Outsourcing and Market Value Relevance: Toward a Comprehensive Model

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Abstract

Using organizational control theory and a related model of firm level outsourcing capabilities, we analyze the effects of buyer, contract, and vendor characteristics on abnormal stock returns among firms that have announced large scale outsourcing contracts. We draw upon a comprehensive dataset on outsourcing announcements for 2005-2007, augmented with data collected from public sources on buyer organizations. Salient buyer factors examined include governance of IT-business integration and use of various organizational controls jointly labeled as IT Sourcing Capability (ITSC). On the vendor side, we examine the impact of vendor size, contract size and reputation. Our study shows that IT-business integration, use of enterprise standards (negative), vendor reputation, and industry affect market value. For the focal firm, governance related factors such as IT business integration and use of social or clan controls are positively related to outsourcing success. An interesting finding is that buyers need to have different capabilities to succeed across IT and BPO outsourcing. While past research has been clouded by the lack of detailed categorization of outsourcing contracts, our study clarifies some conflicting results through a comprehensive examination of relevant factors affecting outsourcing success.

Keywords: Outsourcing, Event study, Organizational controls, Firm level capability.

1. Introduction

Information Technology (IT) accounts for a quarter of non-residential fixed investment, (Bureau of Economic Analysis 2006). Whilst the link between overall IT investment and productivity is well known (Stiroh 2002) it is less well known that *a significant and increasing* share of this IT investments is currently outsourced. As a conservative estimate, this share has reached 20% of IT budgets among Informationweek 500 firms (Vallis et al. 2008), a study of large firms in the United States. Moreover, anecdotal accounts suggest that this share is growing. In addition to a higher share of IT budgets, outsourcing has also gained wider adoption among firms. Hence, there has been a steady growth of IT outsourcing in the US and internationally, reaching $260 billion by 2009 (Souza et al. 2005). Recent estimates for IT and BPO (Business Process Outsourcing) were $297 billion for 2007. IT outsourcing (also referred to as sourcing in some 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).

Yet the role of this outsourced element in affecting productivity is less understood. Given that outsourcing is increasingly a direct proxy for IT investment, success of these outsourcing initiatives would be the key to future productivity increases. In contrast, market research indicates that a significant share of client firms are not satisfied with the outcomes of outsourcing (Cohen et al. 2006). About half of large outsourcing contracts have been discontinued, or subjected to major changes (CIO 2003). In addition, outsourcing highly 'customized' functions, such as application development, is even riskier (Cohen et al. 2006) with regard to success rates.

Academic and practitioner research offers some hints of the reasons for the "firm effect" in outsourcing, i.e., differential industry and firm level outcomes of IT outsourcing. This research explains why some buyer or focal firms exhibit distinct value adding capabilities in outsourcing. There is scattered evidence that provides clues to these factors. First, different industries gain varying economic contributions from IT outsourcing (Han et al. 2005). Second, dyadic characteristics such as relationship quality predict some differences in sourcing success (Lee et al. 1999). However, these studies do not go beyond suggesting experience or 'partnership' as an explanation for success. At the same time, role of outsourcing has moved away from cost reduction. 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". This research (Linder 2004) suggests the importance of outsourcing that goes *beyond cost reduction*. It appears that more successful focal or client firms differ in how they select and combine the increasingly commoditized IT resources, viz., vendors and contracts. 'IT services market' composed of vendors has become a commonly available global resource, and information about a large number of standard (and even customized) contracts and Service Level Agreements (SLAs) are available. In summary, there is a lack of research to systematically explain success factors for large scale outsourcing.

The wide range of success rates in outsourcing, and their nexus to firm level impact, would suggest that stock markets are cognizant of contextual information on IT outsourcing. Abnormal returns around outsourcing announcements signal the 'success' of outsourcing initiatives, assuming rational expectations of investors. Hence we use abnormal returns as a proxy for 'success' with the inherent assumption of rational and knowledgeable investors. On

average, announcements of outsourcing have been accompanied by positive abnormal returns (Hayes et al. 2000). Given this result, a small stream of Accounting Information Systems (AIS) literature has delved into factors that could affect abnormal returns. Hayes et al. found significant differences across small and large focal firms, and service versus nonservice industry firms. Later work by Oh et al (2006) found effects of contract and vendor size, in addition to effects due to the asset specificity of outsourcing activity.

Surprisingly, buyer (also referred as focal or client firm) capabilities have received less attention in this stream. It is plausible that the role of focal firm capabilities is instrumental in outsourcing success: in the end it is the buyers' understanding and value captured from outsourcing that leads to 'success' of outsourcing initiatives. Therefore, we attempt to understand whether differences among buyers' capabilities explain their level of success in IT outsourcing. We theorize that these are not merely characteristics of the firm; they are capabilities that are developed over a long time. We draw on case study research (Nagpal 2009) that involved interviews with Chief Information Officers (CIOs) and senior vendor executives. The case study shows a number of aspects of these focal firm characteristics, such as idiosyncratic and causally ambiguous nature, which suggests that these are **firm level capabilities**. Hence, these capabilities are the focus of the paper. At the same time, vendor and contract characteristics remain important, given the findings of Oh et al. (2006). In this paper, we also propose and test for new vendor and contract related factors. Finally, we use some findings (Oh et al. 2006) as controls in our model.

We utilize a comprehensive dataset of recent outsourcing announcements, to study the role of buyer, vendor and contract related factors. In addition, we integrate them with the salient results from previous research (Oh et al. 2006); the latter are used as controls to strengthen the

validity of results. Hence, together we test a comprehensive set of buyer, vendor and contract factors that can potentially affect outsourcing success. In addition, we distinguish between IT and Business Process Outsourcing (BPO). The former is customized to the needs of the buyer or focal firm, with detailed business analyses and requirements definition to align the system being developed to focal firm strategy. The latter is more generic, with highly standard business processes at the vendor end used to drive cost savings.

We find that governance related factors such as IT business integration and use of social or clan controls are positively related to outsourcing success, as measured by abnormal returns. Controlling for size of vendor, we see vendor reputation as a significant antecedent to success. In addition, analyses of nonservice industries show a number of significant factors. An interesting finding is that buyers need to have different capabilities to succeed across IT and BPO outsourcing. While past research was clouded by the lack of detailed categorization of outsourcing announcements, our study clarifies the conflicting results. The contribution is a comprehensive examination of relevant factors that affect outsourcing success. Given that outsourcing is increasingly a proxy for IT investment, the results add to the extant AIS literature and serve as a sequel to the research on IT investment and productivity (Stiroh 2002).

The paper is organized as follows. In the next section, we briefly review the literature on outsourcing and related event studies in this area. The research model, hypotheses, data and methods, and results follow. We discuss the findings, highlight contributions and implications, and conclude with limitations and recommendations for future research.

2. Literature Review

A number of researchers have used the event study methodology to study the effect of IT related phenomena. The work includes the impacts of the 'dot com effect' (Subramani et al. 2001) , IT infrastructure investments (Chatterjee et al. 2002), and the strategic role of IT investments (Dehning et al. 2003). The findings confirm the apprehension of 'value' or future 'success' by rational investors, and support the use of abnormal returns as a proxy thereof. As a result, we use abnormal returns as a measure of market value to proxy for the expectation of future success of IT outsourcing initiatives.

### 2.1. IT Outsourcing related Event Study research

A small stream of IT outsourcing related event studies started with Hayes et al (op. cited). Higher returns for smaller firms (Hayes et al. 2000) and service sector vis-à-vis manufacturing (Hayes et al. 2000; Oh et al. 2006) have been seen in literature. Farag and Krishnan (2003) worked with a larger sample, and found an effect of industry and the stated objectives of the buyer firm. Oh et al (2006) found support for the stated objectives of outsourcing; cost reduction was seen as valuable by markets, in contrast to 'strategic' objectives related to growth. In contrast, Peak et al (2002) found higher returns for 'strategic' versus 'cost saving' type of outsourcing. Thus, the results have been scattered and inconclusive.

In view of the early stage of research, the researchers have largely focused on firm characteristics that are a given, or readily available, for example large versus small firms (Hayes et al. 2000), or service versus manufacturing firms. While interesting as a starting point to understand the phenomenon, we consider some characteristics that focal firms can develop over time. Hence, these results are also of greater interest with regard to practice. Past studies also experienced difficulties in the conceptualization as well as in the operationalization of their

constructs. The latter difficulties were mainly due to data availability. In this study, while we also adopt the market value orientation in our model, we view the focal firm characteristics as those of greatest interest and propose a research model based on the theory of organizational controls.

3. Research Model and Hypotheses

The research model is shown in Figure 1.
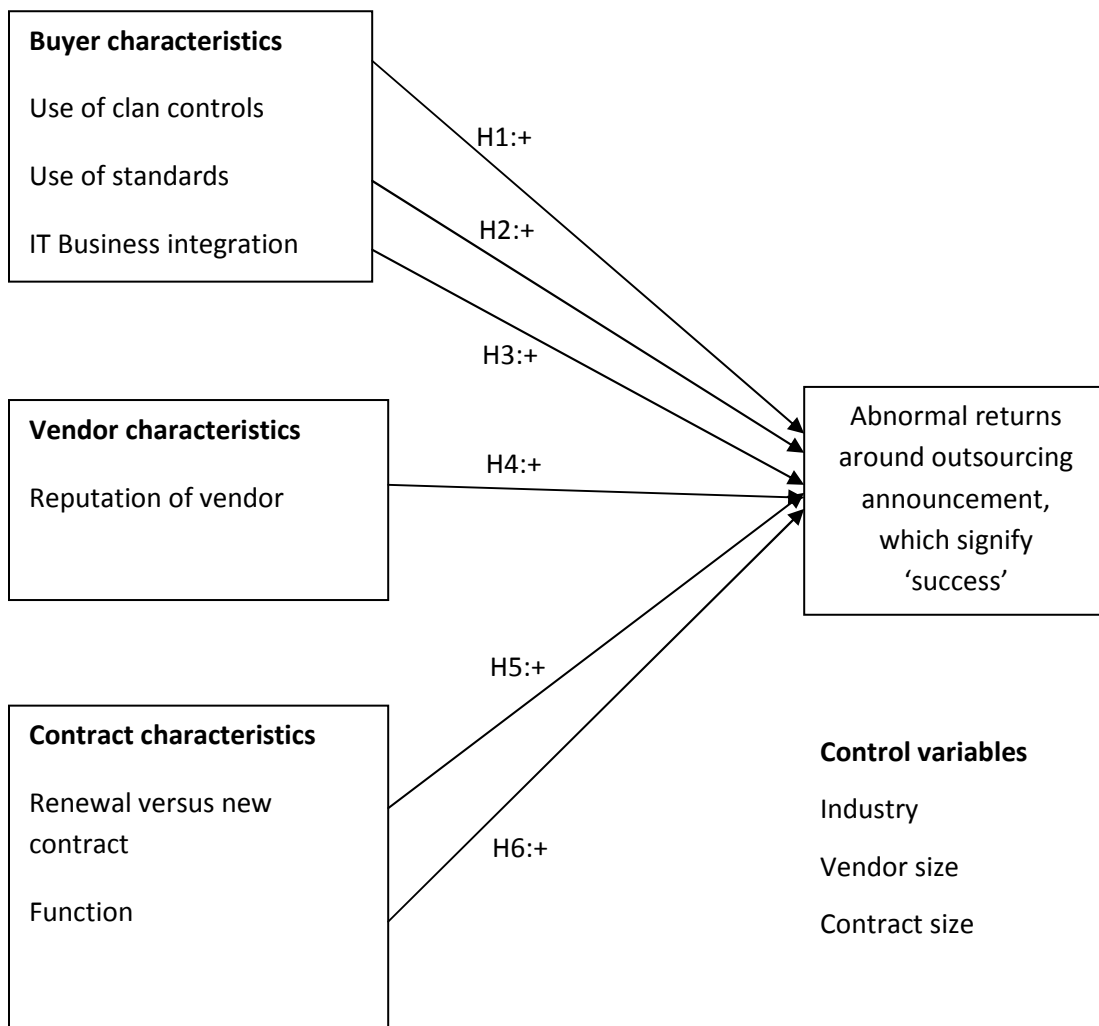
Figure 1 Research Model

The research model depicts the effects of buyer, vendor, and contract specific factors on outsourcing success, as measured by abnormal market returns around the outsourcing announcement. Thus, success is not measured directly in this model. Positive (negative) cumulative abnormal return (CAR) of an outsourcing announcement serves as a proxy for expected success (failure) of the announced outsourcing initiative. Market reaction represents the investors' collective view on the expected future success (or failure) of outsourcing, based on buyer, vendor and contract characteristics as known at the time of announcement. Hence we model only those factors that are known *ex ante*. In addition, they represent publicly available information, although some information is more likely to be available to sophisticated investors[1].

As a result, in the model, we address the following research questions:

1. Which factors affect the magnitude of abnormal returns around outsourcing announcements by firms? Specifically,

2. What is the impact of client specific factors?

3. What is the impact of contract specific factors?

4. What is the impact of vendor related factors?

The **theoretical lens** in our study is the one of organizational control theory. This theory delves into how an individual or organization, the controller, motivates another individual or organization, the controllee, to act in a manner in line with the objectives of the controller (Ouchi 1979). It is known that managers exercise a range of controls to govern IS development activities (Kirsch 1997). This research stream has attempted to understand a variety of controls used in IT

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[1] This appears to be even more likely for buyer and vendor factors, unlike contract characteristics.

sourcing, and the antecedents of formal and informal controls used by the focal firm (Kirsch et al. 2002). We build on the notion of portfolios of control (Choudhury et al. 2003; Kirsch 1997) that are viewed as an implicit link to success in outsourcing. While this literature promotes the study of high level formal and informal organizational controls, we argue that the use of combinations of *specific control mechanisms* leads to outsourcing success. We also adopt the perspective of the buyer or focal firm, which acts as the controller, and thus enables us to frame our arguments within the theory of organizational control. In the following hypotheses, we view the role of specific controls in the context of large scale, complex outsourcing initiatives. We define these large scale outsourcing initiatives as those with a value of at least $ 15 million dollars. Both Information Technology (IT) as well as Business Process Outsourcing (BPO) are included in our study. This comprehensive data helps us to understand the effect of a variety of factors.

Table 1 presents all independent variables and the hypothesized direction of their impact on abnormal returns. These variables are grouped into buyer, vendor, and contract characteristics and are discussed in this section.

*** Insert Table 1 about here ***

3.1. Buyer capabilities: Use of organizational controls

In line with literature on the use of controls (Kirsch 1997), and the view that there are no 'pure' forms of control (Turner et al. 2006), we propose a set of *three types of controls* that is comprehensive, and relatively exclusive (note that controls are not mutually exclusive as there is some overlap by theoretical type). Overall, these controls are categorized as behavior, outcome and clan controls. In the context of outsourcing, we define specific attributes of these controls.

3.1.1. IT business integration, as behavior control

In this mode of control, 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 the 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. Using a number of behavioral controls that are designed to work across business and IT organizations, outsourcing firms link their IT and business strategies to each other. These strategies embody business strategies of the buyer's managers, which are translated into an IT strategy, and finally connected to an outsourcing strategy. In order to reach such complex alignments, a number of behavioral controls need to be deployed by the buyer firm. Specific mechanisms that have been seen in case study research are IT-business-vendor meetings and boundary spanner roles of outsourcing managers at the focal firm (Nagpal 2009). Given that sourcing is a strategic issue *beyond cost reduction* which deserves CIO level involvement (Linder 2004), such alignment is vital to success of large scale outsourcing initiatives.

H1: Greater IT-business integration is associated with greater sourcing success, or higher abnormal returns.

3.1.2. Use of standards, as outcome control

Outcome controls have been defined as a mode of control in which the client liaison expects the project leader (at the vendor) to achieve specific project outcomes and targets, regardless of the particular behaviors and actions taken by the vendor (Kirsch et al. 2002). In line with this 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 continually evaluates and rewards (or penalizes) the vendors which adhere to these standards. A wide range of standards have been mentioned case study research on sourcing success (Nagpal 2009). These standards include requirements definition, testing, and architecture standards.

Requirements documentation and system testing standards have been studied as formal controls in recent research (Rustagi et al. 2008). Use of these outcome controls is less costly to monitor, and is readily built into contracts and other enforcement mechanisms that are set up by the client. Standards will be valuable regardless of whether the objective of sourcing is cost reduction, or value addition, broadly defined. In cost reduction exercises, use of standards will reduce coordination costs among the client and vendor agents. In value additive or 'transformational sourcing' standards will embody the deep seated assumptions of the client, and hence free resources to handle issues other than low level coordination. In line with prior research (Kirsch et al. 2002) we propose that standards lead to improvement in specific outcomes for outsourced contracts. Hence we propose,

H2: Use of standards will be associated with greater sourcing success, or higher abnormal returns.

3.1.3. 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). 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). Recent outsourcing projects become more complex, and more closely tied to the success of focal firm IT and business strategy (Linder 2004). As a consequence, outsourcing managers realize that vendors need to understand not only their firm strategy but also the 'host' culture, so that the underlying strategy is successfully realized in day to day execution. At the execution level, it is difficult to lay down detailed metrics in a cost effective manner. Clan controls effectively fill the gaps to communicate hidden cultural assumptions of host culture to the vendor. 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 with time, a context in which clan controls are relevant (Kirsch 1997). Strategic relationships with select vendors, and travel by vendor and client to the other party's sites, have been associated with clan controls (Choudhury et al. 2003). Case study research suggests informal structures and activities

to bring client and vendor cultures together (Nagpal 2009). These activities and structures ranged from informal contacts across firms, learning with vendors, and use of global virtual team. Use of diverse and flexible teams, with distributed knowledge and expertise, is a common example. In line with a common philosophy and values explanation (Kirsch 1997), these informal modes minimize cultural and cognitive differences and get the buyer and vendor team members "on the same page", as it were, to facilitate common task execution of the salient IT and business issues. Given the large number of examples of clan controls, we hypothesize the effect of clan controls in general, instead of specific mechanisms considered in earlier control modes.

H3: Increased use of clan controls is associated with greater sourcing success, or higher abnormal returns.

3.2. Vendor characteristics

There are a number of vendor characteristics that could affect success, or the size of abnormal returns. Hayes et al. (op cited) found that abnormal returns are greater for smaller firms. Larger the vendor in relation to the outsourced contract, Oh et al. theorize greater economies of scale, and hence higher abnormal returns. Oh et al. found a positive effect of vendor size normalized by contract value. The relative size of vendor is therefore used as a control in our model. In line with literature (Hayes et al. 2000; Oh et al. 2006), we use the ratio of vendor size and contract value.

In a related although distinct effect, we hypothesize that the market would recognize the *reputation of vendor* separate from size. The effect of reputation is important for theoretical as well as practical reasons. A large number of new vendors have come up in recent years, and have shown faster growth as compared to older, established firms. Although they lack the size of

large, global vendors, they have acquired strong reputations in the outsourcing market. They are ranked favorably in competition with large vendors, and the rankings are publicly available. The reputation acquired by a vendor is therefore valuable information for investors. Contracting to a more reputed vendor, all else equal, would decrease the risk of failure. Given that almost half of outsourcing contracts fail (CIO 2003), such clients need to look for alternatives, such as transfer of work in-house, or looking for alternative vendors; such transitions are extremely costly. Hence the reputation of vendor is a warranty against failure, and would be seen as valuable by stock markets.

H4: The reputation of vendor is associated with greater sourcing success, or higher abnormal returns.

3.3. Contract characteristics

IT outsourcing contracts are risky initiatives, given the relatively large number of contracts that are canceled, renegotiated or brought in house. There are a number of conjectures regarding the contract characteristics that could affect returns in an event study context, ranging from asset specificity to the location of supplier. We consider the effect of size of contract, type of contract as regards prior relationship with vendor, and the function outsourced by the focal firm.

Size of contract (adjusted for client firm assets) has been shown to be related to market reaction (Oh et al. 2006). Hence this variable is used as a control in our model.

Experience with the same vendor is likely to lead to higher success in outsourcing. The relations between buyer and vendor are complex and idiosyncratic, and take time to develop. In view of the knowledge gained by both firms through working on earlier contracts, a renewal of

outsourcing contract will be seen as a vote of confidence for the relationship[2]. Hence, this type of contract will be seen as more valuable by markets. Once the buyer and vendor firms have worked out initial glitches with the necessarily 'incomplete' initial contract, there is a higher chance of success in following contracts. All else equal, it is more likely that the objectives of outsourcing will be achieved in a renewal, as compared to a new relationship.

> *H5: Renewal of contracts with existing vendors, as compared to contracts with new vendors, will be associated with greater sourcing success, or higher abnormal returns.*

The discrete function outsourced is yet another contract characteristic that could have an impact on success. We divide our sample between IT and business process outsourcing (BPO). We argue that IT outsourcing, which includes application development and application support, is more likely to provide strategic advantages to the buyer firm. This would take place through the introduction of industry best practices, and learning effects. On the other hand, business process outsourcing (BPO) and network hosting is unlikely to provide strategic advantage to the focal firm, being focused on cost reduction. Hence, the latter would be seen as less valuable by investors. Extant research has not examined this distinction, perhaps due to data related limitations. BPO outsourcing is also more recent, and is relatively under researched. Hence we propose, ceteris paribus

> *H6: IT outsourcing contracts will be associated with greater sourcing success or higher abnormal returns, versus BPO contracts.*

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[2] This ignores lock in with the vendor, which is another reason to continue; however, it is not a reason to renew.

3.4. Control variables

In order to test the model, we use controls on industry. A distinction between service and manufacturing firms has been used in event study literature (Dos Santos et al. 1993) and also found to be relevant in outsourcing related research (Hayes et al. 2000). Hence we control for service and nonservice industry. Oh et al. found significant effects of vendor and contract size in their results. Hence, they are used as statistical controls in the model.

4. Data and methods

4.1. Data

We utilize a comprehensive database of IT and BPO outsourcing contracts compiled by Datamonitor, an independent research firm. This data was merged with COMPUSTAT, CRSP and industry databases such as Global Sourcing 100. The Datamonitor dataset has not been used in event study research on outsourcing, to the best of our knowledge. There are a number of data characteristics that are worthy of interest. First, this data includes outsourcing announcements till 2007, while published research has examined outsourcing events only till 2003. Next, the raw data includes more than 1000 data points for 2005-2007, as compared to sample sizes below 100 in extant research (Hayes et al. 2000; Oh et al. 2006).

Unlike the use of news articles to generate datasets, this method is expected to provide improved data quality. Compared to data obtained from company announcements, this data is relatively free of bias due to selective disclosure that tends to creep in as vendors and clients seem to announce outsourcing contracts selectively. Indeed, there is a larger number of contracts in our dataset, as compared with manually collected data from databases such as LexisNexis. Wide coverage of unlisted companies also suggests a lack of bias toward listed firms, and improved comprehensiveness of data. The sample and variables are defined below.

4.2. Sample

The Datamonitor dataset includes outsourcing announcements for 2000-2007, which was divided into periods 2000-2004 and 2005-2007. This data included information on the client, vendor, announcement and contract dates, type whether new or renewal contract, length and value of contract, among other data. Data cleaning of 2005-2007 sub-sample yielded 203 outsourcing contracts, after removal of unlisted firms. Also, we removed firms involved in acquisitions, joint ventures and alliances. A number of focal firms were listed on foreign stock exchanges, and CRSP did not cover them. We also removed contracts smaller than $ 15 million, as these contracts accounted for a small proportion of the cumulative value of contracts. Contracts involving IT and telecom firms as 'clients' were also removed, as IT would itself be a production factor in these firms. The final sample is well above sample sizes used in extant research (Hayes et al. 2000; Oh et al. 2006).

Table 2 shows sample selection procedure for 2005-2007 data. The existence of a large number of unlisted firms is consistent with the objectives of the research firm, which was to allow senior IT executives a timely source of information on the global IT outsourcing industry. The selected dataset also allows a focused look into a relatively large number of announcements within a relatively short time period. In view of the outsourcing landscape being highly dynamic in the number and capability of vendors, this focused sample is expected to be more internally consistent as compared to samples spread across a number of years.

*** Insert Table 2 about here ***

The key variables are discussed next.

4.3. Variable definition

As mentioned earlier, the dependent variable is Cumulative Abnormal Return (CAR) around the event date, as used in event study research on outsourcing (Hayes et al. 2000; Oh et al. 2006). In line with this research stream, we estimate the linear market model based on daily stock returns for a given period. Next, we calculated the abnormal returns by subtracting the returns around event date from the 'normal' returns as per the market model. The method is in line with the well-known event study methodology (Binder 1998; Kothari et al. 2007). The details are discussed under methodology. The Datamonitor data is merged with COMPUSTAT, CRSP and industry databases such as Global Sourcing 100, as shown in Table 2A. The table shows data sources for the variables, which are discussed in detail in the following.

*** Insert Table 2A here ***

4.3.1. Independent variables

Buyer, vendor and contract characteristics comprise the independent variables and statistical controls.

4.3.1.1. Buyer capabilities

We coded salient buyer capabilities as mentioned under research model and hypotheses. IT business integration (ITB) was assessed from the inclusion (or not) of focal firm Chief Information Officer (CIO) on the company executive team. Research on IT strategy suggests that the membership of the CIO in top management committees improved IT assimilation into business strategy (Armstrong et al. 1999). Hence in firms where the CIO or the senior most IT executive is included in the executive team, this variable was coded as "1" and "0" otherwise. This data was collected from the websites of client firms.

Enterprise Architecture and standards such as Service Oriented Architecture (SOA) and XML are the key architecture and standards that were seen as relevant to outsourcing success in case study research (Nagpal 2009). Use of standards (STD) was coded from a search on news items up to 5 years before event date, on Lexis Nexis Academic. We looked for client company news which had mention of the words "standards" or "architecture". The companies where we saw any mention of these terms were coded as "0" (none), "1" (either standards or architecture) or "2" (both standards and architecture). The terms did not have to be specifically linked to outsourcing to be included. However, we excluded trivial mentions.

Finally, clan controls (CLAN) were coded using Datamonitor, which has information on the key contact person for the client firm. We presume that the contact person is the senior most contact in the focal firm for the purpose of outsourcing arrangement, or the counterpart of the conventional account manager at the vendor. This client side contact in the dataset ranged from Chief Information Officer (CIO) or Chief Financial Officer (CFO), to director/vice president, or a manager in the firm. We consider the rank of the contact person as a proxy for the use of clan controls. We argue that the client contact would act as a channel for focal firm vision and strategy to be communicated to the vendor. In addition, a senior contact would have the authority to look beyond the simpler budget and cost controls that would overwhelm a lower ranking contact. Thus, she would have the ability as well as willingness to implement clan controls. Research on outsourcing indicates that roles can conflict with institutional forces (Nagpal et al. 2007); a senior officer would be less inclined to merely follow outcome controls. Hence we code this as "0" where there is no contact person, "1" where there is a Director/vice president, and "2" where a Chief Information Officer or Chief Financial Officer is mentioned.

4.3.1.2. Vendor characteristics

The data on vendors was collected from public sources. Vendor size (VENSIZE) was measured as the ratio of vendor sales for the year before outsourcing announcement, to contract value. This was log transformed in line with Oh et al (2006). Vendor reputation (REP) was estimated using the vendor rank on "Global Sourcing 100" for the year 2007. This annual study lists the top vendors as judged by a panel of outsourcing industry experts. The ratings are available from outsourcing associations and are publicly available information. The quartile ranking was used in the dataset, with rank data used to code from "0" to "4". Top quartile vendors were coded "4" and so on, with vendors in the bottom quartile scored as "1". Vendors which did not figure in the ranking were coded as "0".

4.3.1.3.   Contract characteristics

Contract size was divided by the client firm assets for the year before outsourcing announcement, available from Compustat, to calculate CONSIZE. This was log transformed in line with Oh et al (2006). Renewal (RENEW) of contracts was coded as "1" and fresh contracts as "0". Finally, IT function (FUNCTION) outsourced was coded as a dummy variable, with application development and support as "1" and BPO or hosting as "0".

In addition, industry (INDUSTRY) was coded as "1" for service, and "0" otherwise using 4 digit SIC codes equal to or greater than 5000, in line with Hayes et al.

Accounting data on buyers and vendors was obtained from Compustat, and stock prices from the Center for Research on Security Prices, CRSP.

4.4. Methodology

We followed well known methods used in accounting and event study literature, and give a brief description of steps we use in the estimation of results. This includes the dependent variable, namely CAR, and the independent variables as listed in the earlier section. The dependent variable calculation follows.

We estimate the **market model**, starting well before the event, and ending a certain number of days before the event date. In line with literature (Oh et al. 2006), we used an estimation length of 200 trading days, extending to 30 days before the event date. In line with the convention followed in extant research, this estimation period did not overlap with the event window so as not to bias the predicted return. This served as the baseline return, against which we compared the individual stock return. We used CRSP equally weighted index as the benchmark. Hence the estimation was based on the following equation,

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \hspace{4cm} \textbf{Equation 1},$$

where R represents the rate of return for the firm and the market, respectively, on day t; epsilon is the disturbance term for the stock on a given day, and alpha and beta are the parameters for a linear model.

In this context, the event period was selected as (-10, 10) in order to estimate returns for a range of event windows. Although the event study literature assumes the day of announcement as the day the information becomes public knowledge, case study research has showed a number of sources of information leakage (Nagpal 2009). In particular, a number of consultants and advisory firms are involved in the outsourcing contract process for large contract. With contracts that involve a number of geographies and law regimes, the contract finalization process involves

a number of law firms and IT strategy consultants. Hence it is vital to use a wide window to check for information leakage, in the context of these large outsourcing projects.

The abnormal return for a stock was estimated via the following equation,

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt})$$ **Equation 2**,

where the benchmark return is subtracted from the individual stock return to calculate the abnormal return for the stock.

The individual return is cumulated over the event window to calculate cumulative abnormal return (CAR). This can be averaged across the firms in the full sample to calculate the cumulative abnormal average return (CAAR) or mean CAR for the sample. The CARs were standardized and Z statistic constructed to test the significance of this statistic as greater than zero. The calculation was done using Eventus software.

Finally, we used the CAR for each announcement in a **cross sectional regression** that includes the independent variables discussed earlier in this section. Industry (INDUSTRY) of the client firm, size of vendor (VENSIZE) and size of contract (CONSIZE), were used as controls. The regression could take two forms, either a comprehensive test of all hypotheses as shown in Equation 3, or separate hypotheses of the buyer, vendor, and contract characteristics as shown in Equations 4 through 6. A comprehensive test of all hypotheses would be the strongest test of the effect of suggested variables, as we would implicitly control for the effect of all other variables.

$$CAR_i = \beta_0 + \beta_1 CLAN_i + \beta_2 STD_i + \beta_3 ITB_i + \beta_4 REP_i + \beta_5 RENEW_i + \beta_6 FUNCTION_i +$$
$$\beta_7 INDUSTRY_i + \beta_8 VENSIZE_i + \beta_9 CONSIZE_i + e$$ **Equation 3**

In addition, we can also regress buyer, vendor, and contract characteristics separately. The equations are shown below, for buyer, vendor, and contract characteristics respectively.

$$CAR_i = \beta_0 + \beta_1 CLAN_i + \beta_2 STD_i + \beta_3 ITB_i + \beta_4 INDUSTRY_i + e \qquad \textbf{Equation 4}$$

$$CAR_i = \beta_0 + \beta_1 REP_i + \beta_2 VENSIZE_i + \beta_3 INDUSTRY_i + e \qquad \textbf{Equation 5}$$

$$CAR_i = \beta_0 + \beta_1 RENEW_i + \beta_2 FUNCTION_i + \beta_3 CONSIZE_i + \beta_4 INDUSTRY_i + e$$

$$\textbf{Equation 6}$$

The analyses and results are discussed next.

5. Results

In this section, we present the results of our analyses, starting with descriptive statistics. This is followed by CAR calculations and regression results.

5.1. Descriptives

Table 3 shows a sample contract description. The average length of contract was 65.3 months, with an average value of $ 205 million. As compared to contract sizes from $ 1 million to $ 5 billion (Oh et al. 2006), we observe a narrower range in our dataset. Table 4 shows the contract characteristics. The contracts were composed of 91 IT application development, and 112 BPO contracts. The former included IT application development, support, and application management, and are referred to as IT contracts in the following.

*** Insert Table 4 here ***

In line with Oh et al. (2006), we used an estimation length of 200 trading days, extending to 30 days before the event date to estimate CARs. Mean CARs for the announcement period (-1, 0) were negative and insignificant, counter to the results of Oh et al. (2006) which analyzed

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contracts for 1995 to 2003. The daily mean abnormal returns (not shown here) were positive starting 9 days before the event date, and ending 5 days before the announcement. In contrast, the daily abnormal returns were generally negative after the announcement. Hence event windows (-9, -8), (-9, -7),   (-9, -6), and (-9, -5), all show positive and significant CARs. These are shown in Table 5. In particular, the last two windows show significant z statistic and the sign test. In (-9, -5) event window, the mean CAR was 0.71%. 112 outsourcing announcements showed a positive response, while 91 led to a negative response. The daily Mean Abnormal Return for (-9, -5) event window is 0.14%. This is comparable to Hayes et al. (2000) who used a 2 day window and reported a CAR of 0.36% or a daily Mean Abnormal Return of 0.18%. Hence we use CAR (-9,-5) as the dependent variable.

These results on 'early windows' suggest information leakage, which is highly plausible. A number of pre-announcement contract negotiations are mentioned in specialized trade press covering client firms. Related research suggests a number of sources of information leakage (Nagpal 2009). This case study research involved interviews of senior IT executives, vendors and consultants involved in large scale outsourcing. The study revealed a large number of parties such as advisories and consultants involved in outsourcing contracts of this magnitude. The respondents also noted that it could take several months to finalize the contracts. Hence, some contract related information is known in advance, at least to those following the negotiations. The leakage also hints at the role of more sophisticated investors.

Descriptive statistics for all variables are shown in Table 6.

*** Insert Table 6 ***

5.2. Regression results

As seen in descriptives, a number of variables are not normally distributed. This violates the assumption of normality required for OLS regression. Hence we use median regression in order to handle heteroskedastic error terms, and avoid biasing the parameter estimates (Koenker et al. 2001). The method has been used in accounting and finance literature, and was also adopted by Oh et al (2006). In addition to widely available software, there is also clear statistical guidance on inference in median regression (Koenker et al. 1999). Analogous to R square in OLS regression, pseudo R square in median regression represents the extent of variance explained in the dependent variable. Unlike the use of newspaper reports, our dataset included comprehensive data on all variables. Therefore, we were able to use the full sample in the regression analyses.

The results for all variables- buyer, vendor, and contract- are shown in Table 7. The results are also shown by function; IT and BPO. Results for full sample with all factors show a pseudo R^2 of 0.05, thus indicating that 5 percent of the variance in CARs was explained. **IT business integration** and **reputation** of the vendor were significantly related to investor reaction, after controlling for the other buyer, vendor and contract factors. In contrast to the stated hypotheses on standards, the use of standards at the client firm was *negatively* related to market reaction. In addition, the service industry was associated with a negative incremental return.

*** Insert Table 7 here ***

In addition to the full sample, we also tested the hypotheses separately by outsourced function in Table 7. IT contracts show a pseudo R square of 0.10, suggesting stronger explanation of CARs. IT business integration is seen as the only significant variable, although

negative effect of service industry is also suggested. In BPO contracts, we observe the negative effect of the use of standards. The regression shows a lower pseudo R square.

In Table 8, we regress separately for service and nonservice firms. IT business integration and standards are significant in the regression for service firm sample. A number of variables were significant for the nonservice sample. Among buyer factors, IT business integration and standards were again significant in the regression. Among vendor related factors, size and reputation were significant, with the effect of size as negatively related to investor reaction. Among contract related factors, contract size and function (IT or BPO) were related to CAR as hypothesized. The results show **higher incremental returns to IT contracts**, at least for nonservice firms.

*** Insert Table 8 here ***

We examined the buyer related factors separately, as per Equation 4. The results are shown in Table 9. Overall results show the negative effect of standards and industry, which were seen earlier in Table 7. However, the returns for IT contracts are related to IT business integration and clan controls. The role of standards is not significant. BPO contracts show very different characteristics. IT business integration is now insignificant, and the use of standards and clan controls show negative effects. It is noteworthy that buyer factors account for a large share of the variance explained in CARs, when we compare these pseudo R squares with those in Table 6. The buyer factors explain a large share of variance, when compared with vendor or contract factors (results not shown). As the dependent variable is identical, we can compare pseudo R square values directly across models of vendor and contract characteristics (results not shown). The results are interesting for IT contracts sample. Here, buyer related capabilities

explain more than 80% of the variance explained by a comprehensive model of buyer, vendor and contract characteristics.

*** Insert Table 9 here ***

6. Conclusion

The results have a number of implications for success in IT outsourcing. The results for overall sample show that IT business integration and vendor reputation drive abnormal returns. In addition, nonservice industry announcements show a number of significant factors. However, overall results do not tell the whole story; we see a number of effects when we test industry and function separately. We discuss the results, and also compare with extant literature.

6.1. Buyer related factors

We start with buyer related factors, as ours is the first study to propose that the buyer, or the client or focal firm, has a key role in the success of outsourcing. IT business integration (ITB) was significantly related with market reaction for the full sample. This was also seen for industry wise samples. However, this variable was not significant for BPO contracts. These results suggest that BPO contracts involve somewhat different success factors, and do not need the involvement of IT executives; given a lower need to align the outsourcing initiative with business agenda. An alternative explanation is that BPO outsourcing is currently immature, and hence investors focus on cost saving. As the industry matures, non cost goals will become important. This, of course, is a conjecture that relies on the historical profile of IT outsourcing. It was driven by cost saving in the eighties, and has recently evolved to affect non cost goals. There was limited support for the use of informal social controls (CLAN), as there was no significant effect in the overall sample, and industry and function subgroups. However, the regression limited to buyer related factors in Table 9 shows the significance of such controls. Interestingly,

they have significant and opposite effects in IT and BPO outsourcing. In the former, social controls have a positive effect as hypothesized. The results indicate that sharing client company vision and high level strategy with the vendor adds to success of outsourcing initiatives. However, BPO outsourcing does not seem to need this high level social linkage. In BPO outsourcing, this control can damp success, as suggested by the negative coefficient. The results serve to clarify the results of cultural similarity seen in Oh et al. (2006), as clan control includes aspects of cultural similarity. In Oh et al, cultural similarity had been identified on the bases of client firms which were involved in IT related products or services; these firms were hypothesized to be "culturally similar" to IT vendors. Although they hypothesized a positive relationship with CAR, the results showed a negative relationship. Our results resolve the contradiction by showing that both effects are possible. Hence, IT outsourcing is the candidate for use of clan controls. BPO outsourcing is better controlled through simple outcome controls such as time and budget controls. Again, the relative simplicity of BPO in so far as cost is the sole objective, is a factor in the results. As BPO initiatives become more complex, and focal firms look for gains over and above cost minimization, this effect could change.

The use of standards (STD) was negatively related to abnormal returns. However, this overall result does not tell the whole story. The negative effect is limited to BPO outsourcing, as seen in Tables 7 and 9. As with clan controls, it appears that the focal firm should *not* try to enforce or specify its own standards in BPO activity. It is best that BPO vendors be allowed to select the 'best' standard that they deem appropriate. Seen with results on the negative effect of social controls, these results suggest that a 'factory' style of BPO outsourcing is favored by investors. It is possible that vendors evolve their own standards for specific types of processes, and it is best for focal firms to fall in line. An alternative explanation is that BPO outsourcing is

less mature, and so buyers do not have any standards in place to control the vendors. Overall, success factors differ for IT and BPO initiatives.

6.2. Vendor related factors

We tested the effects of vendor size and reputation in our model. Reputation is significantly related to market reaction for the overall sample, while vendor size (adjusted for contract size) is not significant in these results. The results suggest that vendor reputation has an effect on abnormal returns, after controlling for size, and the buyer and contract factors. This implies that investors see a reputed vendor as key to success of outsourcing initiative, over and above sheer size. Taken with Oh et al. results on the positive effect of vendor size in 1995-2003 era (they did not consider vendor reputation), our results suggest a maturation of outsourcing industry in that size in itself is no longer a signal of vendor capability to investors. Although vendors need a threshold size to work on large, global projects, their reputation is a stronger signal to markets.

6.3. Contract related factors

We had proposed renewal of contracts and outsourced function as the contract related factors that could affect CARs. The latter is supported only in the nonservice sector (Table 8). All else being equal, IT outsourcing has a greater impact on market reaction when compared with BPO contracts. The results suggest that IT outsourcing has matured, and can add value to the client firm in unique ways. Investors are cognizant of this difference, and IT has acquired an importance as a factor of production that rivals the role of 'overall' IT investment in the nineties (Stiroh 2002). Success in IT outsourcing is a proxy for overall success in IT investment, given that a large share of IT is outsourced.

We have some conjectures as to why these effects are not seen in the service sector. It appears that investors are unable to differentiate IT and business process functions in the service sector, given that business processes in service industry are highly IT intensive. In contrast, it is perhaps easier to sequestrate the success of IT and business process outsourcing in a manufacturing context.

7. Contributions and implications

The model has a number of features that extend AIS research on this topic. First, we test a comprehensive set of buyer, vendor and contract factors. Theorizing and empirical validation of 'buyer side factors' is a key contribution of the research. The buyer characteristics are considered at an individual firm level, and include a set of key capabilities. In contrast to size or industry, which are relatively stationary, these buyer factors suggest specific capabilities that have value. Focal firms can develop such capabilities, albeit in relatively long periods of time. These buyer-related factors have not been adequately researched in event study or outsourcing literature. We observe some firms that show the use of salient organizational controls; the routinized use of controls constitute a capability that is not easily replicated, and is therefore a source of competitive advantage. We label these salient buyer factors as IT Sourcing Capability. In addition, these results are very much in line with a survey based study of success in outsourcing (Nagpal 2009). The survey of senior executives was a structured survey that collected data using multi item scales, in line with behavioral research practice. IT business integration and clan controls were significant predictors of sourcing success, while the use of standards was not significant (Nagpal 2009).

In addition to buyer characteristics, we also test contract and vendor characteristics. In replication and extension of research on these related areas, we add to the robustness and

comprehensiveness of results. As regards data, we consider a recent sample which has not been analyzed to the best of our knowledge. As we use the same dependent variable in all regressions, it is possible to compare R square values across different sets of factors. Buyer factors explain more variance than vendor or contract related factors. This is true for both IT and BPO outsourcing, and strongly suggests that buyers ultimately control the success of their own outsourcing initiatives.

8. Limitations and Future Research

There are a few limitations of the research that need to be acknowledged. We used daily abnormal returns, in line with event study literature on outsourcing. We also used an identical market model (Oh et al. 2006), to ensure that results are comparable. With this model, we did not see significant returns around day 0 (for example). It is plausible that an 'identical' market model is not the best choice. In addition, it is entirely possible that abnormal returns have advanced in recent years so that day 0 results are no longer significant. As there are no known studies for recent years, we need to compare the results by analyzing older data. The results of our 2000-2004 data, when compared with those for 2005-2007, will clarify these issues. There is also a view that daily returns are not significant around the event date in outsourcing, and use of buy and hold abnormal returns has been suggested (Daniel et al. 2006). An additional conjecture is the role of sophisticated investors, which could have increased over the years, thus 'advancing' the returns in the window. At any rate, the contracts are negotiated over long time frames, and subject to leakage. Investors who follow specific sectors can easily have earlier knowledge of the contracts, as compared to less sophisticated investors. This could be tested by controlling for the holdings of institutional investors in the focal firm. Paired event study approach, with controls for each focal firm, is another possible improvement. Fama French (1993) and momentum

returns (Jegadeesh et al. 2002) are methodological improvements that would add to the validity of research on this topic. Experience with outsourcing, and related learning effects, are not covered in the model. We treat the buyer, vendor and contract characteristics as independent. Another approach would be to predicate contract choice on the characteristics of parties, and execute two stage or three stage regressions. Although the role of standards was not supported, this could involve more specific standards relevant to IT or BPO. Future research could also identify specific standards that hinder BPO outsourcing success.

Table 1

Hypotheses and variables

Hypotheses	Factor	Variable definition	Effect
	Buyer specific factors		
H1	IT business integration	IT senior executive on top management executive team	+
H2	Use of standards	Use of standards and architectures	+
H3	Use of clan controls	Availability and level of client contact person	+
	Vendor specific factors		
H4	Reputation of vendor	Vendor ranking quartile	+
	Contract specific factors		
H5	Renewal versus new contract		+
H6	function outsourced in the contract	Application development/support versus BPO	+
	Controls		
	Industry of buyer firm, whether service or not	Service versus nonservice industry	
	Relative size of vendor	Vendor size adjusted for contract size	
	Size of contract	Size of contract adjusted for client firm size	

Table 2

Sample selection

Initial sample from research firm		1157
Less: Unlisted companies	860	
		297
Less: acquisitions, joint ventures, alliances	48	
		249
Less: Announcements with contracts smaller than $ 15 mn.	18	
		231
Less: Companies with inadequate trading data	13	
		218
Less: Announcements involving large IT firms as buyers	15	
		203

Note: Data for years 2005-2007

Table 2A

Data sources

Factor		Variable definition	Data source
Buyer specific factors			
IT business integration	ITB	IT senior executive on top management executive team	Focal firm websites
Use of standards	STD	Use of standards and architectures	LexisNexis Academic
Use of clan controls	CLAN	Availability and level of client contact person	Datamonitor
Vendor specific factors			
Reputation of vendor	REP	Vendor ranking quartile	Global Sourcing 100
Contract specific factors			
Renewal versus new contract	RENEW		Datamonitor
IT function covered in the contract	FUNCTION	Application development/support versus BPO	Datamonitor
Controls			
Industry of buyer firm	INDUSTRY	Service versus nonservice	SIC codes
Relative size of vendor	VENSIZE	Vendor size adjusted for contract size (OGK)	Datamonitor and COMPUSTAT
Size of contract	CONSIZE	Size of contract adjusted for client firm size (OGK)	Datamonitor and COMPUSTAT

Table 3

Sample of outsourcing contract announcement

Vendor	Accenture
Client	Dow Chemical Company
Announcement date	Aug. 4, 2005
Contract description	Accenture and Dow Chemical, the US chemical company, have signed a multi-year agreement under which Accenture will continue as a strategic services supplier to Dow Chemical. Accenture will provide a broad range of business application development, implementation and support services to Dow, extending to 2011. Under the new agreement, Accenture will help Dow identify value-added opportunities, develop and implement new initiatives and support and improve Dow's organization and work process. The new agreement expands on an existing agreement between the two companies during which Accenture helped Dow improve IT development and support productivity by more than 45 percent and supported the implementation of key strategic initiatives over the past ten years. As a part of the agreement, Dow is developing a shared services center in Shanghai, China in coordination with Accenture. Contract value estimated at $100m over five years.

Table 4

Contract characteristics (N=203)

	Mean	Std. Dev.
Contract value, $ million	205.815	419.134
Contract length, months	65.310	24.353
Function	0.448	0.498

Table 5

Cumulative Abnormal Returns

Event window	N	Mean CAR (%)	Precision Weighted CAAR (%)	Positive: Negative	Z
(-10,-9)	203	0.36%	0.05%	92:111	0.429
(-9,-8)	203	0.68%	0.25%	102:101	2.193**
(-9,-7)	203	0.70%	0.26%	101:102	1.871**
(-9,-6)	203	0.54%	0.24%	110:93>	1.498*
(-9,-5)	203	0.71%	0.36%	112:91>	1.993**

The symbols *,**, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively, using a 1-tail test. The symbols (,< or),> etc. correspond to 0.10, 0.05 and show the significance and direction of the generalized sign test.

Table 6

Descriptive statistics for variables (N=203)

	Mean	Std. Dev.	Min.	Max.
CAR (-9, -5) (%)	0.710	3.979	-7.22	18.76
ITB	0.463	0.499	0	1
CLAN	0.871	0.851	0	2
STD	0.438	0.605	0	2
REP	3.113	1.456	0	4
RENEW	0.286	0.453	0	1
INDUSTRY	0.477	0.500	0	1
VENSIZE*	4.613	2.093	-1.966	8.529
CONSIZE*	-5.740	2.180	-11.076	1.304

*Log scale

Table 7

Quantile Regression on CAR

Hypotheses		Hypothesized sign	Results by Function		
			All contracts	ISD contracts	BPO contracts
H1	ITB	+	0.878***	1.556**	0.246
H2	STD	+	-0.961***	-0.333	-0.994**
H3	CLAN	+	0.091	0.377	-0.242
H4	REP	+	0.333**	0.378	0.195
H5	RENEW	+	0.313	0.011	-0.196
H6	FUNCTION	+	0.513		
	INDUSTRY		-0.599*	-1.709***	0.157
	VENSIZE		-0.144	-0.041	-0.120
	CONSIZE		-0.044	-0.027	0.119
	Constant		-0.444	-0.929	1.149
Pseudo R^2			.0517	.1030	.075
N			203	91	112

* Significance at 10% level, 2 tailed.

** Significance at 5% level, 2 tailed.

*** Significance at 1% level, 2 tailed.

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