed that buyers configure effective ‘portfolios of control’ (Choudhury et al., 2003). This choice includes the selection of formal and informal controls which can be organized within a wide range of contingency factors (Choudhury et al., 2003). Formal controls are explicit forms of monitoring and enforcing compliance and thus subject to availability of a hierarchical authority, while informal controls are fluid and subject to the influence of informal structures such as norms in groups. Within formal controls both behavior and outcome controls have been identified and they include the use of regular meetings, conference calls and predefined reports to review and monitor services and their delivery. Outcome controls include time and cost criteria, and various measurable outcomes (Choudhury et al., 2003). Using longitudinal research, Choudhury and Sabherwal (2003) and Kirsch (2004) found that buyers add formal and informal controls to an initial portfolio, presumably to improve the odds of success in outsourcing. Hence a well diversified portfolio of controls is ultimately required for success, in either insourced or outsourced context. In contrast to the antecedents and ‘mix’ of controls, however, we know little about the impact of these controls. In fact, it has been claimed that there is limited empirical evidence on the link between organizational controls and performance (Kirsch et al., 2002).
2.4. Other factors: Modularity, and multisourcing

Modularity, multisourcing are additional concepts relevant to this study, and deal with configurational characteristics of outsourcing arrangements (Cohen et al., 2006).

Modularity is defined as the degree by which system components can be separated and recombined into new configurations with a limited loss of functionality (Schilling & Steensma, 2001). This has the advantage of “exponentially increasing the number of possible configurations achievable from a given set of inputs” (Schilling, 2000). With increased modularity, the same inputs can be combined in a combinatorial fashion, so as to meet the increased heterogeneity of demand (Schilling, 2000). Although there is some research on Enterprise Architectures and their connection to increased modularity (Venkatesh, Bala, Venkatraman, & Bates, 2007), the nature and extent of modularity and its impact on IT outsourcing has been inadequately addressed in the extant literature.

Cohen et al (2006) have suggested the use of multiple vendors as a success factor in outsourcing. The increased coordination cost is a drawback here, and can overwhelm the gains from using several “best in class” vendors. On the other hand, improved capabilities of these vendors could result in greater effectiveness. Although increased vendor capability would suggest an advantage to multisourcing, this remains an empirical question. Tan and Sia (2006a) tested the influence of multisourcing and did not find a significant effect on outsourcing success. Hence this remains an unresolved question.
2.5. Summary

Research has shown that a well diversified portfolio of controls is required for success, in either insourced or outsourced context. In contrast to the antecedents and ‘mix’ of controls, we know little about the impact of these controls. In fact, it has been clearly claimed that there is limited empirical evidence on the link between organizational controls and performance (Kirsch et al., 2002). The use of such controls has not been explicitly linked to normative factors such as buyer’s outsourcing success. At the same time, the literature on sourcing effectiveness (Grover et al., 1996) has emphasized dyadic factors such as relationship quality. Hence, there is a need to establish a conceptual link between the use of organizational controls by the focal firm, and normative factors such as sourcing effectiveness. Against this backdrop, we will examine the use of specific controls in outsourcing arrangements in relation to outsourcing success. Using multi-method research, we study the success factors using an exploratory case study, and then propose a model of organizational mechanisms related to a set of controls to outsourcing success. This builds on the notion of portfolios of control (Choudhury et al., 2003; Kirsch, 1997). We also study the role of configurational characteristics, multisourcing and modularity, and relate sourcing success to business performance.

3. Research Questions, Design, and Methodology

In this thesis, we address six research questions as shown in Table 1. The questions are addressed through a multimethod research design. We address the first three questions through qualitative research. Based on the results of qualitative study, we then address the latter research questions through quantitative research. The qualitative-
quantitative design has been recommended to develop a theory, and then test the theory in subsequent stage (Morse, 2003). These inductive and deductive methodologies guide the respective studies. However, the approach is somewhat different in that we also connect the findings of qualitative stage to extant conceptualizations. The details of these studies are given in the following chapters. In this section, we give the logic of the overall study.

**Table 1: Research questions**

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<th>Quantitative study: Chapter 3</th>
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<td>1. What are the buyer side factors salient to focal firm outsourcing success?</td>
<td>4. What is the impact of salient organizational controls (or salient success factors) on sourcing success?</td>
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<tr>
<td>2. What are the firm and environmental characteristics that explain the use of selective sourcing, as against total outsourcing?</td>
<td>5. What is the impact of these controls on modularity?</td>
</tr>
<tr>
<td>3. What are the key configurations of successful sourcing arrangements?</td>
<td>6. What is the ultimate effect of sourcing success and modularity on business performance?</td>
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There are a number of recommendations on mixed methodology research design that we follow rigorously. Morse (2003) recommends that each study should be “methodologically independent, exquisite, and adherent to its own methodological assumptions” (p. 203). This is done by using *distinct samples* with no overlap: qualitative study with a purposive (or non random) sample, and the quantitative study with a large random sample. The objective of this design is *triangulation* of results. To elaborate, the qualitative study is carried out as a positivist case study (Eisenhardt, 1989). The
divergence across the results is critically evaluated later in this chapter, and serves as opportunity for future research.

In order to address the first three research questions, an exploratory case study was conducted as this is well suited to ‘how’ and ‘why’ questions (Yin, 2003). In addition to success factors, we were interested in firm and environmental factors that could explain the use of selective sourcing within IT functions. Although the literature in consulting (Cohen et al., 2006) and IS (Lacity & Willcocks, 1998) has observed higher incidence of success in selective sourcing as compared to total outsourcing, there is very limited understanding of the characteristics of successful selective outsourcers. Finally, we were interested in the overall set of success factors along with firm and environment characteristics, or gestalts, which could be inducted from the case study sample.

There are several method related features which help to address the first three research questions. We used interviews with senior IT executives, as the main data collection method. In addition, archival data was used where available. A semi-structured interview guide was used as the research instrument. Seven buyer or focal firms, which had outsourced their IT activity, continued to outsource, and were successful in outsourcing, constitute the case study sample. A range of industry and size of firm ensured maximal difference in the sample. In addition, a global IT outsourcing vendor and a leading consulting firm were also interviewed for their perspective. The interviews were analyzed through within and cross case analyses, while organizing the data into themes (Miles & Huberman, 1994). The results are summarized in the next section of this chapter. The details are given in the second chapter.
In order to address the *final three* research questions, we developed a causal model of sourcing related controls that explain outsourcing success. The research model included hypotheses on the effect of sourcing related controls. These specific organizational controls were developed from the results of the case study in the previous chapter. In addition to clan controls, of which a number of instances were seen, this includes behavior and outcome controls. IT business integration related mechanisms were the salient example of behavior controls related to sourcing success in the case study. Standards served as outcome control mechanisms to control the vendor. Drawing on the logic of ‘portfolio of controls’ (Choudhury et al., 2003) in outsourcing, we want to test the effect of these controls on sourcing success. In addition, we relate these controls to modularity, another key characteristic of recent outsourcing arrangements. Finally, we propose the effect of sourcing success and modularity on firm level performance. The notion of sourcing success impacting business performance is similar to the effects seen in IT value research (Brynjolfsson & Hitt, 2000). However, there has been no proposal or testing of this linkage in literature, to the best of our knowledge. The complete research model is shown in Figure 1. In addition, we also proposed the ultimate effect of sourcing success and modularity on business performance. Hence the model is essentially composed of two separate, though related models in a single nomological network. The first model tests the antecedents of sourcing success and modularity. The model relates the organizational controls to sourcing success and modularity, as shown in Figure 1a. The second model relates sourcing success and modularity to business performance, as shown in Figure 1b.
Figure 1a Antecedents of sourcing success
Again, there are a number of method related characteristics that help to address the final three research questions. First, a ‘causal’ model was developed with the associated hypotheses. Using validated instruments from the literature, discrete items were selected and tested using sorting exercises. The questionnaire was tested and piloted to finalize the survey instrument. Surveys of senior executives were used to collect data. In order to be eligible for the survey, respondents needed to have knowledge of outsourcing and the business value generated from the arrangement. In order to improve response rate, and hence the quality and generalizability of results, high profile organizations of executives were approached to direct the survey to their members. The resulting data was analyzed through Partial Least Squares (Chin, Marcolin, & Newsted, 2003). The details are reported in the third chapter.

Table 2 summarizes the respective elements of qualitative and quantitative methodology. Each study follows the requirements of the respective methodology as shown in the table. In combination, the methodologies are better suited to exploring the little investigated phenomenon of differential success in outsourcing. Such research design is recommended when a theory built through a qualitative study is tested in a quantitative study. The latter generalizes the results of the initial purposive sample to a larger universe (Morgan, 1998). Independent samples and different data analyses allow triangulation of results, as discussed in the next section.
Table 2: Research Methodology

<table>
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<th>Quantitative</th>
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<td>Instrument</td>
<td>Interview guide</td>
<td>Questionnaire</td>
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<tr>
<td>Unit of sample</td>
<td>Case/interviews in a firm</td>
<td>Questionnaire/ respondent</td>
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<td>Sample criteria</td>
<td>One or more senior IT executives at buyer firm,</td>
<td>Senior IT executive in buyer firm, with knowledge of outsourcing, and business value</td>
</tr>
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<td>with recent experience and ‘success’ in outsourcing, and continue to outsource</td>
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<tr>
<td>Analyses/methodology</td>
<td>Cross and within case analyses</td>
<td>Causal model to test relationships and hypotheses</td>
</tr>
<tr>
<td>Results</td>
<td>Themes, issues, firm level configurations and propositions</td>
<td>Significance of paths relating to a number of hypotheses</td>
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</table>
4. Results

In this section, we summarize the results of each study. In addition, we compare the results of qualitative and quantitative study to the extant research, and to each other. As mentioned earlier, triangulation of results is a key objective of the multimethod research design (Tashakkori et al., 2003). The studies are linked at the level of research questions (Creswell, Clark, Gutmann, & Hansom, 2003), with independent data collection, analyses and interpretation. It is notable that research questions do not overlap entirely. Success factors for outsourcing at the focal firm are at the ‘core’ of the study, and addressed through a sequential research design. Other research questions, specifically RQ2 and 3 in qualitative study, and RQ 5 and 6 in the quantitative study, do not overlap. These questions reflect research issues that are related to the major research question of success factors using different types of inquiry. However, they were best addressed through each individual methodology, and hence subject to limited triangulation. We comment on the support across each research study, and discuss scope for future research.

The results of the qualitative study are summarized in Table 3. Analyses of interviews revealed that IT business integration, use of standards, clan controls, and vendor market orientation lead to success in outsourcing. In addition, study of sample firms suggests a number of prerequisites to the successful use of selective sourcing strategies; firms which do not have these characteristics are unlikely to succeed in selective sourcing. Finally, we synthesize configurations of firms by comparing internal and external characteristics of sample firms. This is done through within and cross case analyses. As discussed in the second chapter, controllers, architects and visionaries differ
in their approach to outsourcing. The role of learning is important in the development of behavioral and clan controls. In particular, if the focal firm managers rely only on outcome (time and cost) controls, clan controls are difficult to develop. Hence these explanations are different from those based on Transaction Cost Economics (TCE), which rely only on the minimization of cost. The study suggests that use of ‘higher order’ controls can minimize the role of asset specificity. As this key component of TCE has low explanatory power in empirical research on outsourcing (Nagpal, 2004b), we provide an explanation for such results in extant research.

As shown in Table 4, the quantitative results generally support the findings of the qualitative study as regards success factors for outsourcing. More details on the constructs are given in Chapter 3, with definitions of constructs in Appendix A. IT business integration and use of clan controls is significantly related to sourcing success. Clan controls refers to “a mode of control in which the client liaison becomes part of a project team clan by instilling, embracing, and fostering shared values and goals among the project team, and common approaches to working on the project” (Kirsch, Ko, & Haney, 2007). However, the use of standards was not related to sourcing success. As the items were newly developed, as against the use of validated items, there could be limitations in the scale. While our tests show the convergent and divergent validity of the items, it is more difficult to test content validity. Given that the domain of “use of standards” includes use as well as enforcement of standards, the items might not cover the whole range of the phenomenon. Among the configurational characteristics of outsourcing- multisourcing and modularity, the former has a significant effect on sourcing success. It is notable that the effects control statistically for the use of
‘conventional’ time and cost controls. Sourcing success has a positive effect on firm level performance. Given that outsourcing represents a significant portion of total IT spending (Vallis et al., 2008), the results are not entirely unexpected. Additional analyses on architectural modularity showed that its effect is mediated through sourcing success. The direct effect of modularity was also observed. The mediated effect suggests that modularity would have an effect only when it is synchronized with sourcing success. Hence modularity, in and of itself, is of limited advantage as regards business success.

**Figure 2 Statistical analyses Results**

Note: Solid arrows show supported hypotheses
Table 3: Results of Qualitative study

<table>
<thead>
<tr>
<th>Research question</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What are the buyer side factors salient to focal firm outsourcing success?</strong></td>
<td>Four success factors underlie the understandings of informants in case study. These are improved IT Business integration, use and enforcement of standards, use of clan controls, and vendor market orientation.</td>
</tr>
<tr>
<td></td>
<td>The results are mapped to extant conceptualizations in Tables 2A-E in the next chapter. In addition to detailed mapping to the respective construct, case study data leads to improved understanding of the constructs in the context of outsourcing.</td>
</tr>
<tr>
<td></td>
<td>Other success factors included technical skills, contract management, and project management.</td>
</tr>
<tr>
<td><strong>What are the firm and environmental characteristics that explain the use of selective sourcing, as against total outsourcing?</strong></td>
<td>Four factors push the firm toward the use of selective sourcing- scale and scope of IT organization, inter-functional linkages in the firm, and vendor availability. Strong institutional pressure and historical failure in sourcing push the focal firm toward total outsourcing.</td>
</tr>
<tr>
<td><strong>What are the key configurations of successful sourcing arrangements?</strong></td>
<td>Controllers, architects, and visionaries emerged as the discrete configurations of successful sourcing arrangements. The configurations indicate a continuum in terms of increasing sourcing capabilities. Controller firms are limited to total outsourcing, although they show some use of clan controls. Buffeted by strong institutional and cost pressures, they are unable to develop the capabilities needed for selective sourcing. Architects succeed at selective sourcing, due to IT Business integration, use and enforcement of standards, and some use of clan controls. Visionaries show additional strengths over and above architects. They show greater use of clan controls, and also monitor the outsourcing vendor market continuously to align their outsourcing activity dynamically with business needs through outsourcing additional activities as new vendors become available, or existing vendors add to their capabilities.</td>
</tr>
</tbody>
</table>
Table 4: Results of Quantitative study

<table>
<thead>
<tr>
<th>Research question</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the impact of salient organizational controls on sourcing success?</td>
<td>IT Business integration and use of clan controls have a significant effect on sourcing success, use of standards does not have a significant effect. Multisourcing has a significant effect. Organizational controls and configurational characteristics- multisourcing and modularity-explain 35% of the variance in sourcing success.</td>
</tr>
<tr>
<td>What is the impact of these controls on modularity?</td>
<td>IT business integration has a significant effect on modularity, unlike the use of clan controls or standards. Organizational controls explain 15% of the variance in modularity.</td>
</tr>
<tr>
<td>What is the ultimate effect of sourcing success and modularity on business performance?</td>
<td>Sourcing success has a direct and significant effect on business performance. Modularity has a mediated effect on business performance. These variables explain 17% of the variance in firm level performance.</td>
</tr>
</tbody>
</table>

As mentioned earlier, triangulation of results is an important aim of multimethod research design. In this study, we attempt triangulation across case study and survey methods. Webb et al (1966) recommend the use of data from distinct sources and analyzed in different ways to strengthen the validity of results. Given the differing strengths and weaknesses of different methods, such triangulation is expected to reduce threats to internal and external validity (Denzin, 1978). The triangulation could lead to convergent, complementary results or divergent results (Erzberger & Kelle, 2003). In the overall study, we observe each type of result, as shown in Table 5.
Table 5: Triangulation across methods

<table>
<thead>
<tr>
<th>Results of study</th>
<th>Comparative analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convergent results</td>
<td>IT business integration and use of clan controls as success factors of outsourcing.</td>
</tr>
<tr>
<td>Complementary results</td>
<td>Use of selective sourcing, configurations in sourcing for Qualitative; Impact of controls on modularity, ultimate impact on firm level performance in Quantitative study.</td>
</tr>
<tr>
<td>Divergent results</td>
<td>Use of standards as success factor of outsourcing.</td>
</tr>
</tbody>
</table>
The case study suggested that more effective IT business integration, use of clan controls, and the use and enforcement of standards led to success in outsourcing. IT business integration and the use of clan controls are supported in the quantitative study. Case study data help to understand the ‘how’ of these relationships, which are measured in the multivariate model. As discussed in the results of case study, the last column in Tables 2A-E in the second chapter gives additional insight into the phenomenon over and above congruency of conceptualizations. An understanding of business implications (Table 4B in second chapter), for example, helps IT executives to outsource activities that are no longer core to their firm. Firms in the ‘visionary’ configuration looked to add vendors who could take on IT activities that are currently handled internally. In this way, they did not merely depend on the understanding of what is ‘core’ in their firm. They are able to redefine the ‘core’ through their superior knowledge of vendor markets, and blending this knowledge with an understanding of business implications. As shown in Table 4 in the second chapter, we observe convergence of results on these factors.

Case study and survey results are complementary in that they reveal different aspects of the phenomenon of sourcing success. For example, the case study suggests preconditions for selective sourcing, and also a set of configurations that distinguish ‘clusters’ of firm level features on sourcing strategy and success. The links of organizational controls with architectural modularity, and the ultimate effect on firm level performance are tested in the survey based model. In this respect, different methods highlight different aspects of the phenomenon. Given the strengths and limitations of each method, this complementarity enriches the study as a whole. In this respect, the methods relate to different albeit complementary research questions. In particular,
qualitative methods involve the intentionality of the actions of actors, situated in a given context (Erzberger et al., 2003). Quantitative methods aim for statistical generalizability in the larger universe.

**Divergent** results were seen on the use of standards. Although this could arise due to method related weakness, an examination of the methods revealed no clear shortfall. For example, the psychometric properties of the scales used in quantitative study were adequate. These properties test for the convergent and discriminant validity of the scale in relation to other scales. However, it is possible that there are some difficulties with content validity of the scale. In this situation, Erzberger and Kelle (2003) suggest that the researcher “revise and modify the initial theoretical assumptions and draw on further theoretical concepts that have not yet been related to the domain in question”.

Alternatively, the divergences could be considered different aspects of the phenomenon (Bryman, 1988) which is unlikely here. Hence one route would be to look for concepts other than standards, which are able to explain the case study data. Another route would be to limit the operational domain of standards to a single type of standards more germane to outsourcing, instead of a wide ranging operationalization; the survey items currently include Requirements Definition, Enterprise Architecture and testing standards. Yet another approach would be to include use as well as enforcement of standards. All of these approaches are feasible avenues for future research.

### 5. Contributions

A number of contributions are mentioned in the respective chapters. Here, we summarize the key contributions arising from the use of multimethod research. The
studies synthesize the literature on organizational controls with the ‘dependent variable’ of sourcing success. In fact, Kirsch et al. have claimed that there is limited empirical evidence on the link between organizational controls and performance (Kirsch et al., 2002). The research study addresses this limitation on organizational controls. It also adds a layer of granularity to the ‘portfolio of controls’ (Choudhury et al., 2003) that have been seen at the level of behavior, clan and outcome controls. Specification and enunciation of these controls adds to the understanding of ‘portfolio of controls’ (Choudhury et al., 2003). In addition to the well known time and cost controls, there are a number of specific controls that are needed to succeed in large scale outsourcing.

Case study data hinted that architectural modularity is vital to sourcing success. The interviews also suggested different aspects that were amenable to being surveyed as discrete items. This insight helped to devise a new measure of architectural modularity, another contribution of the study. This measure met the requirements of convergent and discriminant validity. As hypothesized, organizational controls not only impact sourcing success; they also add to modularity. Although the results are tentative in some ways, they shed new light on the role and importance of modularity in the context of large scale outsourcing. The study is also the first to link sourcing success with firm level performance. Although there is some bias in the result due to selection of sample outsourcing arrangements that anchored the survey, that did not guarantee the significance of the link. Architectural modularity has a direct effect on firm level performance. However, sourcing success mediates this effect, which is another novel result in our model.
6. Limitations

As explained earlier in this chapter, multimethod research design enables triangulation of results across methods. This triangulation reduces threats to internal validity (Denzin, 1978). Thus, individual study limitations (as mentioned in the respective chapters) are attenuated to some extent. The major limitation of the overall study is the cross sectional research design, and the resulting inference of causality. Variation of model parameters across time and even across firms has been known in management literature (Bowen & Wiersema, 1999). Longitudinal research design, whether qualitative or quantitative, would be the best way to observe the effects of success factors as they unfold with time. However, the phenomenon of outsourcing changes rapidly, which would introduce a confounding element in such a longitudinal research design. Longitudinal research is also subject to attrition and selection related limitations, which would again bias the results.

As compared to ‘quasi experiments’ which collect cross sectional data and control statistically for the ‘causal’ factors, experiments provide a rigorous method for study of effects by varying the causal factors. However, their utility is limited to research on individuals, and groups. As a firm level phenomenon, outsourcing is less amenable to study through experiments. The experimental method also has its weakness. The increase in internal validity is generally gained at the cost of lower external validity.

In view of the following limitations, econometric research using longitudinal data would be a candidate method. Using accounting data, the research method would ‘test’ the effect of outsourcing related success factors, on firm level performance in the
following years. However, this method would be unable to capture the richness and
nuance involved in case study or survey research.

The boundary conditions of our research are “large, strategic outsourcing
arrangements” which are about three years in duration, on an average. In our related
research that involves a secondary dataset of outsourcing contracts, we observed average
length and value of 65 months and 199 million dollars, respectively. While the secondary
data is not equivalent to this study as there is some skew towards large firms, the
contracts in this study would be conservatively in the multimillion dollar range. Hence,
the results might not be relevant to smaller and relatively simple outsourcing contracts.

7. Future research

The results of the multimethod research suggest a number of questions, which
suggest avenues for future research. Starting with the antecedents of sourcing success,
there are a number of factors that are as yet undiscovered. More important, we used a
limited number of salient factors in the model for quantitative research. Although this
leads to a parsimonious model, other factors could add explanatory power to the results.
Post hoc results suggest new conceptualizations of sourcing capability that are best
addressed through case study research. These post hoc conceptualizations could be
examined through additional case study research involving the experience of sourcing
managers in order to conceptualize new capabilities. On the other hand, a wider
conceptualization of standards could have weakened the results. Limiting the research to
specific standards, as well as considering the enforcements of these salient standards,
offers scope for future research.
The links across sourcing success, modularity, and firm level performance were not covered in the case study. Additional qualitative research could shed light on the ‘how’ of these relationships, and help understand the actions that managers can take in their context. Case study results on the characteristics of selective sourcing show a number of firm and environment characteristics that lead to total outsourcing. Finally, the configurations of controllers, architects and visionaries are based on cross sectional data. Longitudinal study of firms would demonstrate the stability of these configurations, and the changes that take place when firms move from one configuration to another. It would be interesting to see the triggers for change in different internal and external contexts.

Given the limitations in cross sectional research design, econometric data using secondary sources would also be an avenue for future research. Dependent variables on firm growth and profitability are well known, and it is possible to link the effects of sourcing success factors to multi-year performance. A large number of extraneous variables could affect firm performance, and confound the relationship. Hence a case-control design would be recommended. In this method, matched or control firms: which are similar to outsourcing focal firms on industry and size, but did not outsource: could provide a control over ‘non outsourcing’ effects. This design would be a strong test of causality that was only inferred in cross sectional methods.
Chapter 2: Building theories of Selective Sourcing and IT Sourcing Success

Abstract
We use the inductive, positivist case study method as described by Eisenhardt, to carry out a field study on the antecedents of success in large scale IT outsourcing. The study involves interviews with Chief Information Officers at successful focal firms, and a leading global vendor. The case study theoretically triangulates interview data with extant conceptualizations of well known constructs to formulate an extended model of success in IT outsourcing. The model consists of four main antecedents: the level of IT business integration, the use of clan controls, the use of standards, and vendor market orientation. The resulting model offers a testable theory of outsourcing success which can be validated in subsequent research. The case study also suggests environmental and firm level predictors for selective sourcing, which has been viewed in the extant research to be superior to total outsourcing, although the conditions that lead to successful selective sourcing are not well understood. Inductively derived configurations of focal sourcing firms suggest gestalts of sourcing related capabilities that are difficult to develop in isolation.

Keywords: Outsourcing, sourcing, sourcing success, configurations, organizational controls, case study.
1. Introduction: Research questions, key terms and research focus

IT outsourcing (herein referred to as sourcing) has been 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 et al., 1995). As shown by the steady growth of IT vendor firms in the US and internationally, there is an increased trend toward outsourcing IT services. According to a research and consultancy firm, worldwide IT outsourcing spending was expected to rise from $193 billion in 2004 to $260 billion by 2009 (Souza, Young, Goodness, & Silliman, 2005). Recent estimates for IT and BPO were $297 billion for 2007. IS researchers have sought an understanding of this phenomenon by drawing on theories from economics, organizational behavior, and strategy (Lacity, 2004). A wide range of research methodologies have been adopted to address research questions ranging from antecedents of sourcing, to the process of setting up of ‘strategic’ partnerships (Ye, 2005). A review of extant research shows that transaction cost economics (TCE) has been the dominant lens (Hui et al., 2001). A large number of papers drawing on TCE have formulated conceptual models and informed empirical work. However, a review of empirical studies that draw on TCE (Nagpal, 2004b) shows that TCE offers limited explanatory power to IT sourcing success to the extent that concerns over production costs overwhelm the empirical findings informed by TCE. In particular, key dimensions of TCE, such as asset specificity, seem to have a limited role in explaining the use and dynamics of outsourcing.

There is some evidence that the well known “firm effects” as testified by differential results of ongoing IT investment (Brynjolfsson & Hitt, 1995) also apply to IT
sourcing: different firms achieve differential returns with the use of similar sourcing arrangements. There is evidence of varying levels of success while using the same set of vendors (Han et al., 2005). In other words, although the ‘market’ including technology and vendors has become increasingly a “commonly” available resource, firms exhibit distinct value adding capability, if and when, they select and combine these resources mindfully. In this realm, researchers have looked at the impacts of IT vendor capability, and the nature of interactions between the buyer and vendor (e.g., relationship quality) (Grover et al., 1996) in explaining differential results.

At the same time, the impact of buyer capabilities has remained under researched, though these capabilities are clearly the most important. Buyers’ interest in outsourcing is driven by the advantages they perceive to accrue to them. There is also some evidence (Ye, 2005) that vendors’ expected gains from outsourcing focus mainly on the short term gains though on the buyer side there is a need to relate these impacts to long term strategic gains. Therefore, we need to draw on the related literature on managing external vendor relationships and tap into the experience of seasoned buyers to delve into the factors that explain the buyers’ success in IT outsourcing.

In this paper, our aim is to identify a set of constructs that can explain variation in the buyers’ success in outsourcing. We solicit them through an exploratory theory generating multi site case study (Eisenhardt 1989). This research approach is warranted because the past literature has not built explanations of successful buyer side sourcing capabilities, and consequently models of their impact on sourcing success. What research has been carried out has used concepts of social capital (Ye & Agarwal, 2003), and is
thus based on dyadic analyses of buyer and seller interactions. Some researchers also have suggested that differential advantages can be gained from alternative outsourcing configurations, as they increase buyer’s flexibility (Tan & Sia, 2006b). Against this backdrop, we seek to study sourcing successful outcomes in relation to buyer’s capabilities, and develop a model of sourcing capabilities that lead to outsourcing success drawing on an exploratory case study.

In particular, we address the following research questions:

1) What are the buyer side factors recognized as salient to buyer outsourcing success by key actors?

2) What are the firm and environmental characteristics that explain the use of selective sourcing, as against total outsourcing?

3) What are the key configurations of successful sourcing arrangements?

The study draws on rich and detailed descriptions of the interactions between various outsourcing activities, their history and the resulting nature and variation among the sourcing arrangements, and uses theoretical generalization and triangulation in addressing these questions to derive a set of propositions that explain sourcing success differences at the buyer side.

The remainder of the article is organized as follows. In the next section, we review the literature on outsourcing and outsourcing success. Research design and data collection, including sampling principles and data analysis methods, are discussed next.
Findings are presented and synthesized in the following sections. Discussion, limitations and contributions conclude the paper.

2. Literature review

2.1. Research on IT outsourcing

A review of the extant outsourcing research shows that Transaction Cost Economics (TCE) has been a dominant lens both conceptually and empirically in the study of the phenomenon (Hui et al., 2001). The antecedents of outsourcing like uncertainty or asset specificity as identified by TCE, therefore, have been of significant interest explaining outsourcing decisions and their outcomes in outsourcing research. TCE assumes that minimization of sum of transaction and production costs associated with IT services consumed by the focal firm is the main rationale for outsourcing. A recent review of TCE related research (Nagpal, 2004b) shows, however, that this theory has limited explanatory power. In fact, the “logic” of production costs overwhelms the role of transaction costs in IT outsourcing decisions. The key constructs of TCE, in particular, its notion of asset specificity, have a limited role in explaining outsourcing decisions. One reason for this can be that TCE may be more relevant in studying monolithic, all-or-nothing outsourcing, or on the spot service contracts. Given the variety of objectives that focal buyer firms need to consider while outsourcing, where cost enters into the decision equation among many other non cost factors like reliability or strategic advantage, such models seem to have limited explanatory power.

Recently, some researchers have emphasized broader IT vendor interactions (e.g., relationship quality) as a criterion for outsourcing success. Surprisingly, at the same time
buyer side explanations have not received similar attention. Yet, these factors remain
critical, because in the end it is the buyers’ perceived business value that drives the
outsourcing, not the vendors. There is also some evidence (Ye, 2005) that the vendor’s
gains from outsourcing are focused on the short term. In contrast, buyers tend to relate
these decisions to their long term gains and their concerns of strategic advantage.

2.2. Outsourcing Success

Several recent articles discuss various approaches to IT outsourcing and its
success (Quinn, 1999; Venkatraman, 1997). One of the earliest, Venkatraman
(Venkatraman, 1997) builds on IT strategy to suggest that the managerial approach to IT,
whether focused on cost minimization or business capability, impacts the choice of
outsourcing approach. One approach toward cost minimization, labeled as ‘cost center’,
is theorized to be different from the management of a ‘value center’ with a different set of
objectives. The move from a cost center to a value center involves a move to an
acquisition of new capabilities needed to succeed in outsourcing. The role of CIO
changes to an orchestrator of sources (external and internal), and the IT organization
becomes an integrator of IT components to deliver “business solutions”. The limitation of
such research is its bi-polar characterization of IT outsourcing arrangements. Most
outsourcing arrangements are neither focused on cost nor strategic value; they need
to address both (Ross et al., 2007).

Quinn’s (Quinn, 1999) list of ‘techniques’ for successful outsourcing emphasizes
results and new services achieved from outsourcing. In order to succeed, a specialized
group of sourcing professionals needs to be established hinting that a unique set of
capabilities needs to be garnered by the buyer firm while embarking on outsourcing. A new C-level executive role called the ‘Chief Sourcing Officer’ (Quinn, 1999), and setting up a centralized Program Management Office also emphasize the need to acquire and hone new capabilities. Similar recommendations have also been put forward by McDougall (McDougall, 2007). Some recent research also emphasizes the positive impact of such arrangements on enterprise level performance (Linder, 2004b). To succeed the firm has to formulate new business models (beyond a contract) and obtain top management support (Linder, 2004a).

In line with this analysis some IS researchers have concentrated on antecedents of outsourcing success driven by the vendor capabilities, or a dyadic view emphasizing service quality (Grover et al., 1996) and partnership quality (Lee et al., 1999). Grover et al (1996) draw on resource dependency theory and transaction cost economics to hypothesize that vendor service quality influences sourcing success. Partnership quality (Lee et al., 1999), in contrast, is a dyadic concept and draws on trust as a measure of partnership quality as an antecedent for outsourcing success.

2.3. Selective Sourcing

Recently selective sourcing has been approached as a fruitful intermediate level of outsourcing that lies between total insourcing and total outsourcing. IS researchers have used the extent of outsourcing as a percent of annual IT budget as a key criterion, with outsourcing in 20-80% range defined as selective sourcing (Lacity et al., 1998). In a study of 40 organizations, Lacity and Willcocks compared success rates across firms grouped on the extent of outsourcing. Selective sourcing was found to be associated with
a higher success than total outsourcing (Lacity et al., 1998); 80-100% extent of outsourcing were classified as ‘total outsourcing’. Low cost available from respective vendors for specific IT services (commodities) was seen as the motivation for the use of selective sourcing. A key limitation of this research was, however, that cost savings achieved through the outsourcing arrangements were defined as the sole criteria for success (Lacity et al., 1998). In general, selective sourcing implies multi-sourcing, i.e., the use of multiple vendors, while total outsourcing is associated with the use of a large vendor. The use of selective sourcing, along with use of a small number of ‘strategic’ vendors, has been the increasing trend (Collins, 2008). It is believed that this move is due to cost and other advantages of selective sourcing over total outsourcing (Lacity et al., 1998). However, there is very limited understanding of firm or environmental factors that affect the choice of selective sourcing, and the success of such outsourcing approach.

2.4. Summary

The literature review suggests that buyer side factors related to sourcing success remain largely unexplored. IS researchers have continued to focus on the dynamic interactions between the buyer and vendor, with special attention placed on vendor service and partnership quality. While these characteristics can improve the buyer vendor relationship, there is a need to study factors that are unilaterally and directly controlled by the focal buyer firm. In this direction, selective sourcing, and the related approach to multisourcing where buyer firms exercises its decision rights has received attention in consulting literature (Cohen et al., 2006) as well in academic research (Lacity et al., 1998). Given that selective sourcing appears to lead to increased sourcing success, this literature suggests that all buyer firms can and should move to selective sourcing.
However, there are reports that a number of firms have struggled to make this shift (CIO, 2003). Hence, there is a void in the literature as regards buyer side factors that influence IT outsourcing success. First, what are the antecedents of sourcing success that are unilaterally addressable by the focal firm. Second, how does selective sourcing lead to improved sourcing success with the presence of firm and environmental factors.

3. Methodology: Data collection and Analyses

Due to the lack of empirical research on buyer side factors that affect outsourcing success, a qualitative theory generating methodology was followed (Eisenhardt, 1989; Yin, 2003). Such methodology is well suited to address ‘how’ and ‘why’ research questions. As the research is heavily grounded in data, it is also based on grounded theory methodology (Glaser & Strauss, 1967). We aim to understand the salient factors that affect outsourcing success in general, and selective sourcing in particular in the focal buyer firm context. As we were interested in recent experience, archival accounts were less relevant. With a view toward achieving maximal difference in the sample, a range of companies of different sizes and industries were contacted. As a result of these contacts, seven focal firms agreed to participate in a set of seven separate case studies organized around top management interview data and some archival data analysis. The interviews were carried out using a semi-structured interview guide developed through a review of literature. In addition to seven ‘buyer’ firms, a leading global IT outsourcing vendor and a leading consulting firm were also interviewed for their perspective on the types of buyer capabilities involved in outsourcing. The consulting firm had a large and successful practice in IT strategy, and also had served as an advisor to large outsourcing arrangements.
3.1. Data collection, instrument and sample

We formulated an interview guide based on literature review of outsourcing including selective sourcing, and general knowledge of outsourcing arrangements. The guide was iteratively refined through pilot interviews to focus on key areas related to the research questions, and is shown in Appendix A. We contacted interviewees from a range of industries and firms to add to the richness of data and enable triangulation across different cases.

Overall our sample included seven focal firms. The respondents were initially approached with a view toward contacting the most senior IS officer in the firm, starting with the Chief Information Officer (CIO). This led us to identify one key informant at each firm (Gamma had 2 informants), generally the CIO. After the initial contact, we were sometimes directed to the next level of IS executive reporting to the CIO who was more knowledgeable about outsourcing. Sometimes, the initial contact (generally the CIO) recommended that a next level executive would be more knowledgeable about the study. This contact method alleviates concerns on the quality of respondents. In this respect, each firm was treated as an independent case. Firms which had done IT outsourcing in the recent past or continued to outsource, were interviewed. A few firms that did not outsource at all, or had discontinued outsourcing, were excluded after initial contact. Hence the interviews were limited to firms with substantial experience in outsourcing. Given their record, they presumably had a relatively high level of current success in outsourcing. We started contacting the interviewees in early 2007, and the study subjects were interviewed at a later date, depending on their availability. The interviews were spread over six months, with the final interview conducted in June 2007.
The actual length of interviews ranged from 40 minutes to one and half hour. Given the limited availability of executives, some of the interviews had to be rescheduled more than once, or spread over more than one day to complete the interview. With the exception of one face to face interview each with a vendor and a focal firm, others were conducted on telephone. In a few interviews, recent documents such as strategic plans and related internal documents were shared by the interviewees. The interviews were held with one respondent at a time, with the exception of Gamma, in which the CIO and Director reporting to him were interviewed together. In firm Chi, a global project manager was interviewed in addition to the division CIO, and provided additional insight into offshore development. The profiles of the interviewees are shown in Table 1.

In addition to these eight respondents from companies which outsourced their IT, one large US vendor (among the largest IT outsourcing vendors in the world) and an American consulting firm were also approached to provide additional perspective, and serve as a check on the company interviews. These vendor and consultant interviewees headed their division/function as regards outsourcing services and consulting, respectively.

The respondents at the vendor and consulting firm were senior managers specialized in outsourcing, and had long experience with onshore and offshore outsourcing. In addition, they had a rich perspective on the outsourcing market and vendor side strategies. Although somewhat skewed toward the advantages of outsourcing, they were relatively open to talk about failures at their client firms. A few firms (not included in our sample) reported that they did not outsource their IT, citing a variety of
reasons. These reasons had to do with the company, their development practices, and their earlier experience with outsourcing. These firms seemed to be a minority, and the rationale and motivation for not outsourcing are beyond the scope of this research.

The respondents were e-mailed a copy of the interview guide in advance of the interview, so that they could familiarize themselves with the contents. The interviews started with a background of each interviewee, and the company. The initial section was meant to understand the business and IT elements of the company, and the interviewees’ career. In order to help the interview, examples were given from recent news coverage on the company. They were asked questions about success factors relevant to their firm and types of outsourcing, and were given some explanation of what we meant by each factor in later interviews. They were asked to support their observations with specific examples to relate the observations to overall interview questions or other responses. They were asked follow up questions, and clarifications in case of conflicting information, to the extent this was noticed and the respondents were able to resolve the conflicts. All the interviews were tape recorded. The interviews were transcribed, and the transcripts were checked against the recordings as an additional quality check. Interviews were supplemented with annual reports and company documentation. The discussion guide is summarized in Appendix A. The case study sample, with the extent of outsourcing, and the characteristics of firms that were interviewed is shown in Table 1.

The salient mention of success factors was recorded for each interview, with relevant quotes also noted separately. These success factors are summarized in Table 2. The firms in our interviews sample were relatively successful, and willing to talk about
their experience with outsourcing. In this sense, the sample could be considered as a set of revelatory cases (Yin, 2003). As regards success criteria for outsourcing, all the interviewees mentioned cost as well as capability related drivers for outsourcing. The question of success criteria was also viewed both from the vendor and the buyer perspective.

3.2. Data Analyses and Validity

As noted, the interviews were transcribed for analyses, and the materials consisted of more than 100 pages. We read the transcripts several times to immerse ourselves in the data, and to align the responses with extant theory and other data points. These steps were carried out within and cross case analyses, with each organization representing a case. In analyzing the interviews, the following steps were followed.

Step 1- Identify salient factors related to sourcing success

Step 2- Look for firm and environmental factors that impact selective sourcing

Step 3- Formulate configurations to explain success and selective sourcing.

Throughout the research process several measures were taken to address main criteria of qualitative research: credibility, transferability, dependability and confirmability (Guba & Lincoln, 1989). As suggested by Guba and Lincoln (1989), these criteria help establish the ‘truth’ in social science research that uses qualitative methods.

Credibility takes into account simultaneous cause and effect, which we recognized in the use and development of controls involved in outsourcing. A number of firms had failed to develop these controls, if (for example) they failed to work with a
given vendor, and then had to try different vendors. The initial failure sets up a vicious circle of trying new vendors repeatedly, while those who succeed initially are able to build on their success. Other than this extreme example, success and controls would be mutual.

Transferability is similar to replicability, in the sense that the reader or consumer of research is given the context with a description of the research sample. In this study, the context relates to the characteristics of firms, and their history, which are presented below before the analyses. Table 1 shows the industry, firm size, and the extent of outsourcing. A similar sample would be able to replicate the results to some extent, given our research methods and instruments. Dependability is closest to reliability, in that the methods of research are described, and it is possible to use the same methods and carry out the research to achieve similar results. Confirmability refers to that fact that all data and observations that are brought to bear can be rooted into the context of data collection. Interviews across several firms added to the richness of data, and allowed contrasts across different types of firms and extent of outsourcing.

4. Study context and sample

Firms included in the study are described next, as to address the transferability criterion, so that the reader understands the context and source of data. As shown in Table 1, the sample covered a range of company sizes and industries. We have also indicated the size of IT budget and the relative share of outsourcing in the firm. In contrast to a statistically representative sample, the objective was theoretical sampling (Eisenhardt, 1989). The sample firms were successful in their current outsourcing
initiatives; however, the cases also represented some variety with respect to size and industry. This was done with a view to attaining maximal differences across firms. In addition, given the difficulty of reaching senior executives who had hands on experience in large scale outsourcing, the availability of sample is subject to the cooperation of interviewees. The sample is described next, to aid the understanding of the results of research. Given the objectives of research, the reporting is somewhat selective, as the executives gave background information about their organizations and how they arrived at the specific situation as regards outsourcing. The range of functions outsourced was not given as much attention in line with extant research on outsourcing. Notably, all firms outsourced application development. Also, limiting the sample to outsourcing to specific functions, say application development, would have made the contacts even more difficult. The profiles of seven firms are given in Appendix B. The description is expected to aid the replicability and interpretation of results.

The research aims for theoretical generalizability (Eisenhardt, 1989). Therefore we followed purposive sampling which aims to increase rich theoretical insights about typical successful outsourcing situations. To this end we tapped also into the senior level experience of respondents within successful large firms, which represent state of the art in their outsourcing practices. The companies cover a wide range of outsourcing situations in terms of size, industry, and extent of outsourcing as shown in Table 1. IT budgets varied from about $ 40 million to $ 500 million, in line with size of the firm and other strategic factors. There were also differences in the extent of outsourcing, which ranged from minimal to total outsourcing. In this respect, the firms were typical of Fortune 500 firms in the United States, with representation from different industries and
firm sizes. Service as well as manufacturing firms were represented in the sample. The individual cases are described in more detail in Appendix B in line with the transferability criteria.

5. Findings

In this section, we present findings from the interviews. The findings are organized in line with research questions that motivated our research. Section 5.1 covers success factors in outsourcing. Section 5.2 organizes firm and environmental features related to selective sourcing. Section 5.3 synthesizes alternative outsourcing configurations among firms by using pattern matching based on the profiles of the case study sample.

5.1. Identify salient factors related to sourcing success

The salient success factors were solicited from each interview, by identifying quotes that ascribed to some success factor. This list was maintained and expanded separately and independently as we moved along in the data analysis by identifying similar success factors or categories of success factors that could be grouped together. A range of factors was overall identified by the interviewees and they were finally labeled through a comparison with the extant studies in IS and management. Table 2 shows the interviewee firms, the extent of outsourcing in terms of selective and total outsourcing, and the individual success factors related to outsourcing success in each firm. The success factors were grouped into three categories: internal, vendor related, and external. The first set of factors related to internal capabilities and interactions within the focal firm. The second set of factors was seen as key to better interaction with vendors, and
effective management of outsourcing. External factors related to monitoring the external market and technologies. These groups are discussed, followed by the key themes that were seen as salient to success in outsourcing.

The first set, internal factors, related to internal knowledge and capabilities in the firm. This included two major sets of factors: integration and understanding of business issues, and an expertise in technologies and development related skills. The former was seen as more important, given the number and variety of quotes in the interview data. This included an understanding of what was ‘core’ to the firm (and hence could not be outsourced), leveraging of technology in a given industry, and understanding of the business rationale for investment in technology. The second set included a large number of factors relating to day to day working with vendors, as well as high level alignment. The former included well known skills such as contract and project management. Less well known aspects were the facilitation of ‘single organization’ through informal interactions with relevant vendor employees. Large scale outsourcing was seen to involve the use of Enterprise Architectures and other standards in order to synchronize outsourced elements with the overall IT strategy and implementation in the firm. The final set of factors involved monitoring of vendor landscape and cautious experimentation with new technologies. The use of consultants and market research firms was common, while networking with CIOs and similar organizations was also mentioned. Cautious interest in new technologies was seen to be somewhat related to use of outsourcing, and less to success in outsourcing. Overall, the final category was seen as relatively less important to sourcing success as compared to internal and vendor management categories.
Based on the content analysis of the three groups of success factors, four key themes emerged concerning antecedents of outsourcing success. These were named as: 1) IT business alignment, 2) Clan controls, 3) Use of Architectural and IS development standards, and 4) Vendor market orientation. These specific themes have not been related to sourcing success in extant research. We will use illustrative quotes to discuss and highlight each theme. At the same time, we will compare the themes to the literature in organizational controls and IT business strategy. We compare the explanations provided by actors to existing conceptualizations from the literature, rather than proposing entirely new conceptualizations. This approach establishes construct validity of themes (Eisenhardt, 1989). The use of existing constructs would also enable the use of validated instruments to test the proposed model in future research. In Tables 2A to 2E, the respective quotes on each theme are compared with extant conceptualizations from the literature. In line with positivist case study approach, we start with the dependent variable of sourcing success.

### 5.1.1. Sourcing success

As shown in Table 2A, there were a number of observations of the key facets that define sourcing success. These quotes were also in line with prevailing conceptualizations within the literature. Overall, the table serves as evidence of construct validity (Eisenhardt, 1989). In addition to creating a correspondence across interview themes and extant conceptualization of sourcing success (Grover et al., 1996), the data also suggests additional facets of sourcing success as understood by the focal actors.
These are shown in the right most column of Table 2A. A focus on the core, for example, implies the logic of divestment.

Sourcing success was mostly defined as the extent of fitness between the client requirements and expectations and outsourcing outcomes. The interviewees from six firms mentioned criteria other than cost minimization in their judgment of ‘success’ in outsourcing. These criteria involved enhanced IT competence, increased access to skilled staff, increased control of IS expenses, and increased access to key information technologies.

In addition, each firm’s business objectives seemed to determine their set of relevant success criteria for outsourcing. In general, larger firms articulated clearly the additional non cost criteria that defined their sourcing success. They were also more creative in setting and addressing these additional criteria. For example, Ksi involved the vendor in its CMMI transformation effort.

*Other than cost, and productivity improvement that outsourcer committed to us, the outsourcer improving and stabilizing the day to day processes that we use, they’re helping us by the way with a CMMI transformational effort we are using the same (vendor). [Vice President, Enterprise Solutions, Ksi]*

As shown in Table 2A, interview data cover a number of facets of the extant conceptualization on success in outsourcing (Grover et al., 1996). This includes a focus on the elements of business that are seen as ‘core’ through direction of IT investment to focus areas. Outsourcing was also expected to provide enhanced IT competence, and increased access to skilled workers. Better control of IS expenses and reduced technology
risks were achieved through the use of outsourcing. Large vendors could also provide access to new technologies.

5.1.2. Factors affecting sourcing success

We next move to the drivers of sourcing success as viewed by respondents, having achieved the construct validity of sourcing success as the dependent variable in case study research. To this end we content analyzed the categories mentioned earlier, and arrived at three themes. These themes were compared to the extant IS and management literature to ‘match’ them to established conceptualizations. As with sourcing success, we carry out a detailed comparison of the respective theme from interviews with item level features of the proposed conceptualizations to justify our choice. In addition to establishing the construct validity, this procedure helps establish the internal validity between the antecedents and sourcing success (Eisenhardt, 1989).

5.1.2.1. Success Factor I: Improved IT Business integration

The findings on this theme matched with the need for improved IT business integration. This is defined as the ability of IT professionals to act as a business problem solver, and to integrate IT with business capability (Bassellier & Benbasat, 2004). Alignment of IS goals and strategies with the overall business level strategy is implied in this conceptualization. An understanding of IT’s role in business, ranged from the leveraging of technology in healthcare (Upsilon) to an understanding of what is essential to the business (Kappa). The following quotes illustrate how the respondents viewed IT business integration in the context of outsourcing.
IT executives working on outsourcing needed to understand the role and contribution of the various components of the IT function. This understanding was described as juxtaposing “core versus context” (Kappa) and an understanding of the needs of the firm (Chi) as to what and how much to outsource.

*We lend value to the business, understand the business. We have... determined that help desk or call center activity is no longer core to our IT organization.* [CIO of Kappa]

*So basically they (IT and business plan) have to be aligned together, and what happens is, the business says, here are the IT things to accomplish in the next three years, (they) provide to us and then IT provides service plan on the same lines...then IT and the business both take a look, say this is what we’re trying to accomplish, how are we going to do it, in terms of people and resources, and that kind of leads to...how much should we be outsourcing, what areas to outsource, in order to meet our additional objectives that we have.* [Global Project Manager at Chi]

As shown in Table 2B, interview data are in line with the extant literature. The table serves as evidence of construct validity (Eisenhardt, 1989). In our interviews, respondents speak for the firm as a whole, and address (for example) the ‘how’ of IT alignment. In addition to IT-business alignment, they suggest a trilateral alignment of IT, business, and sourcing strategy. “Additional” objectives in the above quote imply resources that were beyond internal IT resources, and hence a clear strategy is needed as to how outsourcing would add to those internal resources.

IT business integration was carried out through a number of governance methods. The interviewers mentioned governance in general, and also identified specific groups that were key to alignment. These concepts were used quite synonymously in the
interviews. Enterprise Architectural Group was seen to have improved integration at the business process level in Chi.

_This starts (at the top)… CIO participates in business leadership team. CIO Council connects the strategic vendors to the heads of operating companies (divisions)... (to understand) what (will be) the future state and how do we leverage them more. So this is one aspect, vendors will come to talk to each of the operating companies directly._ [CIO of Chi]

_Enterprise Architecture Group was set up few years ago...has also led to...more integrated business process._ [CIO of Chi]

Although value center approach by Venkatraman (1997) recommends linking business strategy with outsourcing strategy based on some exemplary firms, his model does not make a prediction regarding sourcing success. In this respect, IT business integration has not been directly linked to outsourcing success in the past IS literature. In contrast, the interview data suggest that IT business integration (Bassellier et al., 2004) and related set of capabilities are instrumental for successful outsourcing. In Table 2B, we also delve into ‘how’ of outsourcing success, over and above a juxtaposition of quotes. This provides some evidence of internal validity (Eisenhardt, 1989) as to how IT business integration is linked to sourcing success. Hence, we propose

\[
P1: \text{Greater IT-business integration is associated with increased sourcing success at the focal buyer firm.}
\]

5.1.2.2. Success Factor II: Use of Standards

Standards can be defined as “a set of technical specifications adhered to by a producer, either tacitly or as a result of formal agreement” (David & Greenstein, 1990). Use of standards, particularly concerning Enterprise Architecture, was seen by
interviewees as a salient feature to interface systematically IT capabilities and their needs across buyer and vendor firms. In addition to Enterprise Architecture, development methodologies (Chi, Mu, and Foo), integration and testing (Gamma) standards, were seen instrumental to sourcing success. The need for being generally selective on standards and avoiding their proliferation, both in the internal and vendor organizations (Gamma), was also mentioned.

[Table 2C here]

Across a number of firms, the use of standard Architectures, most commonly coined as Enterprise Architecture, was seen as a key capability to integrate the vendor side IT service with that of the focal firm. Although roles and levels of the architect varied across firms, it served as a governance and coordination mechanism throughout the firm that was enabled by the use of common terms and data and process standards. The architectural review process started at the design phase itself (Chi).

*Architecture Group is in the same overall group as Strategy and Planning. Few years ago we really didn’t have anything like Architectural group per se, (then) we recognized as a company, to have integrated business partners, I mean that’s why we start beefing up the Architectural group, they have a high level business blueprint, and IT Architecture needs to be aligned, (so) there is business architecture, process architecture, technology architecture, so all of them need to link together… [CIO of Chi]*

At Ksi, Enterprise Architects managed the development lifecycle at a high level.

*Enterprise Architecture team is responsible for standards, and also responsible for managing the life cycle of applications. [Vice President, Enterprise Solutions, Ksi]*

Other standards included development methodologies (Chi, Mu, and Foo), which were required to be uniform across the buyer and vendor sides as to coordinate
development behaviors. In addition, it was also important to enforce jointly these standards with the in-house developers.

“We are being certified as the CMM level x for the organization, and same (development) methodologies that are used by all the groups whether they are onshore or offshore. [CIO of Mu]

“We are using a web standard...XML based standard that is the glue if you will. Interoperability is not an issue, as long as we have laid out the standard, that all people (in and outsourced) need to live by. [CIO of Foo]

As shown in Table 2C, a number of standards were mentioned, in line with conceptualization in the literature (Zhu, Kraemer, Gurbaxani, & Xu, 2006). The table serves as a limited evidence of construct validity (Eisenhardt, 1989) as the construct is not very well defined in literature. A variety of standards that were seen as important in the outsourcing context were articulated in the interviews. An additional insight is that consistent enforcement of standards across the vendor organization is also important. Hence, we propose

P2: Increased use and enforcement of enterprise and development process standards is associated with increased sourcing success.

5.1.2.3. Success Factor III- Clan controls

Clan control has been defined as “a mode of control in which the vendor liaison becomes part of a project team clan by instilling, embracing, and fostering shared values and goals among the project team, and common approaches to working on the project” (Kirsch et al., 2007). In addition to typical time and cost targets and related service level agreements, several informal ways were used by the focal firms to control outsourcing
performance. This was achieved in the form of informal contacts with vendors (Gamma, Chi), use of Special Interest Groups (SIGs) across the buyer and vendor (Gamma), frequent interaction across the senior levels (Upsilon), cross firm teaming (Mu, Chi), cultural training (Ksi), and with the idea of “single organization” (Upsilon). This parallels with the use of informal controls in controlling the vendor’s behaviors and is in line with the notion of clan controls (Kirsch et al., 2007). In the following, we illustrate the use of clan controls among studied firms.

[Table 2D here]

The capability to influence the vendor through teams and groups that extended across the firms was the most common. These groups were both consciously developed by the firms, or in some cases, developed from the grass roots.

_We have a SIG on Project Management…that is perhaps the most popular…across the vendors [CIO of Gamma]_

_On a daily basis, it is the Deputy CIO at our company working with the Account Executive at the vendor to make sure they operate well, and then we have service level that is reviewed monthly… [CIO of Upsilon]_

_Cross firm teams were not easy to set up, however they were key to ‘non cost’ advantages such as speed and quality. In Chi, teams included representatives from the relevant business, in addition to IT and vendor._

_(We have) coding, design, development, and I have coding and design offshore, so they are an integrated team. They are virtual teams, it’s a challenge to set up, manage, but you get productivity and better quality product. [CIO of Mu]_

_One of the things we do is we always do projects with cross functional teams, so that means you always have business representatives, you always have an IT representative, and you always have a vendor representative, so our projects and support_
are consistent that we have all three groups represented always. [Global Project Manager at Chi]

Along with the use of offshore vendors, and sometimes even with local vendors, the firms went to great lengths to overcome the cultural issues across firms. This seemed to be more important in total outsourcing as well.

We...have training you call cultural awareness... to help (our) US based IT team so that we can understand offshore culture, (and) also that outsourcer understand our culture, (so)it is easier for us to work together effectively. [Vice President, Enterprise Solutions, Ksi]

Yes, our approach is to play down the fact that they are from a different organization, look at our organization as a single IT organization, and that has been the biggest help, so we treat each other as if we all work for company, we do a lot of cross training and so people would know how to do some of their jobs and we know their jobs...[CIO of Upsilon]

As shown in Table 2D, there were a number of similarities in our observations with the past literature on organizational controls of IT services (Kirsch et al., 2007). The table serves as evidence of construct validity (Eisenhardt, 1989). The interview data in the table also suggests additional nuances in the use of clan controls. Use of common approaches to Project Management, for example, was seen as important in global projects. A high level of cultural awareness was used by Ksi to help US and offshore teams work more effectively.

Surprisingly the use of clan controls has not been linked to outsourcing success. In Table 2D, we compare data from interviews with key characteristics of clan control (Kirsch, op. cited). In addition, we delve into ‘how’ of their link with outsourcing success. Although informal controls are seen in the use of total outsourcing, selective sourcing and outsourcing to gain new capabilities are particularly relevant contexts for the use such controls. Similarly, development of specialized software in which the buyer
and vendor pool their employees and knowledge assets would need these informal
contROLS, as SLAs and price would be inadequate to successful coordination. Hence, we
propose

\[ P3: \text{Increased use of informal controls such as clan controls is associated with}
\text{increased sourcing success.} \]

5.1.2.4. Success Factor IV: Vendor market orientation

The final set of factors relate to vendor market orientation, analogous to market
orientation (Jaworski & Kohli, 1993; Kohli & Jaworski, 1990; Kohli, Jaworski, &
Kumar, 1993) in literature. In a seminal paper, Kohli and Jaworski (1990) redefined the
concept of marketing around three key activities of intelligence generation, intelligence
dissemination, and responsiveness. Market orientation is defined as “organization wide
generation of market intelligence pertaining to current and future customer needs,
dissemination of the intelligence across departments, and organization wide
responsiveness to it (italics in original) (Kohli et al., 1990). A number of success factors
in outsourcing paralleled market orientation, albeit with a view toward vendor markets
and ‘external’ landscape of outsourcing. However, these success factors were limited to a
small subset of firms, viz., Chi, Ksi, and Gamma. Table 2E compares the interview
responses with analogues of Kohli et al (1993). The latter are ‘vendor side’ analogues of
customers and markets. In general, an “understanding of the external landscape” was seen
as a key success factor, as per the CIO of Chi.

[Table 2E here]
The elements we observed for vendor market orientation mainly related to intelligence generation (Kohli et al., 1993), rather than intelligence dissemination and responsiveness factors. First hand meeting with vendors, and direct interaction of non-IT executives with vendors were seen in all three firms.

*IT leaders in different geographies meet with...Indian and East European vendors. [CIO of Gamma]*

*CIO Council connects the strategic vendors to the heads of operating companies (divisions)… (to understand) what (will be) the future state and how do we leverage them (more). So this is one aspect, vendors will come to talk to each of the operating companies directly. [CIO of Chi]*

*Underlying IT leader manages the relationship with the outsourcer. [Vice President, Enterprise Solutions, Ksi]*

Market research activities were an important part of vendor market orientation, similar to market orientation (Jaworski et al., 1993). Both formal and informal research activities were used, although Chi had a rich mix of vendor research activities.

*If you’re talking about procurement we do a formal process where we have our categories that are types of services as I mentioned earlier, and basically every year we go in and update our market research information, for that category…e.g., ADM is a category. [Global Project Manager at Chi]*

*We have a grid of information (on what) the suppliers are offering...they are doing business with a company, so that if something new comes up, here we have the information. If something repeat comes up, we have the information. [Global Project Manager at Chi]*

Finally, Chi attempted to match these vendor markets to well defined outsourcing needs at the firm. In this respect, Chi showed the largest number of features of vendor market orientation.

*The first essential part of knowledge is the market knowledge and keeping pulse of market, trend, needs, and availability of the suppliers and capability. The other*
‘knowledge’ is that they have to have an extended knowledge of best practices, and you know a kind of like world class processes that you can apply to your outsourcing-benchmarking, metrics, what kind of service level agreements they have. [Global Project Manager at Chi]

Market orientation explains the drivers of customer focus and market intelligence. In a comparable sense, vendor market orientation would impact ‘vendor focus’ and vendor market intelligence. We conjecture that vendor market orientation would be related to long term success in outsourcing. We did not discern clear differences on current sourcing success across the sub group of firms which displayed vendor market orientation (Chi, Ksi and Gamma) and other firms which were also successful (Kappa, Mu and Foo). This suggests that vendor market orientation does not have a strong short term effect on success in outsourcing. Although only longitudinal research could discern these effects, we propose that vendor market orientation would have a clear effect in the long term.

**P4: Increased vendor market orientation is associated with increased long term sourcing success.**

### 5.1.2.5. Other success factors

As seen in Table 2, several other success factors were mentioned. However, they were seen as less important. These success factors included internal technical skills (as seen by Kappa and Gamma), and the recognition and management of required internal IT skills during requirements definition and analysis (Gamma). Well known skills such as contract management, were also seen as related to sourcing success. Somewhat less salient was the role of onsite vendor staff as boundary spanners (Chi). However, these factors were mentioned less frequently and seen as less important, as compared to the key
themes discussed earlier. They are also less coherent, and difficult to organize into clear themes. This assertion is supported by the clarity as well as number of quotes on the use of key themes, as compared to these ‘other’ success factors. However, they do draw attention toward a number of less common ‘routes’ that successful outsourcers have taken, to discover and work on the success factors that are relevant to their context. In other words, the ‘other’ success factors are more closely related to the firm context, its history and IT organization, and lack the generalizability of key themes. In view of the interviewees’ knowledge and insights, IT business integration, clan controls, use of standards, and vendor market orientation were recognized as the salient and generalizable factors for success in outsourcing.

5.1.2.6. Vendor side perspective

The vendor interviews provide additional perspective on buyer’s outsourcing success as seen by the vendors. As expected, vendors generally talked about limitations and shortcomings among buyers that prevented them to achieve success, rather than the buyer’s success factors per se. Vendors seemed to be averse to what they saw as ‘micromanagement’ by their clients. This was seen in the clients’ continuing to use an ‘insourcing style’ even after outsourcing their IT functions. These vendor’s reactions (large US vendor) suggest that managing the outsourcing activity is very different from managing regular insourced IT activities. Hence, outsourcing needed a different style of management on part of the clients. In some ways, this also suggests the role of clan controls, which are less ‘hands on’ and guide vendor activities through high level social and cultural ways.
The other thing that they have to determine, these companies is if they are trying to outsource, then the outsourcing provider really takes ownership of actual management of all that and so it becomes a service. (They should ensure that) I’m not resisting that and these companies trying (to still) ‘manage’ the work (even after) the work is moved to outsourcer... the role inside the companies is really different and much narrowly focused and they become a customer, so they are focused on (the same things), from that angle, but I don’t think they have...the capabilities. [Global Head of ADM, large US vendor]

To some extent, this vendor observation is supported by a few buyer responses. Some buyers reflected on the differences in managing of outsourced IT work when compared to its insourcing. There was some realization that governance changes were required, although this was specifically mentioned at very few firms. This meant that buyers had to make changes in their ‘regular’ ways of working with IS development teams.

*When everything was inside the firm, analysts or users could interact more informally, and the style was “let’s talk”. Now the vendor, who is CMM5 level, needs clear and specific requirements from our analysts...so the requirements definition has become tighter”* [CIO of Gamma]

The observations are supported by the need for writing tighter requirements and better documentation (Chi) so that vendors are able to use their standardized development methodologies. These buyer and vendor accounts support the role of standards in case of application development outsourcing, as shown in Table 2C. It seems that highly successful firms were clearer on their enforcement of standards within their own firms. This supports the proposition on the use of common requirement definition standards, and their enforcement within the focal firm, in Table 2C.

Large vendors were clear in that they needed to link buyer’s IT and business perspectives to add value to the buyer in outsourcing. Not surprisingly, the vendors articulated their criteria well, given the vast experience they had with a variety of clients
and outsourcing arrangements. In particular, the vendors started each engagement by analyzing the business value and contribution of IT and business activities underlying outsourcing.

*The lowest cost way to do something is not to do it at all, find a way to eliminate that activity, so productivity has a very broad definition. So if there is reengineering, that is the idea...there is a series of improvements involved. In a typical (outsourcing model, the client has functions that exist inside the company, organized a certain way, and they have certain costs and methods, whatever the labor mix. As part of the outsourcing, we change all of them, so we change from their unique methods, tools, etc. We bring this to much more standardized and 'best practice' approaches to reach outsourcing (model) we have, based on our experience, and scale.* [Global head of ADM, large US vendor]

The vendor stressed a thorough review of IT and non-IT activities as were currently used in their client firms. This was intended to suggest new ways of handling activities, and sometimes, removing activities altogether. This link to business value, rather than wholesale movement to the vendor end, was seen as a strong selling point by the vendor. This supports the proposition on IT business integration as a success factor.

Hence, the vendor data supports and strongly triangulates the propositions derived from buyer interviews on IT business integration and the use and enforcement of standards.

**5.1.3 A Synthetic Model of Sourcing success**

Based on the propositions 1 through 4 identified in the previous section, we can articulate a model of sourcing success as shown in Figure 1. In this model, IT business integration, clan controls, and use of standards serve as antecedents of sourcing success. Although additional antecedents of sourcing success can be added, theoretical sampling and saturation with our data suggest that this will yield only marginal improvements in
the model (Yin, 2003). It is possible that there are alternative conceptualizations that could ‘fit’ the interview data well, and serve as alternative models; note that different conceptualizations could have been chosen from existing conceptualizations. Hence the model represents one plausible explanation of outsourcing success. However, the selected conceptualizations are well supported by interview data. Overall, the proposed model is novel, testable, and empirically valid (Eisenhardt, 1989). Its novelty springs from the insights gained from field study which are different from the explanations of outsourcing success proposed in the extant research literature (Grover et al., 1996). The model has construct validity because detailed interview data were compared in detail with proposed constructs. In addition, the propositions provide evidence of internal validity (Eisenhardt, 1989) in that they allow us relate these constructs in a causal manner. Anecdotal and serendipitous comments allow us to build richer theory. This theory can be tested in the subsequent research, and we have some initial evidence of its validity (Nagpal, 2009).

Unlike explanations that are based on Transaction Cost Economics, it would seem that learning in general, and learning to handle the limitations that arise due to asset specificity, is an important element of this model. While IT business integration and vendor market orientation could involve some learning, clan controls are the key candidate for learning effect. Communication of ‘host’ firm values to the vendor, and gaining influence through a common vision, are more difficult as compared to the use of time and cost controls. Outsourcing managers at the focal firm would need to experience a number of projects and vendors, to gain some judgment and practice of the ‘how’ of
these valuable skills. However, once they gain this experience, it would be visible in their day to day use of clan controls.

Figure 1: Antecedents of Sourcing Success

5.2. Firm and environmental factors in the choice of Selective sourcing

In view of the success (Lacity et al., 1998) and increased use of selective sourcing (Collins, 2008) it appears that selective sourcing is a superior outsourcing strategy when compared to total outsourcing. So, the question arises, as to why certain firms are able to become successful selective outsourcers, while others are limited to total outsourcing. One reason could be the mandate from top management, which seeks to minimize the role of IT in the firm to a utility; this underpinned much of the original rationale for IT
outsourcing. In this scenario, IT managers have little incentives to develop capabilities for selective sourcing. However, given the obvious advantages of selective sourcing (Lacity et al., 1998), this is unlikely to be the case. This suggests other factors affect the choice of the outsourcing strategy. We consequently formulate propositions associated with firm and environmental factors that explain success in selective sourcing.

5.2.1: Scale and Scope of IT Organization

Sample firms varied in the size of their IT budget, as shown in Table 1. The respondents were also asked about the extent of outsourcing, and the scale of outsourcing was estimated from these foregoing numbers. In addition, the scope of IT organization varied widely. Upsilon had a small staff of internal IT employees. When compared with Chi or Gamma, the size and scope of IT organization at Upsilon was small. These differences suggest that large scale and scope of IT organization in the firm is related to selective sourcing. Notwithstanding mutuality of the relationship, in that total outsourcing might need a smaller internal staff, comparing across similar sized IT organizations in Kappa and Mu suggests that there is a threshold size requirement for the selective sourcing. Hence, all else being equal, a large internal IT organization which can handle a larger number of IT activities, from coding to project management, is more likely to use effectively selective sourcing. Hence we propose

**P4: Large scale and wide scope of internal IT organization is more likely to lead to the successful use of selective sourcing as compared to total outsourcing.**
5.2.2. Inter-functional linkages within the firm

There were a number of inter-functional critical linkages among firms using selective sourcing. For example, IT outsourcing was a joint endeavor of IT and Global Procurement functions in Chi. There were also mentions of Supply Chain function being able to offer expertise to the IT function in other firms. However, staffing and operating IT outsourcing as a “Centralized Procurement Group” was unique to Chi. The centralized group was a small, global group dedicated to IT procurement. The group was staffed with “IT people with training on the procurement side” according to the CIO of Chi. These procurement experts were dedicated to management of existing vendors and development of new vendors. The former included sourcing managers dedicated to large vendors, which serviced multiple functions or geographies for the firm. Other sourcing managers continuously looked to develop new vendors, mostly in offshore locations. The sourcing managers’ responsibilities included “full lifecycle management” of the vendor, according to an interviewee who worked in this central group. The group identified new vendors, negotiated contracts, and ensured some compliance. They also served as vendor representatives to their own firm, ensuring (for example) that the vendor was paid on time. In addition to IT and procurement, they were trained in project management. In addition to working with current vendors, they were charged with current market knowledge through extensive travel. They were also trained in Global Procurement methodologies. Hence we propose

\[ P5: \text{Inter-functional linkages of IT within the firm, particularly with Purchase function, are more likely to lead to successful selective sourcing as compared to total outsourcing.} \]
5.2.3. Vendor availability

Intuitively, it would seem that all vendors would be available equally to all buyer firms as long as they pay market rates. However, case data suggests that issues of vendor availability have an impact on sourcing strategy. As seen with the experience of Chi in particular, large size and global scope of the IT function helped the firm to access a larger number of vendors, both domestic and offshore. In this respect, it is plausible that large scale and scope and inter-functional linkages lead to higher vendor availability. Large scale and global scope are also attractive to large vendors, as it allows them to leverage their global scale. Similarly, inter-functional linkages help the focal firm to handle the vendors successfully. Hence these factors improve vendor availability, while the sheer availability of vendors enables selective sourcing. In contrast, firms such as Upsilon mentioned that a small set of vendors were available to the firm. As Upsilon was limited to working with a small set of vendors, it was difficult to carry out selective sourcing.

**P6: High vendor availability is more likely to lead to selective sourcing as compared to total outsourcing.**

5.2.4. Institutional pressure

Institutional pressure constrains the firm to certain strategies and structures as they have a pressure to comply to other organizations buy copying their behaviors (Scott & Meyer, 1991). Often such organizations are seen to be successful, even without understanding the reasons for their success. One firm, Upsilon, was under such strong institutional pressure with its outsourcing. The decision to outsource was taken by a firm level committee, with the help of a consultant. In the interviews, the acknowledgement
that “we knew…we have to outsource everything” suggests that the firm was trying to copy other firms seen as successful in their outsourcing initiatives. The involvement of a large committee with executives having little involvement in IT, also suggests high level of institutional pressure.

*We knew because of the four objectives for us, that we have to outsource everything, we came to that conclusion. The people involved were the CFO, the CIO, the chief operating officer COO, and some other executives that have broad responsibility, like supply chain, so they was very high level committee that make the final decision.* [CIO of Upsilon]

When these choices are made in the context of outsourcing, consultants tend to be carriers of the dominant institutional practices and beliefs (Nagpal & Lyytinen, 2006). In case of Upsilon, the committee that decided on outsourcing was ultimately jointly headed by the CIO and the Chief Executive Officer.

*When the decision to outsource was made, there was not really an existing structure, so the executives I mentioned came together with a consultant to help them, and together made a decision. Since that time, we have a much more formalized governance process we use at this point to make decisions. So now we have an IT steering committee, and if we were to make (a decision), when we decided to extend the contract in x (year) that was done through this committee. I chair the committee along with the CEO, and the committee has the C suite, the CEO and the whole C Suite.* [CIO of Upsilon]

The lack of formalization at the early stages also suggests the impact of institutional effects. Hence we propose

**P7: Strong institutional pressure as regards to outsourcing is more likely to lead to total outsourcing as compared to selective outsourcing.**
5.2.5. Historical failure in insourcing

Although all the firms in our case study had been successful in recent years, one firm talked about its failures in the past and their impact in their outsourcing strategy. The CIO of Upsilon referred to problems in the earlier years which involved a high level of dissatisfaction with IT, when it was wholly in-house. This was followed by a limited and selective outsourcing, which resulted in higher level of dissatisfaction among business units. At that stage, the firm went for total outsourcing. Although the reasons and outcomes of the intermediate stages are not very clear, it seems that there were difficulties in the IT integration solutions within the “semi outsourced” environment. In this respect, historical failure in insourcing and related selective insourcing serves as a good excuse by the top management to outsource totally. Hence we propose

P8: Historical failures in in-sourcing and/or outsourcing are more likely to lead to total outsourcing or insourcing as compared to selective sourcing.

5.2.6. Synthesis of findings on Selective sourcing

This concludes our findings on the second research question, viz., firm and environmental characteristics that lead to selective sourcing. The findings are summarized in figure 2 below and surface a number of characteristics for successful selective sourcing. The scale and scope of the IT organization, and its inter-functional linkage are important. Both these factors improve also vendor availability. In contrast, failures with insourcing can frustrate top management and lead to increase outsourcing (or vice versa). Typically total outsourcing is accompanied with the reduction of critical in-house IT capabilities, justifying even more outsourcing. Ultimately, selective sourcing
is out of reach as there are hardly any critical IT capabilities left in the firm to make informed choices and control the vendor behaviors. This is a vicious circle that can be difficult to break. Hence, firms need to review their long term IT strategy and analyze various options before embarking on total outsourcing. Although there is evidence of the increased sourcing success, when selective sourcing is employed, it has also been assumed that nearly any firm can derive advantages that flow from it. Indeed, consultants have strongly and one-sidedly recommended selective sourcing (Collins, 2008) with a limited understanding of the constraints that a number of firms face. However, our model suggests a much more complex set of interactions between the focal factors. Finally, we observed a number of institutional pressures toward total outsourcing or insourcing also promoted by consultants and vendors (Nagpal et al., 2006).
Figure 2: Antecedents of Selective sourcing (versus total outsourcing)

5.3. Outsourcing configurations among Firms

In this section, we formulate configurations of outsourcing arrangements among the firms on the basis of observed differences in sourcing success and the use of selective sourcing. These descriptive clusters are derived from case analyses and pattern matching
as tabulated in Table 3 with a view to uncover holistic patterns of strategies and factors affecting outsourcing success in line with configuration research (Miller, 1986). These holistic patterns are composed of a number of interlocking features, each of which is related to and partly determined by other characteristics. A well known example is Miles et al configurations of strategy and structure (Miles, Snow, Meyer, & Henry J. Coleman, 1978). A key feature of configuration analyses is that a strong interlinking across firm level characteristics is assumed, in that the characteristics cannot vary independently. This differs from contingency theory, which treats each contingency as relatively unconstrained, and allows any combination of contingency “values” to exist as an aggregate. Thus, contingency theory allows a number of independent propositions that specify the relationship of features in isolation from each other. Configuration theory assumes, in contrast, mutual causality, and focuses on the emergent features among various configurations.

A number of factors were selected to organize the cases drawing on the analyses on sourcing success and selective sourcing. IT Strategy was regarded as a key driver of outsourcing configurations. Similarly, the extent of globalization had been mentioned in the interviewees’ descriptions of the intra company and vendor interactions. IT structure within the firm was analyzed based on its level of bureaucratization and centralization. The salient antecedents of sourcing success, and the extent to which they were used, were also compared as shown in Table 3.

Based on these analyses, we identified three outsourcing configurations, as shown in Table 3A. These configurations differ in extent of outsourcing, whether selective or
total, and the influence of success factors in selective sourcing. Firms which did not outsource selectively were deemed as Controller configuration. In this configuration, Upsilon had attempted selective sourcing, and did not succeed. Although all firms (except Upsilon) claimed to have succeeded in selective sourcing, we judged three firms which showed a more varied set of success factors across internal, external and vendor management categories, as shown in Table 2, to be relatively more successful. This configuration was labeled as Visionaries, and comprised of firms Gamma, Chi and Ksi. Table 3A shows the characteristics of a typical firm in this configuration. Intermediate configuration labeled as Architects was composed of firms which showed some success in selective sourcing, although they had a narrower range of success factors. In particular, they were weaker on external market monitoring.

[Table 3A here]

Visionary configuration includes experienced users of selective sourcing strategy, which had achieved high levels of sourcing success. They also used a wider definition of sourcing success, which went beyond cost minimization. Large scale and wide scope of internal IT organization enabled these firms to assimilate a wide range of technologies, and they had a strong base of technological knowledge and experience to leverage these technologies and their external uses into the business. The role of this knowledge went beyond the ‘deterrent’ role in serving as a ready replacement for a vendor in case of opportunistic actions. IT business integration and the use of clan controls suggest that these firms were able to apply a wider set of organizational controls to manage vendor behaviors. They also had a better understanding of how to integrate multiple vendors that
is necessary in selective sourcing. Strong inter-functional linkages were seen in Chi, for example, where IT outsourcing group depended on the Global Procurement function to learn, maintain and distribute skills relevant to procurement of IT services. Similarly, global linkages in Gamma enabled IT managers across geographies to work together to seek new vendors that could serve the whole firm. Such linkages and deep knowledge of technologies seem to promote the development and use of clan controls. Vendors were attracted to working with such firms as they could learn from them, and use them as reference customers, given their high likelihood of success. In order to develop such a configuration, a relatively stable business environment that is neither stagnant nor highly unstable, is helpful. This benign environment gave the firms an intermediate level of stability to develop and use their salient capabilities. In brief, the firms in the Visionary configuration are large, dynamic, and organic.

In contrast, firms utilizing a total outsourcing strategy were reactive, firefighting, and operated with an unclear strategy. Total outsourcing strategy and a limited definition of sourcing success were the key characteristics of this configuration. Strong institutional pressures relevant to sourcing practices were evident, given the wide use of total outsourcing in their industry. There were also some failures with insourcing and selective sourcing in earlier years, which made it difficult for IT executives to justify any move toward selective sourcing. A limited number of vendors, and consolidation among vendors, offered only limited choice of vendors. Given the dependence on total outsourcing, the company did not develop a significant IT organization and skills. This was both a cause and effect, in that total outsourcing strategy is well suited for such limited IT organization. There seemed to be high cost cutting pressures, forcing the CIO
to consider cost as a key criterion. The small team of IT employees was largely involved in monitoring of sourcing contracts, and had an additional role in serving as a link to the vendor. Over time, there seemed to be a reduction in the scale and scope of IT organization as responsibilities were continually transferred to the vendor. In this sense, the configuration outlines well the mutual dependency between a cause and an effect. In general, the company was heavily dependent on a sole vendor. However, clan controls were also seen as important here, which suggests that the control exercised solely through SLA based contracting was inadequate. It was not clear, however, as to how the impact of clan controls was different from that found in the leader configuration.

Intermediate configuration of Architects had features that were less extreme. These firms exhibited a similarity to the visionaries in that they had also succeeded at selective sourcing. However, they displayed a less varied portfolio of success factors. The first was size and global scale, on which these firms were smaller and lacked global reach. Background and reporting structure of IT function seemed to be another distinguishing characteristic, with a tendency toward higher centralization as compared to visionaries. In line with this structure, there was a greater reliance on formal controls. These firms also showed a lower level of IT business integration, as compared to visionaries. It is possible that some architects could move into the visionary configuration, as their internal characteristics, strategies or external environment changed. However, a number of stable characteristics in the configuration suggest that such changes are unlikely in the short term. In particular, Architects failed to have an explicit strategy on managing external factors. Such external monitoring is of increasing value as new vendors become available, and existing vendors add to their service
portfolio new capabilities. Hence this configuration differs qualitatively on the realized vendor availability. Here, the number of vendors available is similar to that of visionaries but the potential availability is less likely to be realized given the lack of external monitoring. The architect configuration is hence dependent on a ‘push’ from vendors, unlike leaders who ‘pull’ the vendors through a conscious strategy, and evolve their outsourcing strategy in line with developments in vendor markets. This key difference suggests that architects would be less successful in sourcing than visionaries in the long term. However, only longitudinal research can confirm conjectured differences in success and whether some architects move to the visionary category.

6. Discussion

The discussion is organized around the research questions: 1) antecedents of sourcing success, 2) selective sourcing versus total outsourcing, and 3) key outsourcing configurations of the firms.

6.1 Antecedents of sourcing success

IT business integration, use of standards, clan controls and vendor market orientation were found to be the major antecedents of sourcing success (see Tables 2B through 2E).

6.1.1. IT Business integration

IT business integration has been unrelated to outsourcing in extant research. Our case study shows that IT outsourcing can contribute to firm value. The contribution to firm value is articulated by vendors and clients, in that large outsourcing contracts are
increasingly connected to a business case. In some instances, outsourcing could directly open up new business opportunities through the availability of a standard platform (for example) which had been hitherto unavailable. In addition to fulfilling these expectations, the availability of vendor resources adds a number of nuances to the ‘integration’ expected from IT executives. First, this involves the logic of disinvestment to divest IT activities which are not enablers to business strategy, and where external vendors are available. Secondly, in order to be successful, outsourcing strategy needs to address the gap between business goals and internal IT resources. Vendors can and should be used to address these gaps where internal IT resources are inadequate or costly. Given that new vendors can bring new capabilities to the table, and hence contribute to improved business performance, CIO level executives need to translate and mediate the business-vendor interactions. As a ‘supply side’ factor the vendor landscape needs to be monitored continuously analogous to the demands of the business. IT, business and sourcing alignment is the goal of such high level monitoring. This is inevitably more complex as compared to internal IT business alignment, as it involves the dynamic element of vendor markets.

6.1.2. Use of standards

Use of standards, particularly on Enterprise Architecture, was seen by interviewees as a salient feature among across buyer and vendor firms. In addition to Enterprise Architecture, development methodologies, and integration and testing standards were mentioned as areas in which standards were important to sourcing success. In addition, setting up common standards in any area was also seen as a way to
limit the proliferation of standards. There is some evidence which suggests that better enforcement (Choudhury et al., 2003) or alternatively clear specification of standards in case of outsourcing, are necessary for success. Our study suggests that high level business standards, such as those available from enterprise architectures, are desirable and critical. Given the limited research on enterprise architectures, it is possible that firms which share EA standards with their vendors are ahead of a majority of firms.

6.1.3. Clan controls

Kirsch et al (1997, 2002) and Choudhury and Sabherwal (2003) have researched the “portfolio of controls” comprising formal and informal controls, with the antecedents of controls influenced by a range of contingency factors. Informal controls are more difficult to implement in an outsourced context (Choudhury et al., 2003) as compared to formal controls. They are subject to the influence of informal structures in the outsourcing arrangements such as composition of development groups or maintenance teams (Kirsch, 1997), or the individual roles as development experts and business analysts. However, the role of informal controls in IS development projects has been seen as largely complementary to formal controls (Choudhury et al., 2003; Kirsch, 1997). This is particularly true for outsourced context (Choudhury et al., 2003; Kirsch et al., 2002).

Our results suggest the importance of clan controls in sourcing success, and suggest that formal controls are a given, and serve as a complement to informal controls. There are new developments in practices that involve the exercise of clan controls. For example, allied activities such as project management, and not only development methods, need to be similar across the vendor and focal firm. In the most integrated teams, coding, design, and development all involve joint teams that lead to improved productivity and quality.
An understanding of the other party’s organizational culture, which goes beyond a common understanding of projects at hand, is also suggested from our findings. Concrete examples such as cross training across organizations suggest that socialization goes beyond norms and values that has been researched in literature (Ouchi, 1979).

6.1.4. Vendor market orientation

A select set of firms showed a number of organizational processes and structures that tracked the ‘market’ of outsourcing services. We drew similarities with market orientation (Kohli et al., 1990) drawing analogies across customers and vendors. Hence this represents a mirror image of the well known concept, in that outsourcing managers track vendors and their offerings. Although increased capabilities of vendors have been noted in recent literature, there is limited realization that buyers can track the ‘market’ and position themselves for harnessing these vendor capabilities. A number of activities relating to intelligence generation (Jaworski et al., 1993) were observed in the case study. It is also plausible that there are additional dissemination and organizational response related activities (Jaworski et al., 1993) that we did not cover in the interviews. It is interesting to note that IT Business integration and vendor market orientation had synergistic effects in that successful sourcing managers ‘matched’ the needs of business with evolving offerings in the market. An understanding of both sides of the equation, as it were, helps them to not only match vendors to business needs, but also suggest new avenues for outsourcing drawing on and starting with new vendor offerings. However, vendor market orientation is a function of size: firms Chi, Ksi and Gamma represent the largest firms on sales and IT spends.
6.2 Selective sourcing versus total outsourcing

Our case study suggests that large, global firms have an advantage as compared to smaller, local firms, which explains the less understood aspect of greater success in selective sourcing (Lacity et al., 1998). With the increasing choice of vendors and continuously developing offshore locations, limited size and scope of IT organization is a clear disadvantage as it limits choices on outsourcing strategies. Large scale and wide scope of outsourcing increases the attractiveness of the firm to vendors, which see the firm as a low risk buyer with high likelihood of success in outsourcing, and a possible reference client. Serendipitous factors such as inter-functional linkages of IT with other functions were an advantage, while historical failure in outsourcing arrangements hindered selective sourcing. These linkages have not been salient in extant literature, where ‘non IT’ functions are represented as the generalized user or ‘business’. The role of top management has been emphasized (Henderson & Venkatraman, 1991) in risk taking involved in selective sourcing. Again, top management has been researched in the context of IT alignment (Chan, Huff, Barclay, & Copeland, 1997) and IT knowledge (Armstrong et al., 1999). An understanding of IT in the firm needs to be complemented with the current and future possibilities available through outsourcing. In other words, top management needs to look beyond current conditions to build and protect long term capabilities relevant to IT. Although total outsourcing seems to be a low risk strategy at the outset, it has long term implications for IT capability in the firm. Given the unintended consequences of total outsourcing, choice of outsourcing strategy is a critical decision and has a number of irreversible features.
6.3 Configurations related to outsourcing

The research on configurations suggests that integrated views of strategy and structure make up holistic patterns related to selective sourcing. These gestalts are composed of mutually reinforcing factors that are hard to study in isolation. Empirical research indicates that a lack of alignment is seen in low performance firms (Bergeron, Raymond, & Rivard, 2004). The research stream draws on organizational research on the alignment between strategy and structure. Another characteristic of configurations is that they are relatively stable, and their change is not continuous but frame breaking (Meyer, Tsui, & Hinings, 1993). Given the limited number of configurations, organizations need to make a number of simultaneous changes in order to ‘morph’ into a different configuration.

The case study data suggested three configurations with respect to selective outsourcing. Given the cross sectional nature of our study, the stability of configurations is moot. However, their distinctiveness suggests that the transition from one configuration to another would be discontinuous and frame breaking. The extreme configurations, in particular, would continue in their respective ‘type’ as the cause and effect for the respective configuration are difficult to demarcate. A large number of coordinated, organization wide changes would be needed to become successful at selective sourcing. Controllers would need to make a number of simultaneous and coordinated changes to overcome their structural disadvantages. Sabherwal et al suggest ‘triggers’ that could initiate changes across configurations, such as environmental shifts, sustained low performance, influential outsiders, new leadership, and perception.
transformation (Sabherwal, Hirschheim, & Goles, 2001). For example, a top management working with a visionary CIO could move the IT organization to Architect status, given some time and investment. In the short term, however, this could mean moving against conventional wisdom represented by institutional pressure which favors total outsourcing or insourcing. In the absence of such a trigger, the firms would continue in their respective configuration. Visionary firms need to be vigilant in order to hold their status.

7. Implications, contributions and limitations

Our interview data extend earlier conceptualizations related to sourcing success and offers a number of new insights of state of the art practices in outsourcing. In particular, we observe rich facets of sourcing success that are raised by data. First, the logic of selective disinvestment and reinvestment in ‘core’ areas is key to sourcing success. Indeed, recent evidence of continuous growth in outsourcing suggests that there is greater tendency to outsource activities that were once considered core. So the definition of ‘core’ needs to change not only with internal thinking on firm strategy as articulated by top management, but also due to the availability of ‘new’ resources in the vendor market. Hence, external market monitoring is a critical activity that needs to be revisited continually in order to actively align with business strategy. IT executives need to monitor both the vendor market and firm strategy to suggest new avenues for value adding outsourcing. As a corollary, they also need to be mindful of new developments in business that make erstwhile ‘non core’ activities important to the firm, and recommend that the relevant activity be insourced at the earliest. In this respect, IT business alignment goes beyond a passive understanding of business strategy as sometimes viewed in the literature (Bassellier et al., 2004). It is an active participation by CIOs with the
composite knowledge of new technologies, business strategy, and vendor markets. The second aspect is learning from the vendors. As vendors are in the business of information technology, they have superior methodologies in a range of IT related activities. It is up to the focal firm to recognize their own deficiencies and select the most valuable activities to learn.

Similarly, the drivers of sourcing success have a number of business implications. IT business integration helps IT executives think strategically about sourcing, and also move their strategy in line with the vendor availability and business strategy. Given the large scale of outsourcing arrangements, alignment needs to include outsourcing strategy along with IT and business strategy, i.e., a tripartite alignment of IT, business and sourcing strategy. In other words, IT executives need to manage the supply of resources from the vendor with the demand for IT services from within the firm. In this context, Enterprise Architectures serve as high level artifact to align and coordinate relevant strategies. At the operating level, operational standards need to be identified related to process and services, and more importantly, they need to be enforced in the overall context of outsourcing. Finally, clan controls need to be developed and utilized as a success factor for selective sourcing. Vendor landscape is continuously evolving, and outsourcing managers need to draw a range of formal and informal activities and structures to track the market.

Vendors are well ahead of clients in creating global organizations, and accessing this unique global capability is a key motivation for some firms, which have limited global spread. As suggested by the global vendor interviewee, there is a need for loose
outcome controls in order to avoid micromanagement and allow the vendor to leverage its scale and standardized processes. IT organizations that are used to working in a wholly insourced environment need to change in order to work with large, global vendors. In this respect, success at insourced development could even work against such erstwhile successful organizations, if they remain stuck in their old ways. IT organizations in our case study were able to adapt to an outsourced environment by tightening their requirements analyses so that there is lesser need for iterations across the vendor and buyer. The tension is thus resolved by a new “loose tight” coupling.

Although selective sourcing and multisourcing (Cohen et al., 2006) have been proposed as a recipe for success, we find that a number of configurational characteristics have to come together to enable selective sourcing. If success criteria mandated by top management are limited to cost minimization, there is little scope for successful selective sourcing. Given that global vendors have been evolving rapidly, the value of the “Visionary” configuration strategy is increasing, and these firms can reap the gains for a long time if they do not make major errors. However, it is difficult to change quickly across configurations (Sabherwal et al., 2001) even if firms know the advantages of this strategy. This means that “controller” firms might be ‘locked in’ by their vendors. It is plausible that triggers for change need to be less strong for architects to change into visionaries, although only longitudinal research could confirm this proposition.

7.1 Contributions and limitations

The study makes a number of contributions to the literature. First, it opens the ‘black box’ of buyer capabilities involved in outsourcing. As success in outsourcing has
been researched in the light of vendor characteristics, such as service quality (Grover et al., 1996) we complement the view by a study of buyer side success factors. There are a small number of success factors for outsourcing, and these are highlighted in our research. Secondly, our research extends the well known notion of IT business integration into a tripartite integration that also includes sourcing strategy. Third, it takes a purposive sample of firms which succeeded in selective sourcing, and delves into the characteristics involved as to how they differ from those buyers involved in total outsourcing. Finally, it adds to extant theory in the light of the observation of successful firms.

There are a number of limitations including a limited exposure to the phenomenon that was attained through the use of single interviewee in the sample firms. Different agents have their own views of the phenomena, and the study draws on the senior IT executives’ world view. The sample is skewed toward the large Fortune 500 firms. The sample does not include any firm from the financial services sector, which has a long history of IT outsourcing. However, we did interview firms which had elaborate structures and strategies on outsourcing, hence extenuating this drawback in the sample. The study takes a buyer perspective, as we are interested in buyer success, and the role of client or focal firm in outsourcing. The criteria for outsourcing success were complex, ranging from cost to capability acquisition and agility and speed on the other extreme, unlike the neat ‘types’ seen in extant research. The research is subject to limitations of cross sectional research. We have drawn on the views of a number of firms, each of which had worked on a number of outsourcing arrangements. This rich description of current practice represents some of the latest developments in the field of outsourcing. The boundary conditions of our research are “large, strategic outsourcing arrangements”
which include a number of IT functions and run for a few years. Hence, the results might not be relevant to smaller and relatively simple outsourcing contracts. Contracting related factors such as SLAs, and dyadic factors such as trust or relationship quality are not emphasized. The former are simple skills, as compared to the success factors covered in the study. The latter is a choice in research design, in that dyadic factors are not the focus.

There are a number of avenues for future research. First, the antecedents of selective sourcing could include factors other than firm and environment. Even within these areas, deeper study of antecedents could suggest additional factors and linkages across factors, as suggested in the study of configurations. Second, longitudinal research can follow firms through time, and observe the changes in configurations that we have suggested only from cross sectional data. Finally, success in outsourcing needs to be linked to business performance. IT business integration as an antecedent of sourcing success suggests the relevance of firm level performance to the nomological network of sourcing success. The role of learning (Zollo & Winter, 2002) is important to configure the capabilities that are observed here, and longitudinal case study can show how focal firms learn.
### Appendix A: Interview Guide

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<td>Organization structure of the firm</td>
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<td>Firm strategy and structure</td>
<td>Firm strategy in general, IT and CIO reporting structure</td>
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<td>Outsourcing strategy</td>
<td>History of outsourcing, executive involvement, key vendors offshore/onshore, activities outsourced</td>
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<td>Outsourcing success criteria</td>
<td>Success related metrics</td>
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Appendix B: Study sample

Kappa was a midwestern university with a federal IT organization. A number of functions were centralized, such as security and enterprise architecture, while others were linked to respective educational or administrative units. A range of activities were outsourced, and the university had substantial experience with outsourcing, across a range of functions. The experience included varying extents of outsourcing, ranging from low to high, the latter in helpdesk and call center. There was a high emphasis on internal competences in the interview, although other types of capabilities were also mentioned.

Gamma was a global manufacturing firm, with a functional and geographic organization structure. As regards IT, different geographical units worked together loosely, to exchange views and learnings. Analyses of outsourced projects showed that there were cost and schedule overruns in many cases, and hence a need was seen to develop “outsourcing skills” within the firm. There was a high emphasis on offshoring, as the regional IT organizations in Asia worked together to source vendors in their geographies for use globally by other units in the firm. In this respect, Gamma was unique in having a loosely linked, global IT organization which worked together even though IT managers reported to their regions. The selective sourcing approach was labeled as “out tasking” and implied control of a number of aspects of sourcing. A unique aspect was the desire to have more than “arms length” relationship with the vendors, while trying to maintain some sort of substitutability. There was high emphasis on internal competences, such as project management.
Chi was a large global manufacturing firm, with divisional IT organizations. Each division had an elaborate global structure. In addition, there was a specialized group of IT procurement experts, in a matrix aligned with IT and organization wide procurement function. Drawing on the knowledge of IT as well as procurement, this elite group was mainly involved in identification and management of “strategic vendors” which included onshore and offshore players. In addition to these externally oriented capabilities, there was also an emphasis on internal competences such as understanding of internal culture of the firm so that the right extent of outsourcing was used. As boundary spanners, IT procurement experts were expected to balance the availability of external sources with the internal culture of firm units to set up outsourcing arrangements that would be successful.

Upsilon was a healthcare firm, which had started with an insourced strategy, and then gradually outsourced all IT functions with the exception of some software maintenance. Using a single supplier which managed the other vendors in a subcontractor structure, the main vendor had signed a multiyear contract with the firm. At the initial stage, the firm used a specialized consultant to set up the contract. IT Steering Committee, which included the senior executives, had a large role in governance. There was an emphasis on high level business strategy aspect, and also the more informal and cultural aspects of vendor management. There was an effort to create a “single organization” across the vendor and contracting organization. This went beyond the commonly held view of vendor management via contracts or service level agreements. The account manager, an employee of the vendor, had an important boundary spanner
role in the arrangement, with a visible, senior level, and highly frequent interaction with the firm.

Mu was in the distribution business, and had a highly integrated structure in using a large global vendor to provide ‘dedicated’ employees who were managed by the firm IT managers. Tight control of offshore employees’ hiring, promotions, and use of collaboration tools were used to integrate the vendor staff with in house IT organization. Using standardized development practices across the organizations was also a means of integration. The interviewee emphasized that the objective of the sourcing was to ‘embed’ them in development teams. The role of the vendor seemed to be limited to local offshore source that served to attract and recruit the ‘right’ talent for the firm. This was a global role that the firm could not handle on its own.

Ksi was a healthcare firm which had set up specific organization structures to manage the vendors. The vendor management group was well versed in contracts as well as ‘relationship management’ with the vendor. The structure seemed to be evolving, with the firm itself changing toward a more centralized structure. These changes probably allowed for a more elaborate central group to work on outsourcing.

Foo was a federal government agency, and had access to a network of federal government CIOs to share views on outsourcing vendors. The CIO reported to a Chief Operating Officer (COO) who in turn reported to the Chairman of the agency. The agency also had an appellate arm which was run like a large law firm, with a trial lawyers and economists on staff. The agency relied on specific staff having contracts experience within IT organization.
### Table 1: Firms and outsourcing characteristics

<table>
<thead>
<tr>
<th>Industry</th>
<th>Kappa</th>
<th>Gamma</th>
<th>Chi</th>
<th>Upsilon</th>
<th>Mu</th>
<th>Ksi</th>
<th>Foo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm revenue (or equivalent for non commercial)</td>
<td>$1 b</td>
<td>$15 b</td>
<td>$15 b</td>
<td>$1 b</td>
<td>$5 b</td>
<td>$50 b</td>
<td>$200 m</td>
</tr>
<tr>
<td>IT budget (indicative)</td>
<td>$50 m</td>
<td>$500 m</td>
<td>$500 m</td>
<td>$100 m</td>
<td>$50 m</td>
<td>NA</td>
<td>$40 m</td>
</tr>
<tr>
<td>IT budget as % of revenue</td>
<td>5%</td>
<td>3.3%</td>
<td>3.3%</td>
<td>10%</td>
<td>1%</td>
<td>NA</td>
<td>20%</td>
</tr>
<tr>
<td>Extent of outsourcing (indicative)</td>
<td>20%</td>
<td>30%</td>
<td>30%</td>
<td>100%</td>
<td>15%</td>
<td>NA</td>
<td>20%</td>
</tr>
<tr>
<td>Scale of outsourcing (indicative, from budget and % outsourced)</td>
<td>$ 10 m</td>
<td>$ 150 m</td>
<td>$ 150 m</td>
<td>$100 m</td>
<td>$ 7.5 m</td>
<td>NA</td>
<td>$ 8 m</td>
</tr>
<tr>
<td>Outsourced activities</td>
<td>Call center/helpdesk, Oracle application development</td>
<td>Retailer IS applications, legacy applications, public websites</td>
<td>Large application support and resource augmentation mode in application development</td>
<td>Data center, application support, project management, application development</td>
<td>Application development</td>
<td>Legacy applications, application maintenance and support</td>
<td>Application development</td>
</tr>
<tr>
<td>Key vendors</td>
<td>Help desk spun off as separate company, local vendor with some offshore presence</td>
<td>Large global vendor based in US, smaller offshore vendors</td>
<td>A number of global vendors, US and offshore</td>
<td>Specialized healthcare vendor with some(?) offshore presence</td>
<td>Global vendor with dedicated resources (to Mu)</td>
<td>Large offshore vendor</td>
<td>Local vendors</td>
</tr>
<tr>
<td>Offshore/global element</td>
<td>Low</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Type of sourcing</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>A</td>
<td>B</td>
<td>B</td>
</tr>
</tbody>
</table>

Notes: Types: A Do it yourself/ self integration, B Selective outsourcing, C Full scope outsourcing.
### Table 2 Success factors for outsourcing

<table>
<thead>
<tr>
<th>Kappa</th>
<th>Gamma</th>
<th>Chi</th>
<th>Upsilon</th>
<th>Mu</th>
<th>Ksi</th>
<th>Foo</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal IT and firm factors</strong></td>
<td>Deep technical skills. ‘Understand’ core vs. context to align IT. Relational skills with ‘user’ business.</td>
<td>Write tighter requirement/specs. Technical ‘hands dirty’- code.</td>
<td>Understand external landscape and internal culture of the firm. Requirements gathering- more time and better documentation.</td>
<td>Understand how to leverage technology in our industry. Set high level criteria with the business- vendor selection.</td>
<td>Business management group.</td>
<td>Enterprise level understanding, rationale for investment in technology.</td>
</tr>
<tr>
<td><strong>External market monitoring</strong></td>
<td>Test/pilots with vendors.</td>
<td>Cautious interest in new technologies. Not leading edge, by design.</td>
<td>Understand external landscape. Deal only with ‘top’ vendors, which is a well defined set (limited scanning). ‘Strategic’ partners- large vendors (who know our industry) like Cisco. Tech. such as server virtualization. Advisory firms like Gartner.</td>
<td>Technology monitoring. Select vendors which can offer new technology (we need). Advisory firms like Gartner. Try to use stable, older technologies with vendors, as they do better on stable technologies.</td>
<td>Advisory firms like Gartner. Try to use stable, older technologies with vendors, as they do better on stable technologies.</td>
<td>Conversations with CIOs, similar companies. Not a lot of slack, use mature technologies due to risk, cost.</td>
</tr>
</tbody>
</table>
Table 2A Interviews versus extant conceptualization: Success in outsourcing

<table>
<thead>
<tr>
<th>Evidence from interviews</th>
<th>Extant conceptualization (Grover, 1996)</th>
<th>Comments and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>We lend value to the business, understand the business. We have... determined that help</td>
<td>Refocus on core business.</td>
<td>Identification and divestment of non core activities allows <strong>new investment</strong> in focus area.</td>
</tr>
<tr>
<td>desk or call center activity is no longer core to our IT organization. [CIO of Kappa]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>They are helping us by the way with a CMMI transformational effort we are using the</td>
<td>Enhanced IT competence.</td>
<td>Learning from the vendor in ISD methodology or related areas, as vendors are in IT</td>
</tr>
<tr>
<td>same (vendor).</td>
<td></td>
<td>business.</td>
</tr>
<tr>
<td>IT outsourcing gives a company access to a near unlimited pool of IT skills. As technology</td>
<td>Increased access to skilled personnel.</td>
<td>In rapidly changing technologies, vendors are able to retain and attract specialists.</td>
</tr>
<tr>
<td>...changes rapidly, IT associates find it difficult to stay current. [Global IT Outsourcing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategy document, Gamma]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other than cost, productivity improvement that outsourcer committed to us, the</td>
<td>Increased control of IS expenses.</td>
<td>Deep knowledge of industry helps the vendor stabilize and standardize ‘unique’ process.</td>
</tr>
<tr>
<td>outsourcer improving and stabilizing the day to day processes that we use. [Vice President, Enterprise Solutions, Ksi]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>We are more of a ‘proven’ technology center...right not bleeding edge, though cutting</td>
<td>Reduced risk of technology obsolescence.</td>
<td>Different vendors, from large global leaders to smaller ‘proven’ technology suppliers,</td>
</tr>
<tr>
<td>edge (to leverage outsourcing) [Global Project Manager of Chi]</td>
<td></td>
<td>can supply a range of technologies.</td>
</tr>
<tr>
<td>Yes, if we decide there is a technology that we need to pursue and there’s a project that</td>
<td>Increased access to key information technologies.</td>
<td>Niche vendors, or large global vendors, are a source of new technologies.</td>
</tr>
<tr>
<td>is funded to utilize that new technology, a development manager will need to put together</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a team. At that time, the offshore organization needs to find people that have an</td>
<td></td>
<td></td>
</tr>
<tr>
<td>experience in that particular technology, that is the expectation. [CIO of Mu]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2B Interviews versus extant conceptualization: IT Business integration

<table>
<thead>
<tr>
<th>Evidence from interviews</th>
<th>Extant conceptualization (Bassellier and Benbasat, 2004)</th>
<th>Comments and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>We lend value to the business, understand the business. We have… determined that help desk or call center activity is no longer core to our IT organization. [CIO of Kappa]</td>
<td>Recognizing potential ways to exploit new business opportunities using IT. Knowledge of the way IT contributes to firm value.</td>
<td>In relation to outsourcing, IT has to recognize not only ways to invest in new business opportunities, but also divest some activities in line with business strategy and vendor availability.</td>
</tr>
<tr>
<td>So basically they (IT and business plan) have to be aligned together, and what happens is, the business says, here are the IT things to accomplish in the next three years, (they) provide to us and then IT provides service plan on the same lines…then IT and the business both take a look, say this is what we’re trying to accomplish, how are we going to do it, in terms of people and resources, and that kind of leads to…how much should we be outsourcing, what areas to outsource, in order to meet our additional objectives that we have. [Global Project Manager at Chi]</td>
<td>Alignment between business goals and IS goals in the organization as a whole.</td>
<td>Outsourcing strategy addresses the ‘gap’ between business goals and internal IS resources.</td>
</tr>
<tr>
<td>This starts (at the top)... CIO participates in business leadership team. CIO Council connects the strategic vendors to the heads of operating companies (divisions)... (to understand) what (will be) the future state and how do we leverage them more. So this is one aspect, vendors will come to talk to each of the operating companies directly. [CIO of Chi]</td>
<td>Alignment between business goals and IS goals in the organization as a whole.</td>
<td>Additional alignment of business and IS goals to outsourcing strategy. CIO acts as translator in vendor-business group interaction.</td>
</tr>
<tr>
<td>Enterprise Architecture Group was set up few years ago...has also led to...more integrated business process. [CIO of Chi]</td>
<td>Analyzing business problems in order to get the ‘big picture’ for IT based solutions.</td>
<td>EA acts as a high level coordination for IT and business. Also serves as a high level map for outsourcing.</td>
</tr>
</tbody>
</table>
Table 2C Interviews versus extant conceptualization: Use of standards

<table>
<thead>
<tr>
<th>Evidence from interviews</th>
<th>Extant conceptualization (Zhu et al, 2006)</th>
<th>Comments and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture Group is in the same overall group as Strategy and planning. Few years ago we really didn’t have anything like Architectural group per se, (then) we recognized as a company, to have integrated business partners, I mean that’s why we start beefing up the Architectural group, they have a high level business blueprint, and IT Architecture needs to be aligned, (so) there is business architecture, process architecture, technology architecture, so all of them need to link together… [CIO of Chi]</td>
<td>Use of EA standards.</td>
<td>EA serves as a high level map for outsourcing.</td>
</tr>
<tr>
<td>When everything was inside the firm, analysts or users could interact more informally, and the style was “let’s talk”. Now the vendor, who is CMM5 level, needs clear and specific requirements from our analysts…so the requirements definition has become tighter” [CIO of Gamma]</td>
<td>Use of Requirement Definition standards.</td>
<td>RD standards need to become tighter and/or enforced well in the outsourcing context.</td>
</tr>
<tr>
<td>We are being certified as the CMM level x for the organization, and same (development) methodologies that are used by all the groups whether they are onshore or offshore. [CIO of Mu]</td>
<td>Similar CMM level.</td>
<td>Wide disparity in CMM levels works against outsourcing success.</td>
</tr>
<tr>
<td>We are using a web standard…XML based standard that is the glue if you will. Interoperability is not an issue, as long as we have laid out the standard, that all people (in and outsourced) need to live by. [CIO of Foo]</td>
<td>Use of web standards.</td>
<td>Consistent enforcement of standards helps success in outsourcing.</td>
</tr>
</tbody>
</table>
### Table 2D Interviews versus extant conceptualization: Use of clan controls

<table>
<thead>
<tr>
<th>Evidence from interviews</th>
<th>Extant conceptualization (Kirsch, op. cited)</th>
<th>Comments and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>We have a SIG on Project Management...that is perhaps the most popular...across the vendors [CIO of Gamma]</em></td>
<td>Similar approaches to decision making and problem solving.</td>
<td>Similarity of approaches on ISD methods. In large and/or global projects, similarity in related activities, such as Project Management, is also important.</td>
</tr>
<tr>
<td><em>(We have) coding, design, development, and I have coding and design offshore, so they are an integrated team. They are virtual teams, it’s a challenge to set up, manage, but you get productivity and better quality product. [CIO of Mu]</em></td>
<td>Client and vendor team members attempted to be ‘regular’ members of the project team.</td>
<td>‘Regular’ members mean that Coding, design, and development are specific activities that both sides can participate in.</td>
</tr>
<tr>
<td><em>We...have training you call cultural awareness... to help US based IT team so that we can understand offshore culture, also that outsourcer understand our culture, (so) easier for us to work together effectively. [Vice President, Enterprise Solutions, Ksi]</em></td>
<td>Common vision of the project.</td>
<td>In addition to a common vision of the outsourced project, both client and vendors should understand the other party’s company culture.</td>
</tr>
<tr>
<td><em>Yes, our approach is to play down the fact that they are from a different organization, look at our organization as a single IT organization, and that has been the biggest help, so we treat each other as if we all work for company, we do a lot of cross training and so people would know how do some of their job and we know their jobs...[CIO of Upsilon]</em></td>
<td>Shared norms and values among the client and vendor team members.</td>
<td>Actual day to day activities that help share values, e.g. cross training.</td>
</tr>
</tbody>
</table>
Table 2E Interviews versus extant conceptualization: Vendor market orientation

<table>
<thead>
<tr>
<th>Evidence from interviews</th>
<th>Extant conceptualization and analogue (Kohli et al in brackets)</th>
<th>Comments and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT leaders in different geographies meet with...Indian and East European vendors. [CIO of Gamma]</td>
<td>Meet with vendors (customers) to find out what products/services they will sell (need) in the future.</td>
<td>Given the diversity of vendors and geographies, regional IT leaders met with vendors and updated corporate and CIO.</td>
</tr>
<tr>
<td>CIO Council connects the strategic vendors to the heads of operating companies (divisions) ... (to understand) what (will be) the future state and how do we leverage them more. So this is one aspect, vendors will come to talk to each of the operating companies directly. [CIO of Chi]</td>
<td>Business executives (Manufacturing department) directly interact with vendors (customers).</td>
<td>Business executives were involved, in order to provide their vision of the ‘future state’ and brainstorm on vendor capabilities, and how to utilize them.</td>
</tr>
<tr>
<td>Underlying IT leader manages the relationship with the outsourcer. [Vice President, Enterprise Solutions, Ksi]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;(One of) three primary problems with outsourcing...is lack of vendor knowledge” [Company Strategy Document] If you’re talking about procurement we do a formal process where we have our categories that are types of services as I mentioned earlier, and basically every year we go in and update our market research information, for that category...e.g., ADM is a category. [Global Project Manager at Chi] We have a grid of information (on what) the suppliers are offering...they are doing business with a company, so that if something new comes up, here we have the information. If something repeat comes up, we have the information. [Global Project Manager at Chi]</td>
<td>Do in-house market research.</td>
<td>Knowledge of vendors, including their capabilities and limitations, was seen as a serious difficulty in outsourcing. Some vendor staff used formal market research on suppliers and their capabilities, which was updated regularly.</td>
</tr>
</tbody>
</table>
Table 2E Interviews versus extant conceptualization: Vendor market orientation (contd.)

<table>
<thead>
<tr>
<th>Evidence from interviews</th>
<th>Extant conceptualization and analogue (Kohli et al in brackets)</th>
<th>Comments and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Use Gartner as a source of new vendor information. [CIO of Gamma]</em></td>
<td>Detect changes in vendor information (customer product preferences).</td>
<td>Use market research firms to track new vendors, internally existing set.</td>
</tr>
<tr>
<td><em>We continuously network with CIOs to learn about new vendors. [CIO of Gamma]</em></td>
<td>Collect industry information informally.</td>
<td>Informal collection of information from conferences and peers.</td>
</tr>
<tr>
<td><em>We also attend conferences to basically get an understanding of what others have done in this area. [Global Project Manager at Chi]</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>We have IT Leadership meeting to review IT vendor related developments on a global level. [CIO of Gamma]</em></td>
<td>Competitor intelligence is generated by several departments.</td>
<td>Different geographies collect vendor developments in their region.</td>
</tr>
<tr>
<td><em>“Not to be overlooked...growing political backlash against offshore outsourcing.” [Company Strategy Document]</em></td>
<td>Periodically review the likely effect of changes, e.g. regulation.</td>
<td>Buyers mindful of country scenarios.</td>
</tr>
<tr>
<td><em>CIO Council connects the strategic vendors to the heads of operating companies (divisions)... (to understand) what (will be) the future state and how do we leverage them more. So this is one aspect, vendors will come to talk to each of the operating companies directly. [CIO of Chi]</em></td>
<td>Vendor (Marketing) personnel spend time discussing vendors’ future plans (customer future needs) with other functions.</td>
<td>Vendor managers at the focal firm ‘connect’ the right vendors to business executives.</td>
</tr>
<tr>
<td>Table 3 Configurations in outsourcing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IT Strategy</strong></td>
<td>Kappa</td>
<td>Gamma</td>
</tr>
<tr>
<td>IT Strategy</td>
<td>Focus</td>
<td>Asset parsimony</td>
</tr>
<tr>
<td>Globalization</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>IT Structure</td>
<td>Many formal rules</td>
<td>Low/informal</td>
</tr>
<tr>
<td>Bureaucratization</td>
<td>High: CIO and Architects</td>
<td>Medium: Global IT, PM</td>
</tr>
<tr>
<td>Centralization</td>
<td>Simple</td>
<td>Informal</td>
</tr>
<tr>
<td>IT business integration</td>
<td>Mid-high</td>
<td>Mid-high</td>
</tr>
<tr>
<td>Extent</td>
<td>High</td>
<td>Global and regional</td>
</tr>
<tr>
<td>Key actors</td>
<td>Mid-high</td>
<td>Med-high</td>
</tr>
<tr>
<td>ISD Capability</td>
<td>Oracle related</td>
<td>Communication/co-nnectivity</td>
</tr>
<tr>
<td>Standards in use</td>
<td>Formal</td>
<td>Informal</td>
</tr>
<tr>
<td>Use of controls</td>
<td>Architect</td>
<td>Visionary</td>
</tr>
</tbody>
</table>
### Table 3A Key Configurations in outsourcing

<table>
<thead>
<tr>
<th><strong>Visionary configuration</strong></th>
<th><strong>Architect configuration</strong></th>
<th><strong>Controller configuration</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Selective sourcing and sourcing success</td>
<td>Scale and scope of IT outsourcing</td>
<td>Total outsourcing</td>
</tr>
<tr>
<td>Large scale and wide scope of IT organization</td>
<td>ISD Capability</td>
<td>Strong institutional pressure as regards outsourcing- CIO and C-suite</td>
</tr>
<tr>
<td>Inter-functional linkages within the firm</td>
<td>Globalization of IT function</td>
<td>Failure in insourcing and/or outsourcing</td>
</tr>
<tr>
<td>Development of clan controls</td>
<td>Success or failure in outsourcing</td>
<td>High cost pressures/low risk taking</td>
</tr>
<tr>
<td>High vendor availability, Vendor attractiveness (vendors attracted to work with client)</td>
<td>Size of firm</td>
<td>Limited ability to select and manage multiple vendors</td>
</tr>
<tr>
<td>Relatively stable business environment</td>
<td>Background and reporting structure of CIO</td>
<td>Low vendor availability, Vendor consolidation (less vendors to select from)</td>
</tr>
<tr>
<td>LARGE, DYNAMIC, ORGANIC</td>
<td>Extreme business environment</td>
<td>REACTIVE, FIREFIGHTING, UNCLEAR STRATEGY</td>
</tr>
</tbody>
</table>
Chapter 3: Antecedents and Consequences of Information Technology Outsourcing Success

Abstract

We propose a model of Information Technology (IT) outsourcing success that draws on a field study of leading practices among large and successful IT outsourcing contractors and review of the literature on IT business strategy alignment and organizational controls. To this end we identify a set of salient organizational mechanisms as predictors for outsourcing success. These mechanisms are exercised by the focal firms in the successful management of large scale, strategic outsourcing arrangements. This set of mechanisms involves the use of clan controls, choice and enforcement of high level IT standards, and use of IT business integration mechanisms by the focal firm. We conduct a survey among senior executives to validate the proposed model. The analysis of data finds support for most of the hypothesized predictors. Both IT business integration mechanisms and the use of clan controls are positively related to sourcing success, while the use of standards is not related to sourcing success. In addition, we investigate the influence of architectural modularity on outsourcing success and resulting business performance. The findings suggest that sourcing success mediates the effects of modularity on business performance. As the salient organizational mechanisms are developed over a long period of time, we argue that they constitute a dynamic capability that we label as IT Sourcing Capability among focal firms.

Keywords: Control, Outsourcing, business performance, outsourcing success.
1. Introduction and motivation

Information Technology (IT) outsourcing (also referred to as sourcing in some recent literature) has been 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 et al., 1995). Over the last decade, there has been a steady growth of IT outsourcing in the US and internationally. It had been estimated that “worldwide IT outsourcing spending will rise from $193 billion in 2004 to $260 billion by 2009.” (Souza et al., 2005). At the same time, market research firms indicate that a majority of client firms are not satisfied with the outcomes of outsourcing (Cohen et al., 2006).

Academic and practitioner research offers some hints of the reasons behind success in outsourcing, or the “firm effect” in outsourcing, i.e., differential industry and firm level outcomes of IT outsourcing with the use of apparently similar IT outsourcing arrangements. Although the ‘IT services market’ composed of vendors has become a commonly available global resource, focal firms exhibit distinct value adding capabilities in how they select and combine the commoditized IT resources. First, different industries have gained varying economic contributions from IT outsourcing (Han et al., 2005). Second, dyadic characteristics such as relationship quality predict these outcome differences (Lee et al., 1999). Third, differential outsourcing value is created due to impact of social capital (Ye et al., 2003). Fourth, some researchers have shown that different outsourcing arrangements lead to different strategic advantages (Tan et al., 2006b). Therefore, some studies emphasize forging new types of ‘partnerships’ as a means to realize strategic gains in IT outsourcing. To this end, Linder (2004 p. 1) argues
that “outsourcing can be more than a tool for cutting costs and improving organizational focus. Increasingly, it is a means of acquiring new capabilities and bringing about fundamental strategic and structural change”. Finally, new outsourcing approaches like multi-sourcing (Cohen et al., 2006) emphasize the need to choose the right ‘mix’ of vendors. Unfortunately, most of these studies of IT sourcing success have limited generalizability and fail to explain why chosen factors influence outsourcing success. In spite of this limited success rate, there is a lack of academic research to systematically explain success factors for large scale outsourcing.

Surprisingly, buyers’ capabilities have received less attention, though these capabilities are instrumental in outsourcing success: in the end it is the buyers’ apprehension of the outsourcing business value that drives the business. Therefore, we need to understand better how buyers’ capabilities influence success in IT outsourcing. A related issue is the organization of the IT services and their dependencies in the buyer firm, i.e. how these IT services are organized for modularity. A modular architecture enables a large number of outputs available as IT services, using a given number of inputs. This aspect was found to be an important factor influencing perceptions of outsourcing success among senior executives in a field study (Nagpal, 2009). Concurrent with increased outsourcing, we can assume a move toward increasingly modular IT architectures that are controlled through enterprise architectures and which allow more selective and strategic outsourcing decisions. Therefore, business and IT executives need to increasingly involve senior IT executives and enterprise level architects in synchronizing outsourcing strategies with their search for better modularity and
understand the influence of architectural plans and modularity on their outsourcing outcomes.

Control, which refers to attempts by an individual or organization to motivate another individual or organization to act in a manner in line with the objectives of the controller (Ouchi, 1979) is relevant in this context. It is widely known that managers exercise a range of controls to govern IS development activities in insourced arrangements (Kirsch, 1997). This work has been followed by research on the use of different controls in outsourcing (Choudhury et al., 2003; Kirsch et al., 2002). This stream of work has attempted to understand the variety of controls used in outsourcing, and the antecedents of both formal and informal controls used by the focal firm (Kirsch et al., 2002). However, the use of such controls has not been explicitly linked to normative factors such as the focal firm’s outsourcing success. At the same time, the literature on sourcing effectiveness (Grover et al., 1996) has emphasized dyadic factors such as relationship quality. Hence, there is a need to establish a conceptual link between the use of organizational controls by the focal firm, and normative factors such as sourcing effectiveness. Against this backdrop, we examine the use of specific controls in outsourcing arrangements in influencing outsourcing success.

We argue that the use of a variety of control mechanisms is a key antecedent of outsourcing success. To this end we propose a model of organizational mechanisms, i.e. a set of controls influencing outsourcing success. The model builds on the notion of portfolios of control (Choudhury et al., 2003; Kirsch, 1997) and is focused on the consequences of such portfolios. It links the use of specific controls to success in large,
complex outsourcing arrangements, and to the level of modularity within focal firm enterprise architecture. In addition, we view sourcing success and modularity as intermediate outcomes ultimately affecting business performance. We test the effects of the controls through a survey of senior executives at focal firms. The sample projects typically includes application development and maintenance, where it is difficult to realize strategic and economic gains from outsourcing (Grover et al., 1996). The survey sample also shows that such projects involve more than one IT function, suggesting high levels of complexity.

The remainder of the paper is organized as follows. Next, we review the relevant IT outsourcing and control literatures. The key variables, research model and hypotheses are proposed in section 3. In section 4 we report on research design and methodology, which is followed by data analyses, results and discussion in sections 5 and 6. We conclude with limitations and suggestions for future research in the final sections.

2. Literature review

2.1. Outsourcing and its antecedents

A review of the extant research shows that Transaction Cost Economics (TCE) has been a dominant lens both conceptually and empirically in the study of IT outsourcing (Hui et al., 2001). A review of TCE related research (Nagpal, 2004b) shows, however, that TCE theory has limited explanatory power: the “logic” of production costs overwhelms transaction costs in IT services. Key constructs of TCE, and in particular, its notion of asset specificity, have a limited role in explaining outsourcing decisions. The antecedents of outsourcing as explained by TCE, therefore,
have been of greater interest. One reason for this is that TCE may be more relevant in studying monolithic, all-or-nothing outsourcing contracts and related transactions. Given the variety of objectives which includes cost but as well non cost factors such as agility (Linder, 2004a) that firms currently consider while outsourcing and the increased diversity of outsourcing arrangements, such theoretical position alone seem to offer limited value.

2.2. Outsourcing Success

In this article, we limit ourselves to the business perspective of outsourcing success, with a focus on firm level impact. The conceptualization of outsourcing success takes a business, rather than user (or individual) perspective. In line with extant literature, sourcing success has been conceptualized as the “level of fitness between the client requirements and the outsourcing outcomes” (Grover et al., 1996).

Building on IT strategy frameworks, Venkatraman (Venkatraman, 1997) suggested that the top management approach to IT, whether focused on cost minimization or business capability augmentation, impacts the choice of outsourcing goals. The respective extremes labeled as ‘cost center’ and ‘IT value center’ are theorized to have different objectives, and success criteria. In the move from a cost center to a value center, the role of CIO changes to an orchestrator of sources (external and internal) and the IT organization becomes an integrator to deliver “business solutions”. However, current outsourcing practices are not focused on either cost or value; they need to address both (Ross et al., 2007). Quinn (1999) and others listed ‘techniques’ emphasizing end results and new services that are achieved from outsourcing. This included new executive roles
such as ‘Chief Sourcing Officer’ (Quinn, 1999) and setting up ‘Program Management Office’ as a centralized function (McDougall, 2007). Though this research anticipated the need to create effective organizational mechanisms to control outsourcing at the organizational level, the lack of overarching theory has led to somewhat ad hoc and less carefully orchestrated analyses of means and ends in managing outsourcing arrangements.

As noted above, extant research on antecedents of outsourcing success has primarily assumed a vendor, or dyadic viewpoint, and focused on vendor service quality (Grover et al., 1996). In addition, partnership quality (Lee et al., 1999) has been proposed as a dyadic concept for explaining success drawing on trust and communication quality as key elements of partnership quality. This stream draws on resource dependency theory and transaction cost economics in explaining how service and partnership quality influences sourcing success. Overall, it assumes that outsourcing success depends primarily on vendor behaviors.

2.3. Organizational controls and outsourcing

The behavioral view of organizational controls (Kirsch, 1996) addresses the question: why do groups of individuals “act in a manner that is consistent with achieving desired objectives” of an external agent (Choudhury et al., 2003). The literature on such controls is relatively mature as regards theory, though there is a paucity of empirical work on their organizational consequences (Kirsch, 2008). In this section, we review prior research on organizational controls and its applications to information technology (IT) projects that are relevant to understanding outsourcing arrangements. We draw, in
particular, on prior research by Kirsch (1997) on organizational controls, and an exploratory field study (Nagpal, 2009) that sought to build a theory of antecedents of sourcing success on the buyer side. An inherent assumption (Kirsch, 1997) is that success is taken as granted, when the controller uses an “appropriate” set of controls. In general, this research stream has focused on specific control modes and their antecedents, such as the antecedents of formal control (Rustagi, King, & Kirsch, 2008).

In view of the increased complexity and scale of outsourcing arrangements where the deals are vetted by the Chief Information Officers (CIO) or other C suite executives, we surmise that a well devised portfolio of controls is necessary to manage the outsourcing arrangements effectively. The ‘buyer’ needs to select and deploy such a portfolio as to influence the vendor’s behaviors so that the vendor will “act in a manner that is consistent with achieving desired objectives” of the buyer (Kirsch, 1996, 1997, 2004; Kirsch et al., 2002). The recent research on IT outsourcing has accordingly stressed the need of a buyer to configure effective ‘portfolios of control’ (Choudhury et al., 2003). This choice includes the selection of formal and informal controls, which can be organized within a wide range of contingency factors (Choudhury et al., 2003). Formal controls denote explicit forms of monitoring and enforcing compliance, and thus are subject to availability of a hierarchical authority, while informal controls are fluid and subject to the influence of informal structures such as norms in groups. Within formal controls both behavior and outcome controls have been identified and they include the use of regular meetings, conference calls and predefined reports to review and monitor services and their delivery. Outcome controls include time and cost criteria, and the quality of the design documents (Choudhury et al., 2003). Kirsch et al (2002) found
behavior observability, outcome measurability, and client understanding of IS development process as the key antecedents of the choice of the type of control. These antecedents were able to predict the use of behavior, outcome, clan and self controls in an outsourced context. Hence there is adequate understanding of the antecedents of main types of controls. There is also an understanding that multiple controls are used in portfolios. Choudhury and Sabherwal (2003) found that buyers added behavior and self controls to an initial portfolio largely made up of outcome controls, when faced with unsatisfactory vendor performance. Similarly, Kirsch (2004) found a heavy reliance on informal controls in the initial phase of insourced projects, which were later complemented by formal controls. Although these findings are somewhat contradictory, an explanation is that Choudhury and Sabherwal did not include the requirements definition phase in their case study. In combination, the results suggest that a well diversified portfolio of controls is ultimately needed for success, in either insourced or outsourced context. In contrast to the antecedents and ‘mix’ of controls, we know little about the impact of these controls. In fact, it has been clearly claimed that there is limited empirical evidence on the link between organizational controls and performance (Kirsch et al., 2002).

2.4. Modularity

In the management literature, modularity has been related to the capability to better compete in dynamic environments (Eisenhardt & Martin, 2000). This parallels with recent changes in the vendor outsourcing capabilities and with new forms of outsourcing such as multi-sourcing. Hence, the implications of modularity (Pil & Cohen, 2006) are becoming increasingly relevant to IT outsourcing. In addition, modularity is relevant for
increased agility (Sambamurthy, Bharadwaj, & Grover, 2003). Investments in IT capabilities have been theorized to enable “digital options” that promote agility. In this logic, the role of modular IT infrastructure and services is instrumental to agility. IT service ‘clusters’ related to agility (Weill, Subramani, & Broadbent, 2002) hint at the need for modularity of infrastructure.

A higher degree of modularity is defined as the degree by which system components can be separated and recombined into new configurations with a limited loss of functionality (Schilling et al., 2001). This has the advantage of “exponentially increasing the number of possible configurations achievable from a given set of inputs” (Schilling, 2000). With increased modularity, heterogeneous inputs can be joined in a combinatorial fashion, so as to meet the increased heterogeneity of demands (Schilling, 2000).

Although there is some research on Enterprise Architectures and their connection to increased modularity (Venkatesh et al., 2007), the nature and extent of modularity and its impact on IT outsourcing has been inadequately addressed in the extant literature. An earlier field study (Nagpal, 2009), however, suggests that successful buyer firms view increased modularity as desirable as their ‘legacy’ systems offer minimal modularity, and make alternative outsourcing arrangements difficult. Recent outsourcing arrangements increasingly recognize the need for improved modularity for outsourced IT. Nagpal (2009) also found that respondents defined such outsourcing outcomes to be strategic, in contrast to cost related advantages. This suggests that expansive and strategic outsourcing involves a move away from monolithic architectures.
and a trend towards modular configuration of IT services within outsourcing arrangements instead of “all-or-nothing” outsourcing deals.

2.5. Business performance

Business performance has been defined as “organizational effectiveness of a firm or business unit in terms of its financial and operational performance relative to its competitors”. (Venkatraman et al., 1986). Initially proposed by Venkatraman and Ramanujam, it has been extensively used in the IS literature including IT value research. Although this measure of performance is collected from survey data, IS researchers have verified this with accounting measures, and found strong evidence and justification for the use of these perceptual measures to serve as a proxy for accounting measures (Tallon & Kraemer, 2007; Tallon, Kraemer, & Gurbaxani, 2000). In addition, there are certain advantages to use of perceptual measures, for example, at the business unit level, where it is difficult to get good accounting data.

The literature on outsourcing has not linked sourcing success (Grover et al., 1996; Lee et al., 1999) to business performance. As a significant portion of IT investment is outsourced, at least in firms which utilize outsourcing, there is a need to test the link between success in large scale outsourcing, and firm level performance. In some ways, sourcing success is analogous to IT investment: just as it was important to link IT investment to firm level effects in the 90s, success in large outsourcing contracts needs to be linked to firm performance.

As regards modularity, benefits such as disaggregated and flexible supply chains have been widely reported in the management literature (Schilling et al., 2001).
However, modularity at the level of enterprise architectures has not been studied in the IS literature. Although introduction of Enterprise Architectures have been linked to increased modularity (Venkatesh et al., 2007), the impacts of architectural modularity on firm level performance have been inadequately addressed in the extant literature.

2.6. Summary

There are a number of under-researched buyer side factors that could influence outsourcing success. The first relates to the consequences of organizational controls. Longitudinal studies of controls show that a diversified portfolio is more effective, given that buyer firms tend to add *not more of the same, but different* controls when faced with negative vendor performance (Choudhury et al., 2003). Kirsch (2004) also recommends applying a diverse portfolio. In addition, there is a realization of the limited empirical evidence on the link between organizational controls and performance (Kirsch et al., 2002). Additional developments such as the modularity of enterprise architectures are also influencing outsourcing arrangements due to new forms of outsourcing such as multisourcing (Cohen et al., 2006).

Overall, there is a void in the IS literature on outsourcing impacts as regards two issues. First, most research has been devoted to its antecedents. A small stream of research that has looked beyond antecedents, such as success in outsourcing (Grover et al., 1996), applies vendor side or dyadic concepts such as trust, and vendor service quality. Second, the consequences of controls with respect to outsourcing success (or other normative criteria) have received inadequate attention (Kirsch et al., 2002). Finally, sourcing success has not been related to business performance.
3. Research model and hypotheses

Based on the review we will address the following research questions:

1) What is the set of organizational controls that serves an antecedent of sourcing success?

2) What is the impact of these controls on modularity?

3) What is the ultimate effect of sourcing success and modularity on business performance?

In order to address these research questions, we next propose a research model with associated hypotheses. The complete research model is shown in Figure 1. We propose the antecedents of sourcing success and modularity, based on a set of antecedent controls. Sourcing success and modularity are important and hitherto unrelated variables. In addition, we also propose the ultimate effects of sourcing success and modularity on business performance. Hence the model is essentially composed of two separate, though related models in a single nomological network.
The **first model** tests the antecedents of sourcing success and modularity. The model relates the organizational controls to sourcing success and modularity, as shown in Figure 1a. The **second model** relates sourcing success and modularity to business performance, as shown in Figure 1b. As regards statistical analyses, the models are tested together for robustness. However, there are no direct effects proposed between the antecedent controls and firm level performance in Figure 1. In other words, sourcing success and modularity are hypothesized to mediate fully the effect of controls. This mediated model is in line with theory, as the organizational controls are directly related directly to success in IT outsourcing. Business performance is causally removed from the antecedents that are relevant to IT outsourcing. However, sourcing success and modularity are hypothesized to have firm level effects. We carry out post-hoc analyses.
for the antecedents and consequences separately. The approach is in line with Partial Least Squares (PLS) based analyses with large models (Yi & Davis, 2003).

**Figure 1a** Antecedents of sourcing success

![Diagram of antecedents of sourcing success](image1)

**Figure 1b** Consequences of sourcing success

![Diagram of consequences of sourcing success](image2)
The following sections lay out the hypotheses on the antecedents of sourcing success and modularity. Although IT outsourcing is proximately concerned with sourcing success, we argue that large scale, strategic outsourcing is ultimately linked to overall business performance.

3.1. Organizational controls

Nagpal (2009) observed specific types of organizational controls that best represent the respective control mode in the ‘portfolio of controls’. In this section, we give examples of specific control modes that were mentioned in his study with a reference to success in outsourcing, and link them to the theoretical type of control. We then delve into the rationale for deploying specific controls, and propose associated hypotheses for each type of control. We use the operationalization of sourcing success as conceptualized in the prior literature (Grover et al., 1996) and then relate the use of specific controls to sourcing success and modularity.

In line with literature on the use of controls (Kirsch, 1997), and the view that there are no ‘pure’ forms of control (Turner & Makhija, 2006), we propose a set of three types of controls that are comprehensive, and relatively exclusive (note that controls are not mutually exclusive as there is some overlap). However, they are categorized with the respective type of control among behavior, outcome or clan control. These controls are next discussed in the context of outsourcing. We also theorize that these antecedents influence sourcing success and modularity.
3.1.1. Outcome controls- Use of standards

Outcome controls have been defined as a mode of control in which the client liaison expects the IS project leader (at the vendor) to achieve specific project outcomes and targets, regardless of the particular behaviors and actions taken by the project leader (Kirsch et al., 2002). In line with literature, we consider the use of standards as outcome controls as they “represent desired goals for new systems” (Kirsch, 1997). Outcome measurability is a defining characteristic of these controls. The client needs to continually evaluate and reward (or penalize) the vendors which adhere to these standards. A wide range of standards were mentioned in interviews on outsourcing success (Nagpal, 2009) including requirements definition, testing, and EA standards. A CIO at a large Fortune 500 firm emphasized the use of EA standards, which were used by the firm to assess vendor behaviors rigorously and continuously (Nagpal, 2009).

Requirements documentation and system testing standards have been studied as formal controls (Rustagi et al., 2008). These outcome controls are less costly to monitor, and are readily built into contracts and other enforcement that are set up by the client. Standards will be valuable regardless of whether the objective of sourcing is cost reduction, or value addition. In cost reduction exercises, use of standards will reduce coordination costs among the client and vendor agents. In value addition or ‘transformative sourcing’ the standards will embody the assumptions of the client, and hence free resources to handle issues other than lower level coordination. In line with prior research (Kirsch et al., 2002) we propose that standards which are mature and well
understood are a way of simplifying outcome measurement for outsourced contracts.

Hence we propose,

\textit{H1: The use of standards is associated with greater levels of sourcing success.}

Use of standards such as enterprise architectures, is a top down approach that helps IS organizations identify the specific portions that need to be done in house, and divide and balance the rest of the work to other firms. Enterprise Architecture (EA) standards tie together the modular output at a suitable high level. With increased emphasis on moving from functional silos to enterprise wide standards, there is a decrease in coordination costs across the client and vendors. Improvements in cost or capability will result through the use of standards, which convey complex business and technology information over firm and project boundaries. In some cases, standards are open to alternative and complementary understandings which help communication. In their study Ross and Beath (2007) found a positive connection between sourcing success and enterprise architecture, and suggested that modular architecture is more effective in integrating a number of ‘best of breed’ vendors. Standard best practices are adopted by the client and vendors based on a common set of processes specified by the EA. Standards are also an efficient mode of coordination, with less need for communication once the standard is adopted and understood by all parties.

\textit{H2: Use of standards is associated with greater levels of modularity.}
3.1.2. Behavior controls: IT business integration

Behavioral controls is the mode in which the client liaison expects the IS project leader at the vendor to follow articulated procedures and rules to transform inputs into outputs during the system development process (Kirsch et al., 2002). Unlike outcome measurability, behavior observability is a defining characteristic of these controls. However, they are formal controls in that they are based on specific rules and procedures (Kirsch, 1997). This set of controls includes governance mechanisms (behavioral scripts) that link business and IS issues and ensure their relevance to outsourcing. The existence of written procedures and sequences that relate to high level business IT strategy, and also include outsourcing strategy, does not ensure measurability of outcomes. Using a number of behavioral controls that are designed to work across business and IS/IT organizations, outsourcing firms link their IT and business strategies to each other into a strategic plan and then align their sourcing approaches to this plan. These high level plans embody business strategies of the buyer’s managers, which are translated into an IT strategy, and finally connected to an outsourcing plan. In order to reach such “alignments” a number of behavioral controls need to be deployed within the buyer firm. Specific mechanisms that were seen in a case study were IT-business-vendor meetings and boundary spanner roles of outsourcing managers (Nagpal, 2009). Serving as an overall behavioral script of the outsourcing process, these controls ensured that vendor actions would be aligned with the business strategy of the buyer unit. The plans will specify as to how to strategize the sourcing activities, or more commonly, set targets to control the outcomes. For example:
“So basically they (IT and business plan) have to be aligned together, and what happens is, the business says, here are the IT things to accomplish in the next three years, (they) provide to us and then IT provides service plan on the same lines...then IT and the business both take a look, say this is what we’re trying to accomplish, how are we going to do it, in terms of people and resources, and that kind of leads to...how much should we be outsourcing, what areas to outsource, in order to meet our additional objectives that we have”. [Global Project Manager at Fortune 500 firm]

There is evidence in the consulting literature that sourcing is becoming a strategic issue which deserves CIO level involvement (Linder, 2004a). Nagpal (2009) found “lending value to the business” “global and regional groups for alignment” and “(develop) strategic plan process with vendor” in their interviews, which suggest the use of behavior controls is needed to handle the vendor behaviors. Thus we propose

H3: Greater IT-business integration is associated with greater sourcing success.

The entities involved in IT business integration, such as groups and teams involved from business and IT, can improve the understanding of the interfaces involved in outsourcing. Improved understanding of either the business or IT side, which is encouraged through cross functional movement or long term assignment on projects, can improve the actors’ understanding of their interfaces. This understanding complements the measurable effect of standards. In this sense, higher IT-business understanding can help increase the level of modularity at an enterprise level. IT business integration in the firm is therefore required to modularize the key systems, all else being equal.

H4: Greater IT-business integration is associated with greater modularity.

3.1.3. Social Integration mechanisms: Clan controls

Clan control has been defined as a mode of control in which the client liaison becomes part of a project team clan by instilling, embracing and fostering shared values
and goals among the project team, and common approaches to working on the project (Kirsch et al., 2002). As with behavioral controls, clan controls are marked by high behavior observability and low outcome measurability. However, in contrast to behavior controls, they rely on informal modes of control. There is some evidence that focal firms diversify their portfolios of controls to achieve a mix of formal and informal controls (Choudhury et al., 2003). Hence clan controls represent a complement to behavior and outcome controls, as regards sourcing effectiveness. As IT projects become more complex, and are more closely tied to the success of focal firm strategy, outsourcing managers realize that vendors need to understand not only their firm strategy but also the culture, so that the strategy is successfully realized in day to day execution. In this sense, the role of clan controls complements the behavior and outcome controls discussed earlier. In addition, vendors are increasingly being brought into highly complex outsourcing projects in which outcomes are difficult to define at the outset. These goals evolve over time making clan controls important (Kirsch, 1997). In interviews with CIOs and vendor executives Nagpal (2009) observed multiple informal ways to bring the client and vendor cultures together. These activities ranged from informal contacts across firms, learning with vendors, and virtual team. The quotes give some sense of these clan controls:

We...have training you call cultural awareness... to help US based IT team so that we can understand offshore culture, also that outsourcer understand our culture, (so) easier for us to work together effectively. [Vice President, Enterprise Solutions, Fortune 500 firm]

Yes, our approach is to play down the fact that they are from a different organization, look at our organization as a single IT organization, and that has been the biggest help, so we treat each other as if we all work for company, we do a lot of cross
training and so people would know how do some of their job and we know their jobs...[CIO of Fortune 500 firm]

Use of diverse and flexible teams with distributed knowledge and expertise is a common example. Strategic relationships with select vendors, and travel by vendor and client to the other party’s site are another example of clan controls (Choudhury et al., 2003). These informal modes minimize cultural and cognitive differences and get the team members “on the same page”, as it were, to facilitate a common task execution of the salient IT and business issues (Kirsch, 1997). Given the large number of examples of clan controls, we hypothesize the effect of clan controls generally, instead of analyzing specific mechanisms selected, as done with the hypotheses associated with behavior and outcome controls. Hence we propose

*H5: Increased use of clan controls is associated with greater sourcing success.*

The use of clan controls will also lead to increased modularity. With the high level understanding among actors, it is possible to divide the work into separate streams of work. These ‘modules’ can be executed independently, and then recombined into new configurations (Schilling et al., 2001). Due to informal controls, teams will have a deeper understanding of the key dependencies, and hence can work easily to match the dependencies across these projects. They can also improvise around the dependencies to improve overall effectiveness. In view of complexity of large outsourcing projects in which goals are not set initially buy evolve with time, it is difficult to precisely specify interfaces across a large number of interrelated modules that different teams are working on. Hence values and norms play a major role in helping the diverse actors understand their own share of the work, in context of the limitations and strengths of other teams. It
is easier to modularize, as the teams have a shared understanding of how their tasks fit together into a whole. The use of clan controls, all else being equal, enables higher levels of modularity.

*H6: Increased use of clan controls is associated with higher levels of modularity.*

### 3.2. Multisourcing

Along with modularity, multisourcing is an important configurational characteristic of current outsourcing landscape. Use of multiple vendors has been suggested as a success factor in practitioner literature (Cohen et al., 2006). This approach parallels the ‘best of breed’ approach, in which a number of vendors are used. The increased coordination cost is a drawback here, and can overwhelm the gains from using several vendors. On the other hand, improved capabilities of these vendors could result in greater effectiveness. As this remains an unresolved question, we include this construct as an antecedent of sourcing success. Tan and Sia (2006a) tested the influence of multisourcing and did not find a significant effect on outsourcing success or intermediate variables. Given the conflicting effects of higher coordination costs and improved vendor quality in the use of multisourcing, this is an empirical question. However, we propose that the increase in vendor capability in recent years, evidenced by large and complex activities being outsourced, would lead to greater sourcing success.

*H7: Multiple sourcing is associated with greater sourcing success.*

### 3.3. Modularity

We consider the role of architectural modularity, which was a concern for senior executives who were interviewed in our qualitative study (Nagpal, 2009). The link
between sourcing success and modularity is drawn on the basis of increased efficiency and effectiveness of the sourcing process (or the inputs to the firm), when modular architectures are used. Recombination implies the combination of limited ‘modules’ to produce a number of services. This also implies increased choice in terms of type and number of suppliers that are potentially available to the firm. As vendor markets and specific vendor capabilities evolve, the focal firm can shift among them or redistribute work more easily. Some modules could also be reused across firm activities with lower internal costs. These advantages also relate to multisourcing, as different modules will be generally sourced from different vendors. However, even if the same vendor produces the modules, the advantages of recombination and reuse will be seen in the increased effectiveness and efficiency of outsourcing.

H8: Increased modularity is related to greater sourcing success.

3.4. Sourcing success and business performance

Sourcing success has a number of features that are related to business success. First, a focus on ‘core’ activities leads to better utilization of scarce capital, management attention, and other resources in the focal firm. In addition, more successful outsourcers tend to scan the vendor market continuously, and redefine the notion of ‘core’ not only in line with their firm’s business strategy, but also the outsourcing market. The evolution of the vendor landscape increases the scope to outsource activities hitherto considered core to the focal firm (Rustagi et al., 2008). Secondly, firms can enhance their IT competence. This includes learning from the vendor on system development or quality related methodologies. A number of vendors follow highly structured methodologies, particularly those based offshore. Buyers can leverage differences in the CMM levels,
and learn from vendors (Nagpal, 2009). In some cases, there are opportunities to learn from vendors who have superior skills in related areas such as project management. Finally, access to skilled personnel at the vendor end is a major benefit as vendors have a critical mass and variety of work to attract and retain specialists in key technologies. This leads to improved productivity for the focal firm, as turnover and retraining is reduced. Successful outsourcing also reduces the risk of obsolescence as the focal firm can choose from a range of vendors and avoid investing in very new (or bleeding edge) technologies until they stabilize.

As a significant portion of IT investment is outsourced, at least in firms which utilize outsourcing, IT value literature suggests a link between success in large scale outsourcing, and firm level performance. The logic for the effects of sourcing success are similar to those of IT value (Tallon et al., 2000). The role of outsourced IT in the major functions such as inbound logistics, operations, service, sales, and outbound logistics (Tallon et al., 2000) would suggest an association with business performance.

H9: Sourcing success is directly associated with higher business performance.

3.5. Modularity and business performance

Extant research suggests that system components can be separated and recombined into new configurations with a limited loss of functionality (Schilling et al., 2001). This has the advantage of “exponentially increasing the number of possible configurations achievable from a given set of inputs” (Schilling, 2000). With increased modularity, heterogeneous inputs can be joined in a combinatorial fashion, as to meet the increased heterogeneity of demands (Schilling, 2000).
The role of architectural modularity is also related to the output side, in that business has the advantage of varied inputs, thus allowing better adjustment to environmental changes. Modularity enables the production of multiple ‘services’ through recombination and reuse of the modules. In dynamic demand environments, higher modularity would enable a broader array of ‘services’ to be customized and delivered by the focal IT organization to users. This could be done even with a limited set of input options (Schilling, 2000). This increased customization is seen as IT services are well matched to the needs of business. In addition to financial effects such as revenues and growth, this can also enhance intangibles such as company reputation. In addition, these services can be scaled up more quickly as to meet the quantitative changes in demand. In cost led environments, quick adjustment to demand changes can help the firm compete in the marketplace. This is because cost saving, such as decreased inventory and reaction time to demand change, is important. In the operationalization, we consider architecture, processes, and the overall system as the salient characteristics.

H10: Increased modularity is related with increased business performance.

3.6. Control variables

We used two sets of statistical controls. In order to control for the effects of simpler outsourcing controls on sourcing success, we used the ‘conventional’ outcome controls such as time and budget controls (Kirsch, op. cited) as a statistical control. This removes the threat of the confounding effects of more common, largely formal types of controls. Next, we used a statistical control to test for effects on business performance. Industry and firm size are the common controls used in IT value and strategy research. The differential effect of industry is partially controlled for in the survey, as the business
performance scale items asked the respondent to compare the firm to its competitors. Hence we control for the effect of size, and used revenue of the firm as a statistical control.

4. Methodology

Next we detail the use of validated scales and item level measurements for proposed constructs. Instrument development and data collection will follow.

4.1. Operationalization

The constructs were measured with validated scales, generally available from the extant literature. The definition and items are shown in Appendix A. Business performance scale was adapted to outsourcing (Venkatraman et al., 1986). Strategic, economic, and technological gains from outsourcing form the key topics of our study, and are included as discrete items in sourcing success scale (Grover et al., 1996). The set of items, taken as a whole, is relevant in a range of IT functions, from application development to infrastructure outsourcing. Modularity was defined as a concept that is opposite of ‘monolithic’, and characterized by a collection of elements that deliver a unique function, independent of others (Pil et al., 2006). However, there was no scale to measure modularity. Therefore we proposed a scale using three items. Clan control is adapted from Kirsch (2007). Use of standards as outcome controls was adapted from Zhu et al (2006) and covered the major standards related to outsourcing. IT-business integration as behavioral controls was adapted from Bassellier and Benbasat (2004).

4.2. Data collection strategy
We used survey based data collection to test the hypothesized research model. In view of research in outsourcing relying on data collection from either the buyer or vendor side (Levina & Ross, 2003) and the goals of the study, we collected data from buyer side executives. Given that buyer advantages and controls are the interest of our research, it is a defensible data collection strategy. While this raises the risk of common method bias, involving the vendor in data collection would have introduced real influence of the vendors’ own success or failure in the outsourcing initiative. This success (or failure) would color the view of capabilities of the other party.

The respondents were business executives who had extensive operational and managerial knowledge of outsourcing. In addition, respondents were able to respond on the business related outcomes, as case study research showed that large outsourcing initiatives were led by senior executives including Chief Operating Officers, Chief Financial Officers and Controllers. In order to help focus the attention of the surveyed executives on the organizational controls involved in outsourcing, we requested them to think about a specific project. Therefore, the respondents were asked to think about a “strategic” IT project that involved significant level of outsourcing. “Strategic” was defined as “large and/or important enough to have an impact on the firm or business unit financials”. They were also asked the IT functions covered (Grover et al., 1996) in the project. On the business results, respondents could answer with a view of the firm as a whole, or the business unit they were involved with. These criteria were expected to help the respondents to consider concretely the use of specific controls used in outsourcing, and focus their attention on the resulting business performance. Meeting these two criteria made the sampling more difficult when compared to surveys focused solely on IT
value. The respondents were finally limited to ‘buyer side’ executives. Hence vendors or consultants were excluded.

4.3. Instrument development and testing

A web survey was developed through a number of stages. All constructs were measured using established items and scales, with the exception of modularity. The research instrument was developed through semi-structured interviews with CIOs and senior IT executives in the qualitative phase of the study. The interviews gave several insights and helped to refine the research model. The survey was refined through sorting exercises, face to face interviews, and a small sample web survey. The sorting exercises were done with groups of students in a senior undergraduate class on IS Strategy, and a group of faculty. The first group was used to get a view of less sophisticated managers, and the latter for more IT literate executives. The results are shown in Table 1.

The objective of item sorting exercise was a qualitative test of convergent and discriminant validity of the constructs in the model. The respondents were asked to group the scattered items with the respective constructs, given the construct definitions. There were minor item level issues with the constructs, which were refined in the context of outsourcing. In general, dependent variables and mediators were free of any problems and were broadly retained as per the validated items available from literature. There were changes made to the wording of some items, and some items were dropped. Table 1 shows the summary of changes after the sort exercise, and face to face interview. The exercises were carried out in April 2008 at a large Midwestern university.
Table 1 Items and constructs after sorting exercise

<table>
<thead>
<tr>
<th>Construct</th>
<th>Initial number of items</th>
<th>Final number of items</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of clan controls</td>
<td>6</td>
<td>4</td>
<td>Less clear items dropped.</td>
</tr>
<tr>
<td>Use of IT standards</td>
<td>3</td>
<td>3</td>
<td>Item on ‘integration and testing’ ‘loads’ on IT business integration in the sorting exercise. It was changed to include only testing standards.</td>
</tr>
<tr>
<td>IT business integration</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Multisourcing</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Sourcing success</td>
<td>9</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Modularity</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Business performance</td>
<td>5</td>
<td>6</td>
<td>Item added on ‘return to shareholders’</td>
</tr>
</tbody>
</table>

The draft questionnaire was then administered face to face with senior IT executives. Based on the comments from executives, an additional item was added to the business performance construct. In addition, the layout of the survey as it would be seen on the web was shown to the executives, and suggestions were taken to improve the presentation. An IT director at the University provided detailed feedback and comments for improvement. Based on these suggestions, the survey was divided into sections with introductions at the start of each section. The survey was reviewed as to its web based presentation by experts who had a deep knowledge of the survey software. Finally, the research division of an industry association tested the survey, and sent the link to a few executives before rolling out the survey to its membership. The final items are shown in Appendix A.
In addition to the above exercises, a number of refinements and company specific questions and outsourcing related were suggested by the researchers at the ‘sponsor’ organization, and included in the survey.

4.4. Survey administration and sample characteristics

The survey was distributed to senior executives through the ‘sponsor’ organization. The data collection method was web survey. The respondents were sent an invitation email with a link to the survey. In order to encourage the executives to participate, they were promised a summary report of findings after the survey. The survey was carried out in summer 2008. As shown in Table 2, the effective response rate is 2.81%. However, the actual response rate is higher as the contact lists were generic to senior executives, and not specific to their active role in outsourcing. Hence a large number of executives were either not involved in outsourcing, or not involved adequately with either IT or business aspects. The sponsor organization, which directed our survey to its members, indicated that less than 30% of their members were involved in outsourcing. Adjusted for this qualification, the response rate for the survey is 9% or higher.

The survey included two subsamples of senior executives. In order to test the equivalence of samples, Chow (1960) test for equality of regression coefficients was carried out. The results indicated that the subsamples were statistically equivalent, and were therefore pooled together for subsequent analysis. In the final sample, each organization has experience with at least one major outsourcing arrangement.
Table 2: Response rate calculation

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original sample</td>
<td>2047</td>
</tr>
<tr>
<td>Less: Undelivered questionnaires</td>
<td>69</td>
</tr>
<tr>
<td>Out of office or other responses of lack of interest</td>
<td>57</td>
</tr>
<tr>
<td>Effective sample size</td>
<td>1921</td>
</tr>
<tr>
<td>Number of questionnaires received</td>
<td>55</td>
</tr>
<tr>
<td>Effective response rate</td>
<td>2.8%</td>
</tr>
<tr>
<td><strong>Adjusted for non involvement in outsourcing</strong></td>
<td>9.3%</td>
</tr>
</tbody>
</table>

The sample profile is summarized in Tables 2a and 2b. About a quarter of respondent firms belong to either finance or manufacturing industry. There is a wide range in the size of firms. The outsourced functions are shown in Table 2c. The vast majority of firms had outsourced application development and maintenance, at least in the reference project. A majority had multiple functions outsourced, with an average of two functions outsourced per firm. The average length of the outsourced project used as a reference to respond to the survey was 34.5 months. The length of projects and range of IT functions involved suggest that these were highly complex outsourcing projects, as specified in our theory and hypotheses section.
Table 2a Sample distribution by industry

<table>
<thead>
<tr>
<th>Industry</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>15</td>
</tr>
<tr>
<td>Banking and finance</td>
<td>9</td>
</tr>
<tr>
<td>Insurance</td>
<td>2</td>
</tr>
<tr>
<td>Telecom</td>
<td>1</td>
</tr>
<tr>
<td>Transportation</td>
<td>3</td>
</tr>
<tr>
<td>Healthcare</td>
<td>1</td>
</tr>
<tr>
<td>Retail/wholesale</td>
<td>7</td>
</tr>
<tr>
<td>Education</td>
<td>7</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>55</td>
</tr>
</tbody>
</table>

Table 2b Sample distribution by firm revenue

<table>
<thead>
<tr>
<th>Revenue Range</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>$15 billion to $29.9 billion</td>
<td>2</td>
</tr>
<tr>
<td>$10 billion to $14.9 billion</td>
<td>1</td>
</tr>
<tr>
<td>$5 billion to $9.9 billion</td>
<td>5</td>
</tr>
<tr>
<td>$2 billion to $4.9 billion</td>
<td>6</td>
</tr>
<tr>
<td>$1 billion to $1.9 billion</td>
<td>7</td>
</tr>
<tr>
<td>$500 million to $999.9 million</td>
<td>7</td>
</tr>
<tr>
<td>$300 million to $499.9 million</td>
<td>7</td>
</tr>
<tr>
<td>$100 million to $299.9 million</td>
<td>13</td>
</tr>
<tr>
<td>$50 million to $99.9 million</td>
<td>5</td>
</tr>
<tr>
<td>NA</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>55</td>
</tr>
</tbody>
</table>

Table 2c IT Function outsourced

<table>
<thead>
<tr>
<th>Function</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application development and maintenance</td>
<td>44</td>
</tr>
<tr>
<td>Systems operations</td>
<td>17</td>
</tr>
<tr>
<td>Networks management and maintenance</td>
<td>17</td>
</tr>
<tr>
<td>End user support</td>
<td>26</td>
</tr>
<tr>
<td>IS planning and management</td>
<td>5</td>
</tr>
</tbody>
</table>
As shown in Table 2d, the survey sample shows high correspondence with the ‘sponsor’ organization membership profile. The median revenue in the sample as well as universe is in $ 500 million range. The universe has some companies at the extremes, which we do not see in the survey. In this sense, the survey sample is representative of the overall universe with the exception of very large and very small companies. This mitigates response bias concerns, to an extent.

**Table 2d Sample versus Universe firm revenue (%)**

<table>
<thead>
<tr>
<th>Revenue Range</th>
<th>Sample (%)</th>
<th>Universe (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ 40 billion or higher</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>$30 billion to $39.9 billion</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>$15 billion to $29.9 billion</td>
<td>2</td>
<td>3.6</td>
</tr>
<tr>
<td>$10 billion to $14.9 billion</td>
<td>1</td>
<td>1.8</td>
</tr>
<tr>
<td>$5 billion to $9.9 billion</td>
<td>5</td>
<td>9.1</td>
</tr>
<tr>
<td>$1 billion to $4.9 billion</td>
<td>13</td>
<td>23.6</td>
</tr>
<tr>
<td>$500 million to $999.9 million</td>
<td>7</td>
<td>12.7</td>
</tr>
<tr>
<td>$100 million to $499.9 million</td>
<td>20</td>
<td>36.3</td>
</tr>
<tr>
<td>$50 million to $99.9 million</td>
<td>5</td>
<td>9.1</td>
</tr>
<tr>
<td>Less than $50 million</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NA/Don’t know</td>
<td>2</td>
<td>3.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

(rounded)
5. Analyses and results

In view of the early stage of theory as well as relatively small sample size, we used Partial Least Squares (PLS) to analyze the data set. PLS uses a component based approach for estimation, in contrast to covariance based Structural Equation Modeling tools including LISREL. It uses a least squares estimation procedure, which has less stringent demands on scales, sample size, and assumptions of multivariate normality (Chin, 1998). Finally, PLS can use formative and reflective constructs in the same model, which was necessary for some of the analyses. Next, we test the psychometric properties of scales used in the survey questionnaire, and then test the hypotheses. We also conducted post hoc analyses to test a selected set of alternative models. These models suggest additional theoretical and empirical avenues of research.

5.1. Validity of measures

All variables were measured as reflective measures. Table 3 shows the descriptive statistics for all these variables after the removal of items with low factor loadings. The table also includes Cronbach’s alpha and composite reliability for each scale. The scales meet the requirements of the conventional standard of 0.70 for Cronbach’s alpha and composite reliability save the item use of standards with Cronbach alpha of 0.668. As this was a new item developed for this study the item was retained given the borderline nature of the value. The use of standards in outsourcing has not been studied before, and hence the measure was important to the theoretical development. Composite reliability of all scales was greater than 0.7, suggesting that the scales were reliable. Finally, item level cross loadings were examined for convergent and discriminant validity (Fornell &
Larcker, 1981). These are shown in Table 4. Items with high cross loadings were removed. However, one item on business performance (item 4) was retained. This item did not cross load, and the business performance scale exhibited good reliability overall (Table 3), and there was no theoretical rationale to remove the item. Similarly, one item for sourcing success (item 1) with a loading somewhat below the conventional cutoff value (0.7) was retained. As seen in the factor structure matrix the retained items load highly on their respective constructs, and lower on other constructs, showing convergent and discriminant validity.

Table 3 Descriptive statistics and reliabilities

<table>
<thead>
<tr>
<th>Item</th>
<th>Item</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. dev.</th>
<th>Cronbach’s Alpha</th>
<th>Internal Consistency Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business performance</td>
<td>5</td>
<td>2.00</td>
<td>6.00</td>
<td>4.23</td>
<td>0.95</td>
<td>0.879</td>
<td>0.897</td>
</tr>
<tr>
<td>Clan controls</td>
<td>4</td>
<td>1.75</td>
<td>7.00</td>
<td>5.18</td>
<td>1.27</td>
<td>0.883</td>
<td>0.917</td>
</tr>
<tr>
<td>IT Business integration</td>
<td>3</td>
<td>1.00</td>
<td>7.00</td>
<td>4.33</td>
<td>1.48</td>
<td>0.886</td>
<td>0.928</td>
</tr>
<tr>
<td>Modularity</td>
<td>3</td>
<td>1.67</td>
<td>6.33</td>
<td>4.69</td>
<td>1.19</td>
<td>0.884</td>
<td>0.930</td>
</tr>
<tr>
<td>Multisourcing</td>
<td>1</td>
<td>1.00</td>
<td>6.00</td>
<td>2.98</td>
<td>1.65</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Size of firm, revenues in million (log scale)</td>
<td>1</td>
<td>1.88</td>
<td>4.35</td>
<td>2.89</td>
<td>0.67</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Standards</td>
<td>2</td>
<td>2.00</td>
<td>7.00</td>
<td>5.17</td>
<td>1.18</td>
<td>0.668</td>
<td>0.839</td>
</tr>
<tr>
<td>Sourcing success</td>
<td>4</td>
<td>1.00</td>
<td>7.00</td>
<td>5.01</td>
<td>1.12</td>
<td>0.785</td>
<td>0.862</td>
</tr>
</tbody>
</table>

Note: All reflective indicators
Table 4 Loadings and cross loadings

<table>
<thead>
<tr>
<th></th>
<th>BPERFORM</th>
<th>CLAN</th>
<th>INTEGRATE</th>
<th>MODULARITY</th>
<th>MSOURCE</th>
<th>OUTCOME</th>
<th>SIZE</th>
<th>STD</th>
<th>SUCCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>clan1</td>
<td>-0.031</td>
<td>0.851</td>
<td>0.117</td>
<td>0.238</td>
<td>-0.014</td>
<td>0.168</td>
<td>-0.128</td>
<td>0.355</td>
<td>0.177</td>
</tr>
<tr>
<td>clan2</td>
<td>0.229</td>
<td>0.895</td>
<td>0.072</td>
<td>0.256</td>
<td>0.043</td>
<td>0.087</td>
<td>-0.170</td>
<td>0.330</td>
<td>0.469</td>
</tr>
<tr>
<td>clan3</td>
<td>0.110</td>
<td>0.913</td>
<td>0.274</td>
<td>0.200</td>
<td>0.013</td>
<td>-0.052</td>
<td>-0.154</td>
<td>0.363</td>
<td>0.461</td>
</tr>
<tr>
<td>clan4</td>
<td>-0.007</td>
<td>0.761</td>
<td>-0.045</td>
<td>0.116</td>
<td>-0.074</td>
<td>-0.058</td>
<td>-0.047</td>
<td>0.405</td>
<td>0.259</td>
</tr>
<tr>
<td>integrate1</td>
<td>0.158</td>
<td>0.071</td>
<td>0.850</td>
<td>0.058</td>
<td>0.069</td>
<td>0.102</td>
<td>-0.105</td>
<td>-0.241</td>
<td>0.347</td>
</tr>
<tr>
<td>integrate2</td>
<td>0.167</td>
<td>0.092</td>
<td>0.902</td>
<td>0.401</td>
<td>0.180</td>
<td>-0.052</td>
<td>-0.057</td>
<td>-0.112</td>
<td>0.275</td>
</tr>
<tr>
<td>integrate3</td>
<td>0.111</td>
<td>0.198</td>
<td>0.947</td>
<td>0.355</td>
<td>0.139</td>
<td>-0.037</td>
<td>-0.035</td>
<td>-0.208</td>
<td>0.303</td>
</tr>
<tr>
<td>modular1</td>
<td>0.317</td>
<td>0.246</td>
<td>0.270</td>
<td>0.950</td>
<td>0.091</td>
<td>-0.002</td>
<td>-0.006</td>
<td>-0.013</td>
<td>0.290</td>
</tr>
<tr>
<td>modular2</td>
<td>0.279</td>
<td>0.259</td>
<td>0.270</td>
<td>0.961</td>
<td>0.025</td>
<td>-0.059</td>
<td>0.008</td>
<td>0.069</td>
<td>0.303</td>
</tr>
<tr>
<td>modular3r</td>
<td>0.025</td>
<td>0.137</td>
<td>0.392</td>
<td>0.789</td>
<td>-0.106</td>
<td>-0.075</td>
<td>-0.098</td>
<td>0.023</td>
<td>0.257</td>
</tr>
<tr>
<td>msoure2</td>
<td>0.144</td>
<td>0.004</td>
<td>0.153</td>
<td>0.013</td>
<td>1.000</td>
<td>-0.053</td>
<td>-0.136</td>
<td>-0.109</td>
<td>0.180</td>
</tr>
<tr>
<td>outcome3</td>
<td>0.136</td>
<td>0.036</td>
<td>-0.011</td>
<td>-0.047</td>
<td>-0.053</td>
<td>1.000</td>
<td>0.021</td>
<td>0.166</td>
<td>0.186</td>
</tr>
<tr>
<td>perform1</td>
<td>0.802</td>
<td>-0.058</td>
<td>0.037</td>
<td>0.098</td>
<td>0.027</td>
<td>0.137</td>
<td>-0.010</td>
<td>-0.118</td>
<td>0.283</td>
</tr>
<tr>
<td>perform2</td>
<td>0.942</td>
<td>0.199</td>
<td>0.156</td>
<td>0.282</td>
<td>0.183</td>
<td>0.138</td>
<td>-0.101</td>
<td>0.024</td>
<td>0.449</td>
</tr>
<tr>
<td>perform3</td>
<td>0.918</td>
<td>0.124</td>
<td>0.237</td>
<td>0.243</td>
<td>0.174</td>
<td>0.090</td>
<td>-0.101</td>
<td>-0.082</td>
<td>0.332</td>
</tr>
<tr>
<td>perform4</td>
<td>0.581</td>
<td>0.100</td>
<td>-0.069</td>
<td>0.130</td>
<td>-0.125</td>
<td>0.063</td>
<td>-0.002</td>
<td>0.094</td>
<td>0.043</td>
</tr>
<tr>
<td>perform5</td>
<td>0.702</td>
<td>-0.032</td>
<td>0.157</td>
<td>0.055</td>
<td>0.202</td>
<td>0.124</td>
<td>-0.041</td>
<td>-0.182</td>
<td>0.025</td>
</tr>
<tr>
<td>size</td>
<td>-0.083</td>
<td>-0.156</td>
<td>-0.066</td>
<td>-0.030</td>
<td>-0.136</td>
<td>0.021</td>
<td>1.000</td>
<td>-0.081</td>
<td>-0.298</td>
</tr>
<tr>
<td>ssucess1</td>
<td>0.279</td>
<td>0.436</td>
<td>0.311</td>
<td>0.298</td>
<td>-0.035</td>
<td>0.042</td>
<td>-0.217</td>
<td>-0.047</td>
<td>0.668</td>
</tr>
<tr>
<td>ssucess2</td>
<td>0.273</td>
<td>0.332</td>
<td>0.295</td>
<td>0.205</td>
<td>0.215</td>
<td>0.216</td>
<td>-0.298</td>
<td>0.230</td>
<td>0.897</td>
</tr>
<tr>
<td>ssucess3</td>
<td>0.217</td>
<td>0.310</td>
<td>0.273</td>
<td>0.269</td>
<td>0.059</td>
<td>-0.134</td>
<td>0.066</td>
<td>0.761</td>
<td></td>
</tr>
<tr>
<td>ssucess4</td>
<td>0.417</td>
<td>0.299</td>
<td>0.181</td>
<td>0.224</td>
<td>0.166</td>
<td>0.232</td>
<td>-0.261</td>
<td>0.368</td>
<td>0.789</td>
</tr>
<tr>
<td>standard1</td>
<td>-0.026</td>
<td>0.378</td>
<td>-0.246</td>
<td>0.059</td>
<td>-0.143</td>
<td>0.149</td>
<td>-0.026</td>
<td>0.955</td>
<td>0.227</td>
</tr>
<tr>
<td>standard3</td>
<td>-0.077</td>
<td>0.338</td>
<td>-0.012</td>
<td>-0.049</td>
<td>0.009</td>
<td>0.143</td>
<td>-0.176</td>
<td>0.736</td>
<td>0.110</td>
</tr>
</tbody>
</table>

Table 5 shows the correlation analysis of all the variables. The diagonal shows the square root of average variance extracted (AVE). This is a measure of the variance shared between a construct and its indicators. All variables show an AVE of 0.5 and above, with the diagonal elements (or square root of AVE) well above 0.7. This establishes convergent validity for the final scales (Fornell et al., 1981). In addition, the values in the
diagonal cells are higher than values in the corresponding row and column indicating discriminant validity.

Table 5 Correlations across latent constructs

<table>
<thead>
<tr>
<th></th>
<th>Business performance</th>
<th>Clan controls</th>
<th>IT Business integration</th>
<th>Modularity</th>
<th>Multisourcing</th>
<th>Outcome controls</th>
<th>Size of firm</th>
<th>Standards</th>
<th>Sourcing success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business performance</td>
<td>0.801</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clan controls</td>
<td>0.121</td>
<td>0.857</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT Business integration</td>
<td>0.158</td>
<td>0.141</td>
<td>0.901</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modularity</td>
<td>0.243</td>
<td>0.242</td>
<td>0.335</td>
<td>0.903</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multisourcing</td>
<td>0.144</td>
<td>0.004</td>
<td>0.153</td>
<td>0.013</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome controls</td>
<td>0.136</td>
<td>0.036</td>
<td>-0.011</td>
<td>-0.047</td>
<td>-0.053</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size of firm</td>
<td>-0.083</td>
<td>-</td>
<td>-0.066</td>
<td>-0.030</td>
<td>-0.136</td>
<td>0.021</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standards</td>
<td>-0.046</td>
<td>0.412</td>
<td>-0.196</td>
<td>0.029</td>
<td>-0.109</td>
<td>0.166</td>
<td>0.081</td>
<td>0.852</td>
<td></td>
</tr>
<tr>
<td>Sourcing success</td>
<td>0.387</td>
<td>0.437</td>
<td>0.333</td>
<td>0.314</td>
<td>0.180</td>
<td>0.186</td>
<td>0.298</td>
<td>0.215</td>
<td>0.783</td>
</tr>
</tbody>
</table>

Note: Square root of AVE in diagonal

These final retained items were used to test the model hypotheses as proposed above.

5.2. Test of model and hypotheses

PLS provides R square values to test the effect of the independent variables on the respective dependent variable. Outcome controls and firm size were included as statistical controls for sourcing success and business performance, respectively. Use of clan controls and IT business integration were included as significant predictor variables of sourcing success; while the use of standards was not. Multi-sourcing was conceived as a direct antecedent to sourcing success. The bootstrap run to test the model was carried out with 55 samples and 500 simulations. Path coefficients in the final model show the significance of each path in the model. The path coefficients and R square values of the
final model are shown in Figure 2. In the overall model, sourcing success showed a significant link with business performance, with an R square of 0.17.

**Figure 2 PLS Results**

![PLS Results Diagram](image)

*Note: Solid arrows show supported hypotheses*

As shown in Table 6, we found general support for the hypotheses, with the exception of the hypotheses 3, 4 and 10. A significant and positive support was detected for all other hypotheses, showing overall support for the model. A few hypotheses failed to reach the conventional significance levels, however the sign and confidence levels indicate some support and are in the right direction. In view of the limited sample having lower statistical power such limitations were expected. Biased parameter estimates which
leads to lower estimates at the structural model (inner model) are also a plausible explanation (Chin & Newsted, 1999). The final variance explained in the dependent variables was 35% for sourcing success, 15% for modularity, and 17% for business performance.

### Table 6 Summary of hypotheses tests

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Path coefficient</th>
<th>p value</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Clan controls → Sourcing success</td>
<td>0.308**</td>
<td>0.03</td>
<td>Supported</td>
</tr>
<tr>
<td>H2: Clan controls → Modularity</td>
<td>0.194</td>
<td>0.12</td>
<td>Weakly supported</td>
</tr>
<tr>
<td>H3: Standards → Sourcing success</td>
<td>0.119</td>
<td>0.27</td>
<td>Not supported</td>
</tr>
<tr>
<td>H4: Standards → Modularity</td>
<td>0.010</td>
<td>0.48</td>
<td>Not supported</td>
</tr>
<tr>
<td>H5: IT Business integration → Sourcing success</td>
<td>0.236*</td>
<td>0.07</td>
<td>Supported</td>
</tr>
<tr>
<td>H6: IT Business integration → Modularity</td>
<td>0.309**</td>
<td>0.02</td>
<td>Supported</td>
</tr>
<tr>
<td>H7: Multisourcing → Sourcing success</td>
<td>0.163*</td>
<td>0.09</td>
<td>Supported</td>
</tr>
<tr>
<td>H8: Modularity → Sourcing success</td>
<td>0.163</td>
<td>0.13</td>
<td>Weakly supported</td>
</tr>
<tr>
<td>H9: Sourcing success → Business performance</td>
<td>0.353**</td>
<td>0.02</td>
<td>Supported</td>
</tr>
<tr>
<td>H10: Modularity → Business performance</td>
<td>0.133</td>
<td>0.21</td>
<td>Not supported</td>
</tr>
</tbody>
</table>

**Note:** * and ** indicate significance at 0.1 and 0.05 levels

5.3. **Post hoc analyses**

In order to understand additional relationships over and above those hypothesized in section 3, post hoc analyses were conducted. These are new relationships that are
supported by data, and suggest additional theory. The analyses are in line with relatively immature theory on the antecedents and consequences of sourcing success, and the guidance on methodology (Chin et al., 1999). In view of the complexity of the model, the antecedents and consequences models shown in Figure 1a and 1b were analyzed separately. This included a second order conceptualization of the antecedents of sourcing success. In addition, a detailed test of mediation of the consequents was conducted. These analyses are explained below.

**Antecedents of sourcing success**

As the antecedents of sourcing success and modularity were proposed as a direct effects model, there was no theoretical justification to study any mediated effects among the organizational controls. Modularity could be considered as a mediator as suggested in Figure 1a. In this model sourcing success remains the dependent variable. In the absence of a relationship between a mediator and the dependent variable as shown in Figure 2, there is no presence of mediation (Mathieu & Taylor, 2006). Hence the analysis suggests only a direct effect of IT business integration and clan controls on sourcing success, irrespective of the presence of architectural modularity to transmit that effect.

In order to test the presence of higher order controls, we operationalized a second order construct with the antecedent organizational controls acting as first order constructs. In order to run this model, factor scores for IT business integration, clan controls and standards were extracted from the first order model. These factor scores were then saved as discrete items in the data and used as individual items to model the formative higher order construct. Here we followed the two step score construction
procedure from Chin et al (2003). Other constructs were modeled reflectively. This was done in line with recommendations by Rai et al (2006). Next, this second order construct was tested for significant interaction with sourcing success and modularity. The results of the test are shown in Figure 3. The higher order construct shows significant direct relationships with both dependent variables. This new construct explains the variance in the dependent variables to a similar extent, when compared with the first order constructs in earlier section. However, the path coefficients are more salient, at a significance level of 0.01. Again, modularity was theorized as a mediator for this model. As with the first order model, we found no statistically significant relationship between the mediator and dependent variable, suggesting the absence of mediation (Mathieu et al., 2006). We label this higher order construct as IT Sourcing Capability (ITSC). This capability has direct, positive effects on sourcing success and modularity. The interpretation and implications of the model are given in the following section.

**Figure 3** Post hoc analyses of the antecedents: Higher order formative construct
Given inadequate theory to guide the relationship between first order and second order construct, i.e., whether formative or reflective, a reflective higher order construct was also tested (Chin et al., 1999). An identical model with reflective higher order construct is shown in Figure 3a. The use of reflective construct shows a slightly higher R square for sourcing success, and lower R square for modularity. There is no mediation effect. This suggests an alternative conceptualization of ITSC. The implications are discussed in the following section.

**Figure 3a** Post hoc analyses of the antecedents: Higher order reflective construct

![Diagram showing the relationship between the variables](image)

**Consequences of sourcing success**

We also examined the relationship between the dependent variables of the antecedent model, viz., sourcing success, and modularity, and the ultimate dependent variable, business performance. This was done in order to study the possible mediating
role of sourcing success. The model is shown in Figure 4a. This shows the significant effect of modularity on sourcing success. The effect of modularity on business performance, however, is not significant. This shows that sourcing success could act as a mediator in this relationship. Alternatively, this could be an indirect effect, if there was no relationship between modularity and business performance to start with (Mathieu et al., 2006).

Figure 4a Post hoc analyses of the consequents: Mediation effects

Figure 4b Mediated effect among consequents
In order to ascertain the presence of mediation, we tested additional models. First, we tested the model with the modularity-business performance relationship removed. As shown in Figure 4b, the results are very similar to the initial model with a small change in R square. In a strong test of mediation (Mathieu et al., 2006), we also tested the direct effect of modularity on business performance. The test would confirm, if there is a significant relationship between the variables, in the absence of the mediator. We find that the effect of modularity on business performance is significant when only the direct effect is considered, i.e. with sourcing success removed from the model. As shown in Figure 4c, the path coefficient from modularity to business performance is 0.297, and is significant. This model shows an R square of 0.095, as compared to that of 0.17 in the initial model. The results are summarized in Table 7. Thus, modularity can explain about 9.5% variance in business performance, even when sourcing success is not included in the model. This direct effect shows that sourcing success mediates fully the effect of modularity on business success. Hence the advantages of modular architecture in the context of outsourcing are mediated by sourcing success. In substantially insourced environments, where there is no mediator variable, an increase in modularity of
architectures would have a direct effect on business performance. Thus modularity is important in both insourced and outsourced settings. The results hold important implications for theory and practice, and are discussed in the next section.

Table 7 Summary of mediation in consequents model

<table>
<thead>
<tr>
<th>Path</th>
<th>Partial mediation</th>
<th>Model with full mediation</th>
<th>Direct model (no mediator)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fig. 4a</td>
<td>Fig. 4b</td>
<td>Fig. 4c</td>
</tr>
<tr>
<td>Modularity → Sourcing success</td>
<td>0.319*</td>
<td>0.331**</td>
<td></td>
</tr>
<tr>
<td>Sourcing success → Business performance</td>
<td>0.340**</td>
<td>0.410**</td>
<td></td>
</tr>
<tr>
<td>Modularity → Business performance</td>
<td>0.155</td>
<td></td>
<td>0.297*</td>
</tr>
<tr>
<td>R square for Business performance</td>
<td>0.172</td>
<td>0.160</td>
<td>0.095</td>
</tr>
</tbody>
</table>

Note: * and ** indicate significance at 0.1 and 0.05 levels
6. Discussion and implications

The boundary conditions of our research are “large, strategic outsourcing arrangements” which are about three years in duration, on an average. Hence, the results would be less relevant to smaller and relatively simple outsourcing contracts, which need only time and cost controls to be successful, and have minimal impact on business performance. As seen in sample details, these arrangements cover application development and maintenance, in a vast majority of firms. Given the difficulty of achieving firm level outcomes from application development and maintenance function outsourcing (Grover et al., 1996), we emphasize that these are highly customized outsourcing arrangements, as compared to the commodity-like nature of some outsourcing. Thus, we qualify the generalizability of our results. However, the results of Hypothesis 9 need to be interpreted with caution, as the respondents were asked to select “strategic” projects, i.e., which could potentially have an effect on business performance. Having established that these outsourcing initiatives affect enterprise level performance (Linder, 2004a) as seen in ‘transformational’ outsourcing, helps us understand the role of organizational controls in such context. While time and cost controls do have a role, a more comprehensive portfolio of controls needs to be deployed by the focal firm in such a context.

The use of clan controls directly impacts sourcing success in such highly complex projects. IT business integration also has a significant impact, given the dependencies across IT and business outcomes. In contrast, use of standards did not relate to sourcing success. The latter result could be an artifact of the measurement, as this construct was
newly developed for the study. However, in spite of the statistical analyses, content validity is untested. Hence the domain of the use of standards is not clear. In the current operationalization, we did not cover the enforcement of standards. It is also possible that relevant standards were not in place at most firms, as far as outsourcing is concerned. Although we saw some highly successful firms use standards to control their vendors, it seems that the majority of firms rely on high level, strategic IT business integration, together with clan controls at operational level. As commonality of standards depends on institutional forces (Zhu et al., 2006), it is possible that standards related to outsourcing are immature. Our results suggest that shared values and goal congruency across client and vendor teams (Kirsch, op. cited) are strongly related to sourcing success. The reliance on more traditional, formal outcome controls is relevant, given the statistical significance of conventional outcome controls. However, time and cost controls are not enough to succeed at large scale, complex outsourcing arrangements.

Modularity was a newly developed construct in this research. In the absence of well known scales, we drew on conceptual definitions in the literature (Pil et al., 2006) in its operationalization. The psychometric properties of the construct were adequate. This gives us some confidence in the interpretation of results. Among the antecedents, only IT business integration had a significant impact on modularity. Again, the domain of modularity is defined at the architectural level. This suggests a direct link between IT business integration where enterprise architectures are expected to conform with business strategy. The positive relationship between clan controls and modularity approaching statistical significance, also has a number of implications. The role of clan controls suggests high level of mutuality involved in modular sourcing practices. Highly complex
and flexible coordination is possible through the use of clan controls, which promotes higher level architectural modularity. IT business integration and clan controls have direct effects on sourcing success. These effects are not mediated via modularity, and hence are seen regardless of modular or non modular architectures in the firm. Hence the use of legacy systems, which are low on modularity, is not a factor in the direct effects of clan controls. However, we are not aware of any empirical study of modularity in relation to sourcing practices. Hence, understanding the role of modularity is an important contribution to sourcing literature, both theoretically and empirically.

We adapted multi-sourcing notion from recent research as a direct antecedent to flexibility and sourcing success (Tan & Sia, 2006a). In the overall model (Figure 2), we observed a significant direct effect on sourcing success. This supports earlier findings on the role of multisourcing as a key characteristic of successful outsourcing (Cohen et al., 2006). Given that the initial development and testing of the scale was based on Singapore based firms (Tan et al., 2006a), our results show the robustness of scales and conceptualization.

In the overall model, we tested for the effects of sourcing success and modularity on business performance. Although the test is somewhat biased by sample selection criteria, the bias does not guarantee a significant positive coefficient. As shown in Table 3, there is a wide range in the values of business performance and sourcing success. The value of R square is in line with those obtained typically in IT value research (Kohli & Devaraj, 2003) which sought to link IT investment with firm value. The result shows the importance of strategic IT outsourcing as a value adding activity in its own right.
Although the downstream link with business performance needs to be tested in more general samples, the study of antecedents of outsourcing success in the context of ‘strategic’ projects is an important contribution to literature. As a significant proportion of IT investment related activities are currently outsourced (Vallis et al., 2008), the results suggest that the outsourced element of IT investment needs to be managed as well in order to improve business performance. In some ways, the results are reminiscent of IT value research, which has established the link between IT investment and firm performance. Hence, sourcing success can be an important measure to focus on in IT value research. In this regard, the hypothesized antecedents or controls look upstream as compared to the IT investment or value criteria. They also suggest that development of specific set of controls, over and above time and cost controls is germane to outsourcing. The success of such complex outsourcing initiatives ultimately affects firm performance.

We thus delve into the specifics of how IT management can add value. While IT business integration is relatively well researched and linked to business performance, its role in outsourcing has not been that clear. Similarly, the portfolio of controls has not been linked to sourcing success.

Post hoc analyses suggest that the relationship between modularity and business performance is mediated by sourcing success. The direct relationship, as shown in the ‘direct effect only’ model, in Figure 4c, is relevant in substantially insourced environments. Hence, modularity is a desirable consequent of controls in its own right, separate from sourcing. In outsourced contexts, modular architecture and sourcing related controls work jointly to increase the likelihood of improved business performance. As for firms which do not outsource (or outsource minimally), modularity remains important, as
it has a direct impact on business performance. Naturally, there can be other antecedents of modularity that have not been covered in this study suggesting an avenue of future research.

We also conjecture that organizational controls work together as configurations, and thus need to be viewed as a higher order construct (Figures 3 and 3a). In combination, the use of controls suggests an outsourcing capability that we label as IT Sourcing Capability. The formative construct aggregates the controls into a single measure, but does not assume any interdependencies among the controls. Given these equivalent results, the formative results are easier to interpret. The reflective conceptualization would suggest a deeper capability, with IT business integration and clan controls as manifestation of this latent ‘capability’. We have also observed the ‘rarity’ of “IT Sourcing Capability” in firms and can speculate that it is developed over a long period of time, and is therefore a source of competitive advantage. These specific mechanisms are manifested typically as effective routines (Winter, 2003) in the context of large scale, strategic outsourcing arrangements and developed over a long period of time, and they collectively constitute a capability difficult to replicate.

The results hold a number of implications for managers. First, a number of controls need to be in place in order to be successful in strategic or ‘transformational’ outsourcing. IT Business integration and clan controls are especially important to sourcing success in this context. As suggested by consultants, multisourcing is also related to sourcing success. Architectural modularity is driven by the same set of organizational controls as sourcing success. Managers involved in outsourcing can make
a case for investments in these salient controls which cannot be developed overnight. Although sourcing success is of interest within the IT function, the ultimate effect on firm level performance is likely to draw the interest of senior executives, and help justify investment in the set of controls required for strategic or transformational outsourcing (Linder, 2004a).

7. Limitations

There are a number of limitations of the research. As regards theory, we did not include self control as a distinct type of control as it is difficult to observe at the organizational level. Hence the assumption is that selection procedures at vendor firms will work toward selecting internally driven, well motivated employees. Similarly, buyers will look for vendors interested in the work. Given the design of study as a firm level survey, with respondents as key informants, it was not feasible to get individual level data. On the other control modes, we selected IT business integration and standards for behavior and outcome controls respectively. However, we propose clan controls as an overarching set of mechanisms (and not specific) given the large number of mechanisms observed in the case study research. Given our interest in the consequences, we did not test the antecedents of controls, and instead relied on theory and our earlier case study research to classify the individual controls. Modularity has both theoretical and empirical limitations. Testing of items and construct level analyses suggest the soundness of our operationalization. It is however possible that there are trade-offs in the use of modularity, with a certain threshold level that is optimal. The results suggest that current architectures are well within the range where increased modularity is desirable.
Low response rates are typical of surveys of senior executives. Given the respondent qualifications that intersect IT and business criteria, there is a limited set of executives who could respond to the survey. Effective response rate in the range of 9-10% show that the results are comparable to well designed executive surveys, and hence generalizable within the boundary conditions of research. Common method bias is a concern in such surveys, which use a single respondent and data collection technique for each firm. The absence of bias was tested through the use of Harman’s single factor test (Podsakoff & Organ, 1986). The bias is indicated when one construct accounts for much of the covariance among all constructs. There were a number of principal components seen in the data, indicating no excessive common method bias. It is notable that social desirability was less of a concern as this was not an individual level survey. Limitations of PLS include the difficulty of finding small effect sizes, when samples are below 100. However, given the advantages such as the use of formative constructs, use of this statistical technique is advisable. In addition, we avoid the common mistakes related to the use of PLS (Chin et al., 2003). The lack of overall model fit indices, that are available in LISREL (for example) is a concern; hence we compare R square values on the same dependent variable.

The respondents were asked to consider ‘strategic’ outsourcing initiatives, defined as those which could have an effect on the firm financials. The bias in resulting sample characteristics would tend to strengthen the relationship tested in Hypothesis 9, as discussed earlier. However, this bias does not guarantee the significant results seen in the model. In a way, the observed significance in the link between sourcing success and business performance validates sample criteria, in that the sample is indeed composed of
strategic or ‘transformational’ outsourcing (Linder, 2004a) initiatives which have an impact on “enterprise level performance”. Hence, these characteristics essentially qualify the results on the antecedents, and the salient organizational controls need to be understood in the context of ‘transformational’ outsourcing, which is less well understood as compared to cost reduction driven outsourcing.

8. Future research

The main thrust of this research was a conceptualization and empirical validation of the antecedents of sourcing success, defined as a set of organizational controls, in strategic or ‘transformational’ outsourcing. It is becoming clearer that IT investments, when operationalized as dollar value, have tenuous links to value and competitive advantage (Bharadwaj, 2000). We add to the extant research on sourcing success (Grover et al., 1996) which has emphasized dyadic concepts, such as partnership quality, and vendor characteristics such as service quality. The results suggest a number of avenues of future research. First, the role of modularity has not been researched in the context of outsourcing. This has been due to difficulties in operationalization, which our study has overcome to some extent. Secondly, the content validity of standards was a limitation; we were unable to include the relevant domain in the operationalization of the use of standards. A wider interpretation, including use and enforcement, or a narrow domain, restricted to (for example) testing standards, are avenues for future research. The interrelationships among controls are another area for future research. Post hoc analyses suggested formative or reflective conceptualizations of the salient controls. Although the former is easier to interpret, the latter suggests avenues for research. The set of controls
would be visible as IT business integration mechanisms within the firm, and the use of clan controls in external relationships. Future research can compare these intra and inter firm environments, and extend this reflective conceptualization.

Finally, the study of long term development of organizational controls, particularly clan controls, is an area of promise. While we study the use of controls, and their ultimate effect on business performance, the longitudinal development of a portfolio of controls is a related question that we do not address here. The long term development implies the use of the same controls in a number of projects, and the learning involved. The results suggest that there are similarities among mechanisms in the control literature (Kirsch, op. cited) and routines (Winter, 2003). Although mechanisms are well known to firms, they need to be practiced over a period of time so that they become routines. In this sense, the set of controls used by focal firms represent a “sourcing capability” in the context of outsourcing which we label as IT Sourcing Capability. As discussed in the first chapter, case study research could help us study the development of these controls, through following a single focal firm across a number of projects.
### Appendix A

**Construct Definitions and items**

| Clan Control: A mode of control in which the client liaison becomes part of a project team clan by instilling, embracing, and fostering shared values and goals among the project team, and common approaches to working on the project.  
Kirsch et al, 2007 (adapted) |
|---|
| All vendor and client team members understood the project team’s goals, values, and norms.  
Throughout the project, vendor and client team members used similar approaches to decision making.*  
Throughout the project, vendor and client team members used similar approaches to problem solving.*  
Shared norms and values among the client and vendor team members influenced their project related behaviors.  
A common vision of the project influenced how the client and vendor team members behaved during the project.  
All client and vendor team members attempted to be ‘regular’ members of the project team. |
| Use of standards: Use of sourcing related standards  
Zhu et al, 2006 (adapted) and CIO interviews |
| Vendor and client team members used common Requirements Definition (RD) standards.  
Vendor and client team members used common Enterprise Architecture (EA) standards.  
Vendor and client team members used common testing standards. |
| IT-Business Integration: IT to act as business problem solver, and to integrate business with IT capability.  
Bassellier and Benbasat, 2004 (adapted) and CIO interviews |
| IT Organization is able to recognize potential ways to exploit new business opportunities using IT.  
IT Organization is able to analyze business problems in order to identify IT-based solutions (understand situations, getting the "big picture", identifying underlying root problems, etc.).  
IT Organization is able to evaluate the organizational impacts of IT solutions. |
| Outcome controls: A mode of control in which the client expects the vendor to achieve specific outcomes and targets, regardless of the particular behaviors and actions.  
The client placed significant weight on timely project completion.  
The client placed significant weight on project completion within budgeted costs.  
The client evaluated the vendor on the accomplishment of project goals, regardless of how the goals were accomplished. |
| Sourcing success: Satisfaction with benefits from outsourcing gained by an organization as a result of deploying an outsourcing strategy.  
Grover, Cheon and Teng, 1996  
We have been able to refocus on core business, as a result of sourcing strategy. |
We have enhanced our IT competence, as a result of sourcing strategy.
We have increased access to skilled personnel, as a result of sourcing strategy.*
We have enhanced economies of scale in human resources, as a result of sourcing strategy.*
We have enhanced economies of scale in technological resources, as a result of sourcing strategy.*
We have increased control of IS expenses, as a result of sourcing strategy.
We have reduced the risk of technological obsolescence, as a result of sourcing strategy.*
We have increased access to key information technologies, as a result of sourcing strategy.*
We are satisfied with our overall benefits from outsourcing, as a result of sourcing strategy.

Modularity: Opposite of monolithic
Pil and Cohen, Hoetker, etc. (no scale exists) and CIO interviews.

We have more modular architecture.
We have more modular processes.
We have monolithic system. (reverse scored)

Multisourcing: Use of multiple vendors.
Tan and Sia, 2006

For the specified project we have a policy of contracting with multiple vendors.
We have partitioned the project and outsourced different components to different vendors.
We have built up relationships with a number of vendors to contract our project.

Business performance: Organizational effectiveness of a firm/BU in terms of its financial and operational performance relative to its competitors. Initially proposed by Venkatraman and Ramanujam, extensively used in IS literature, e.g., Langdon et al, 2007

The extent to which a firm/BU performed better than its competitors…
Sales growth
Profitability
Overall financial performance
Company reputation
Return on investment
Return to shareholders*

IT function
(Grover et al 1996)
Application development and maintenance
Systems operations
Telecommunications/networks management and maintenance
End user support
IS planning and management

Note: * shows items that were dropped in instrument validation.
References


CIO. 2003. CIO Insight Outsourcing Research Study.


