1. Introduction

One central business activity that companies increasingly outsource is the information systems (IS) function (Ang and Straub 1998; Mithas and Whitaker 2007; King and Torkzadek 2008). Given its significance, it is not surprising that academics have devoted considerable attention to the effect of IS outsourcing on firm performance. Previous research has shown that outsourcing of back-office IS systems has a positive effect on shareholder value of the outsourcing firm (e.g., Agrawal, Kishore, and Rao 2006; Dardan, Stylianou, and Kumar 2006; Hayes, Hunton, and Reck 2000; Smith, Mitra, and Narasimhan 1998). Much less is known about the performance implications of outsourcing another important IS function, viz., front-office customer-relationship management (CRM) systems. CRM refers to *a set of customer-facing processes all aimed at establishing and maintaining customer relationships.* There is increasing recognition of the importance of managing customer relationships and customer assets. Previous research suggests that investments in CRM applications often yield improvements in customer satisfaction and financial performance (Mithas, Krishnan and Fornell 2005; Srinivasan and Moorman 2005). CRM distinguishes itself from other IS activities in that it requires a cross-functional integration of information technology (IT) and marketing capabilities to create profitable, long-term customer relationships (Goodhue, Wixom and Watson 2002; Payne and Frow 2005). It provides opportunities for the firm to use data and information to both understand customers and co-create value with them (Payne and Frow 2005). The increased emphasis on CRM stems from changes in the business environment, availability of large amounts of data, and advances in IT (Pan and Lee 2003).

Outsourcing of *back-office IS* activities typically increases firm value because the reduction in production costs exceeds the agency costs incurred in managing the relation with an independent IS supplier (Ang and Straub 1998; Beasley, Bradford, and Dehning 2009). It is much less clear whether *front-office CRM* outsourcing contributes to firm value. In such arrangements, the vendor employs its own personnel and CRM software to interact with the outsourcing firm's customers. As we will argue below, this implicates agency costs and especially customer satisfaction to a greater degree than will be the case with outsourcing of typical back-office activities. Consequently, it is not surprising that existing, largely anecdotal, accounts about the impact of CRM outsourcing on shareholder value are far from conclusive, if not outright contradictory. A survey by the *International Customer Management Institute* touts that CRM outsourcing enhances firm performance because of rapid access to vendor specialization (*ICMI Report* 2006). In contrast, another report suggests that almost 80% of firms that outsource their CRM processes will not experience any performance benefits (Baker 2004).

Such conflicting evidence suggests that the effect of CRM outsourcing on firm performance is complex and intricate. We argue that to fully understand when and how CRM outsourcing impacts firm

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performance, we need to consider two types of effects – supply-side and demand-side effects (Balint, Forman, and Slaughter 2010). *Supply-side* effects refer to the impact of CRM outsourcing on the firm's cost structure. CRM outsourcing need not necessarily reduce costs, once the agency costs associated with managing the independent vendor are considered, in addition to the frequently touted production cost differentials. *Demand-side* effects refer to the impact of CRM-outsourcing on the firm's customers. Outsourcing of CRM may change the quality of the service delivery of these important processes. If customer satisfaction goes down, performance will be negatively affected, all other things equal (Ramasubbu, Mithas, and Krishnan 2008; Whitaker, Krishnan, and Fornell 2008).

The objective of this study is to develop and empirically test a contingency perspective on the performance implications of outsourcing CRM processes. When does outsourcing of this important IS activity enhance firm value and under what conditions does it actually lead to a decline in firm value? We do so using the event-study methodology. Our performance metric is shareholder value, the importance of which is widely recognized by IS scholars (Dewan and Ren 2007; Oh, Gallivan and Kim 2006). We develop an integrative model that delineates how the performance impact of outsourcing CRM systematically depends on the outsourcing firm's IT and marketing capabilities, the type of CRM process being outsourced, as well as on the economic and cultural distance between the outsourcing firm and the vendor. In our work, we distinguish between pre-sales and post-sales CRM processes and highlight their differential impact in moderating the relationship between firm capabilities, vendor cultural distance, and firm performance. We test our hypotheses on a carefully assembled sample of 158 front-office CRM outsourcing announcements between 1996 and 2006 by U.S. firms spanning multiple industries.

The paper is organized as follows. First, we present the conceptual framework and research hypotheses. Next, we discuss the research methodology, data, and measures. We then present the empirical findings. The final section summarizes the findings, discusses implications for researchers and managers, and provides suggestions for future research.

2. Conceptual Framework and Hypotheses

CRM *outsourcing* refers to a firm contracting with *other independent* firm(s) to perform front-office processes all aimed at the establishment and maintenance of customer relationships. Consistent with previous research, we imply outsourcing to mean contracting to *independent* suppliers (e.g., Grossman, Helpman and Szeidl 2005; Grossman and Rossi-Hansberg 2006). Our conceptualization of outsourcing is inclusive of both onshoring (i.e., outsourcing to domestic vendors) and offshoring (i.e., outsourcing to vendors located in another country) as long as the vendor is an independent entity. A firm sourcing CRM from its foreign subsidiaries is an exemplar of 'insourcing' rather than 'outsourcing.'

2.1. Performance Implications of CRM Outsourcing

Shareholder value is an important metric for studying company performance in a competitive marketplace (Girotra, Terweisch, and Ulrich 2007; Hendricks and Singhal 1996; Im, Dow, and Grover 2001; Ranganathan and Brown 2006). It is the metric that guides the decisions of top management. The advantages of using shareholder value as a performance metric are that it is forward looking, integrates multiple dimensions of performance, and is less easily manipulated by managers than other measures (Gielens et al. 2008).

We theorize that CRM outsourcing affects shareholder value through the *supply route* and the *demand route*. The *supply route* refers to the impact of CRM outsourcing on the firm's cost structure. Outsourcing of CRM is typically motivated by the expectation that an outside vendor can deliver the CRM processes at lower costs (henceforth called *production costs*, see Ang and Straub 1998). However, agency theory (Eisenhart 1989) informs us that the outsourcing firm faces *agency costs* due to the moral hazards it is exposed to when dealing with external agents. In a principal-agent setting, information asymmetry often makes it difficult to specify appropriate behaviors in advance. This gives rise to coordination costs that outsourcing firms incur as they work with agents. Likewise, monitoring costs arises when it is difficult to objectively assess the performance of agents. In situations when agency costs outweigh production cost savings, firms are likely to experience superior performance outcomes through internal organization. The *demand route* refers to the possible effect of CRM outsourcing on the firm's end customers (recall that CRM pertains to front-office, customer-facing activities). CRM outsourcing may affect the quality of the service delivery, with concomitant implications *for customer satisfaction* with the firm. Customer satisfaction is a key metric for how the market responds to the firm's offering (Lam et al. 2004).

At first sight, it appears plausible that the dominant effect of CRM outsourcing on shareholder value is positive. This is broadly consistent with Ang and Straub's (1998) finding that lower production costs weigh more heavily in the degree of IS outsourcing decision than higher transaction costs. However, their important finding may not necessarily apply to CRM outsourcing. Many CRM processes are less codifiable and involve more human input, which may entail relatively higher agency costs than some other IS processes. Moreover, as a front-office activity, CRM is even more likely to impact customer satisfaction than back-office IS activities. Thus, outsourcing of CRM activities has both positive and negative performance implications for the firm. For some firms, the negatives will predominate, and for others, the positives will outweigh the negatives, which calls for a contingency perspective on the performance implications of CRM outsourcing.

Drawing on the organizational capabilities literature (e.g., Aral and Weill 2007; Grant 1996), we expect that the net performance effect of CRM outsourcing will be contingent on (1) capabilities of the outsourcing firm (information technology (IT) and marketing), (2) distance between the outsourcing firm and the vendor (economic, cultural), and (3) the type of front-office process being outsourced, and its moderating effect on firm capabilities and vendor distance. These factors impact performance in different ways, which

provides the rationale for why a wide range of changes in firm value is likely. Figure 1 shows our conceptual model. Outsourcing of CRM is shown as affecting firm value. However, the extent to which firm value is enhanced or destroyed is posited to be contingent on firm capabilities, distance to vendor, and the type of CRM process involved.

We use the demand and supply routes as a framework for developing hypotheses delineating how IT and marketing capabilities, economic and cultural distance to the vendor, and the type of CRM process (pre-sales and post-sales) predictably moderate the effect of the CRM outsourcing announcement on shareholder value. Note that our focus is not on testing the supply and demand routes and their associated mechanisms (production costs, agency costs, customer satisfaction) separately (for which data are typically not available). Instead, the goal is to consider which particular mechanism(s) might be especially implicated by each predictor. By organizing these different effects using this framework, we keep the discussion tractable.

Based on this *conceptual* analysis, we derive hypotheses about the *overall net effect* on firm performance, which will be tested in our *empirical* study. Table 1 summarizes our predictions. A "+" signifies that we expect that the predictor positively impacts the mechanism, a "-" means a negative impact, and a blank space means we have no compelling reason to expect a strong impact in either direction. Below, we will discuss the rationale for our hypotheses.

--- Figure 1 and Table 1 about here ---

2.2. Firm Capabilities

Firms can be conceptualized as bundles of resources and capabilities, which are heterogeneously distributed among firms (Grant 1996). While resources are defined as (tangible and intangible) productive factors that a firm uses to achieve its business objectives, capabilities refer to the firm's ability to deploy these resources efficiently to reach the desired end. Thus, variation in performance outcomes associated with CRM outsourcing can be attributed to differences in firms' capabilities (cf. Aral and Weill 2007). While IT capabilities affect the impact of CRM outsourcing on shareholder value through both the supply-side and demand-side routes, the effect of marketing capabilities goes primarily through the demand-side route.

IT capabilities. Research in IS highlights that superior resources and expertise in information technology serve a complementary role in facilitating the execution of business processes (Clemons, Row, and Reddi 1993; Mittal and Nault 2009). Since the outsourcing firm has to monitor the quality of CRM processes performed by external agents, there are coordination costs that are incurred. Firms proficient in IT may be better able to deploy IT resources (i.e., hardware, software, and managerial personnel) to monitor and coordinate with external agents (Clemons and Row 1991; Anderson, Banker, and Ravindran 2006). Specifically, such firms can employ their expertise in IS to facilitate real-time monitoring of the CRM process. Aron et al (2008) note that firms frequently use IT-enabled monitoring systems to get an estimate of the vendor's quality levels. For example, IT capabilities could enable firms to monitor CRM process cycles and

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generate MIS reports and error rates of vendor agents. Likewise, it is plausible that vendors might be able to connect better with firms with higher IT capabilities and thereby better serve the customer.[1] Consequently, CRM outsourcing by firms with higher IT capabilities has greater scope for reducing agency costs and increasing customer satisfaction than CRM outsourcing by firms with lower IT capabilities.

> **H1**: *Firms with higher IT capabilities create more shareholder value by outsourcing CRM than firms with lower IT capabilities.*

Marketing capabilities. Past research notes that firms that possess strong marketing capabilities exhibit superior organizational skills, routines, and systems to monitor the environment, identify customers' needs, understand the factors that influence consumer choice behavior and build strong relationships with customers (Dutta, Narasimhan, and Rajiv 1999; Li, Shang, and Slaughter 2010). These firms are endowed with superior customer focus and higher customer-relating ability. They have deeply embedded organizational processes that enable them to listen to customers, store and process their preferences and convert them to higher sales. Outsourcing of CRM by such firms is more likely to have adverse effects on customer satisfaction because their superior ability to identify, understand, and cater to customer needs is precisely one of the reasons of their marketing success. Such capabilities are not easily transferable because of their high level of tacitness (Day 1994). Outsourcing CRM thus runs the danger of weakening this source of competitive strength. Consequently, when firms with high marketing capabilities outsource CRM, there is also a greater likelihood that customer satisfaction is adversely affected.

It is also plausible that firms with strong marketing expertise are likely to know better how the marketing processes fit together and which processes could be farmed out. This would suggest that firms with strong marketing capabilities benefit more - rather than less - from outsourcing CRM than firms with weak marketing capabilities.[2] However, we submit that for firms high on marketing capabilities, the downward potential associated with outsourcing this customer-facing activity is higher than the upward potential. Since these firms exhibits superior skills, routines, and systems, many of which are tacit (Day 1994), to uncover and fulfill customer needs the chances of a decline in customer satisfaction are high, even when they outsource the right processes as it is unlikely that any vendor can match their high capabilities to satisfy the outsourcing firm's customers. The situation for firms low on marketing capabilities is quite different. Paradoxically, because they are low in their abilities to build strong and satisfying relationships with customers, the downward potential in satisfaction delivery due to outsourcing is minimal, while the upward potential is significant. Therefore, we propose:

> **H2**: *Firms with lower marketing capabilities create more shareholder value by outsourcing CRM than firms with higher marketing capabilities.*

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[1] We thank an anonymous reviewer for suggesting this possibility.
[2] We thank an anonymous reviewer for this suggestion.

2.3 Distance between Outsourcing Firm and Vendor

Economic distance between outsourcing firm and vendor. Wages or salaries are often a large part of the production costs of CRM activities (Ghemawat 2001). Thus, outsourcing of CRM activities to vendors in low-income countries (for short: vendor economic distance) offers the potential of significant reduction in production costs (Aron et al. 2008; Aron and Singh 2005).[3] For example, a recent report suggests that a major airline carrier with over $10 billion in revenues could save over 10% a year by moving customer service to lower cost vendors (Daga and Kaka 2006). Therefore, when firms outsource CRM to economically distant vendors, we expect production costs to decrease, and through this mechanism to lead to higher shareholder value.

> **H3:** *The effect of CRM outsourcing on shareholder value is positively related to the economic distance between the outsourcing firm and the vendor.*

Cultural distance between outsourcing firm and vendor. Differences in cultural norms between the outsourcing firm home country and the vendor country (for short: vendor cultural distance) adds a layer of complexity to the analysis of performance consequences of CRM outsourcing. Differences in national culture have been shown to result in different organizational and administrative practices, contract interpretations, and employee expectations. For example, employment relationships are structured more relationally in Eastern cultures than in Western cultures (Ng and Ang 2004). As stated by Kogut and Singh (1988, p. 414): "it can be expected that the more culturally distant are two countries, the more distant are their organizational characteristics on average." Written and verbal agreements are prone to be differentially interpreted, even by motivated and well-intentioned parties, and potential for conflict with the vendor increases. The agency costs involved in coordinating activities with the vendor, and in acquiring information needed to monitor and evaluate the performance of the vendor "will be proportional to the cultural distance of the host country" (Erramilli and Rao 1993, p.24).[4]

When outsourcing is to a vendor located in a country that is culturally similar to the country of the outsourcing firm, the cultural barriers are less, tacit understanding is easier, and information acquisition costs are low (Hofstede 2001). However, when outsourcing is to a distant culture, the firm has greater difficulty in imposing subjective judgment to determine how vendor people should behave and in monitoring hard-to-quantify inputs and results (Boh et al. 2007). While firms and vendors can clearly stipulate structural norms (project scoping, monitoring and staffing levels), cultural distance would lead to different interpretation of the same structural norms (Ang and Inkpen 2008).

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[3] We thank the associate editor for this suggestion.
[4] Cultural distance and economic distance are distinct constructs. In our conceptual development, we do not assume that culturally distant CRM vendors necessarily provide greater production cost advantages than culturally proximate CRM vendors. For example, while the economic distance between the U.S. and Japan is modest, the cultural distance is large.

A larger vendor cultural distance is also expected to negatively impact customer satisfaction. Recall that CRM processes involve interactions with the customer. It is well-known that human interactions are heavily imbued with cultural meaning. For example, the same word could mean something very different in different cultures. Just as cultural distance can lead to different interpretations of written or spoken words in vendor – outsourcing firm contacts, it can also lead to confusion and frustration in vendor-customer contacts. Thus, when firms outsource CRM to culturally distant vendors, we expect agency costs to increase and customer satisfaction to decline. Therefore:

> **H4**: *The effect of CRM outsourcing on shareholder value is negatively related to the cultural distance between the outsourcing firm and the vendor.*

2.4. The Role of CRM Processes

Past research suggests the importance of distinguishing between pre-sales and post-sales CRM processes (Payne and Frow 2005). Pre-sales CRM refers to processes in the realm of lead generation, lead qualification, and order fulfillment. Post-sales CRM refers to processes in the realm of customer support, troubleshooting, and customer care (Payne and Frow 2005). Pre-sales CRM processes require employees to improvise based on unique requirements of each customer, which requires elaborate knowledge of contingencies that link behaviors to situations. This makes pre-sales CRM inherently tacit and less codifiable (Apte and Mason 1995; Jasmand, Blazevic, and de Ruyter 2011), which increases agency costs. Post-sales CRM processes are relatively easier to codify (e.g., script development for troubleshooting, technical support) and measure (e.g., using inputs such as average handling time and problem resolution time) (see El Sawy and Bowles 1997, Jasmand, Blazevic, and de Ruyter 2011 for a review). According to agency theory, codifiability and outcome measurability of post-sales CRM makes it easier to coordinate and monitor performance (Eisenhardt 1989). Consequently, agency costs associated with outsourcing post-sales CRM are relatively more modest than the agency costs associated with outsourcing pre-sales CRM. This view that functional complexity enhances agency costs and hence influences the outcomes of outsourcing tasks is consistent with the view adopted in the IS outsourcing literature (Ang and Cummings 1997). This suggests that compared to post-sales CRM, outsourcing pre-sales CRM processes creates less shareholder value:

> **H5**: *Outsourcing of pre-sales CRM processes creates less shareholder value than outsourcing of post-sales CRM processes.*

Moderating role of type of CRM process on the effects of firm capabilities. We hypothesized that a key reason why firms with higher IT capabilities are expected to create more shareholder value by outsourcing CRM than firms with lower IT capabilities is that the former firms are more adept in deploying IT systems and therefore offer more scope for reduction in coordination costs (Table 1). Since post-sales CRM processes are relatively easier to standardize and codify, firms with higher IT capabilities are better able to monitor the quality of post-sales processes through measures such as defect rate, problem resolution time etc. The distinctiveness of

such firms lies in leveraging IT process skills and knowledge to monitor vendor quality for post-sales processes. These firms are likely to have considerable expertise for relatively more standardizable processes such as post-sales CRM. However, pre-sales processes are more tacit and as such monitoring requires considerably greater human intervention than IT deployment. This suggests that firms with higher IT capabilities reduce agency costs to a greater extent when it involves outsourcing of post-sales CRM processes than for pre-sales CRM processes

On the other hand, a key reason why firms with high marketing capabilities create less shareholder value by outsourcing CRM than firms with low marketing capabilities is due to the anticipated negative effect on customer satisfaction (Table 1). After all, firms high on marketing capabilities have better abilities to identify, understand, and cater to customer needs (Dutta, Narasimhan, and Rajiv 1999; Li, Shang, and Slaughter 2010). We propose that the negative effect on customer satisfaction is more pronounced when outsourcing concerns pre-sales CRM. Since pre-sales CRM processes are inherently complex, which requires employees to improvise based on unique requirements of each customer, farming out such processes can diminish a firm's interaction capability, which reduces the effectiveness of CRM and adversely affects customer satisfaction and also enhance monitoring costs. In sum, we hypothesize:

> **H6a**: *The positive effect on shareholder value of CRM outsourcing by firms high on IT capabilities is strengthened when outsourcing concerns post-sales CRM processes.*

> **H6b**: *The negative effect on shareholder value of CRM outsourcing by firms high on marketing capabilities is strengthened when outsourcing concerns pre-sales CRM processes.*

Moderating role of type of CRM process on the effects of vendor cultural distance. Our argument pertaining to vendor cultural distance is that it negatively impacts shareholder value because of higher agency costs and lower customer satisfaction. There is a stream of research that proposes a contingent view and notes that the magnitude of barrier posed by cultural distance depends on codifiability, standardizability, and modularity of organizational processes (Apte and Mason 1995; Mithas and Whitaker 2007). Adopting this contingent view, we note that *post-sales* CRM processes are relatively easy to codify and measure (Apte and Mason 1995). According to agency theory, codifiability and outcome measurability of post-sales CRM makes it easier to coordinate and to monitor performance (Eisenhardt 1989). The relative ease of coordinating and monitoring post-sales CRM processes could, therefore, reduce coordination concerns that accompany higher cultural distance (Clemons, Reddi, and Row 1993). Therefore, we expect the negative relationship between vendor cultural distance and shareholder value is weaker when outsourcing post-sales CRM.[5]

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[5] We have no reason a priori to expect that the type of CRM process moderates the effect on vendor economic distance as there is no clear evidence that pre-sales is more labor intensive than post-sales or vice-a-versa. Given the functional complexity of pre-sales it is plausible that the prevailing wage rate of employees engaged in pre-sales processes will be higher than those engaged in post-sales processes. However, given the extensive nature of post-sales services required by several products and service categories, it quite likely that the number of employees engaged in post-sales activities will be higher than those engaged in pre-sales activities. Therefore, we do not specify interactions between the type of CRM

In contrast, we expect pre-sales CRM to exacerbate agency concerns when firms outsource such processes to culturally distant vendors. Aron and Singh (2005) provide the following telling example:

> "In 2003, a well-known financial services firm in the U.S. contracted with an offshore vendor to manage sales processes. The vendor was responsible for acquiring customers for the company by offering fee waivers, upgrades and financial products as incentives. Although the vendor's agents were well-trained, they were frequently unable to interpret customers' responses to the incentives they were offering. This resulted in the vendor placing customers on hold and contacting the firm to seek further instructions on whether to give customers what they wanted." (Aron and Singh 2005; p.135)

Cultural disparity and the tacitness of pre-sales processes are likely to work together in reducing the efficacy of communication between outsourcing vendors and customers, increasing coordination costs and decreasing customer satisfaction. A recent study points out that as cultural distance increases, monitoring complex processes can turn out to be expensive as well, further increasing agency costs (Aron et al. 2008).

> **H7a**: *The negative effect on shareholder value of CRM outsourcing to culturally distant vendors is reduced when outsourcing concerns post-sales CRM processes.*

> **H7b**: *The negative effect on shareholder value of CRM outsourcing to culturally distant vendors is strengthened when outsourcing concerns pre-sales CRM processes.*

3. Research Methodology

3.1. Event-Study Methodology

Our focal measure is the short-term abnormal returns (AR) accruing from the outsourcing announcement to the focal firm, using the event study methodology (e.g., Hendricks and Singhal 1996). Event studies typically allow 1) testing for the existence of information effects (i.e., the impact of the announcement on shareholder value) and 2) identifying factors that explain changes in shareholder value. The information effects of an announcement are assessed by computing the difference between the observed return, R_{it}, on the event date and the expected returns, $E(R_{it})$, estimated on a benchmark model. The percentage change in stock price (observed return) is given by:

$$R_{it} = \left[\frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} \right] \tag{1},$$

where, $P_{i,t}$ is the closing stock price for announcing firm i on day t. The price $P_{i,t}$ incorporates the long term impact of the additional information becoming public on the day t. We estimate the expected returns, $E(R_{it})$, using the Fama-French four-factor model (Fama and French 1993, Carhart 1997):

$$E(R_{it}) = \hat{\alpha}_i + \hat{\beta}_i R_{mt} + \hat{\gamma}_i SMB_t + \hat{\delta}_i HML_t + \hat{\sigma}_i UMD_t \tag{2},$$

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process outsourced and economic distance. We conducted a post-hoc test on the presence of these interactions and found that neither of the interactions was significant at p < .10.

where, R_{mt} is the stock returns of the benchmark market portfolio, SMB_t is the difference between rate of returns of small and big stock firms (i.e., small-big), HML_t is the difference in returns between high and low book-to-market ratio stocks (i.e., high –low) and UMD_t is the momentum factor defined as the difference in returns between firms with high and low past stock performance (i.e., winners –losers). $\alpha, \beta, \gamma, \delta,$ and σ are the parameter estimates obtained by regressing R_{it} on the four factors.

We estimate the daily stock returns for each firm between 260 and 30 days prior to the event day using the Fama-French Four-Factor model. Abnormal returns are estimated as the difference between the observed returns and the expected returns:

$$AR_{it} = R_{it} - E(R_{it}) = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt} + \hat{\gamma}_i SMB_t + \hat{\delta}_i HML_t + \hat{\sigma}_i UMD_t) \qquad (3),$$

The abnormal returns are aggregated for a firm over an event period $[-t_1, t_2]$ and are given by

$$CAR_{(-t_1,t_2)} = \sum_{t=-t_1}^{t_2} AR_i \qquad (4),$$

When information leakage (for t_1 days before the event) and/or dissemination over time (for t_2 days after the event) occur, the abnormal returns for a firm are aggregated over the 'event period' $[t_1, t_2]$ into a cumulative abnormal return (*CAR*). The extent of information leakage and dissemination is an empirical issue. Because the event study is conducted across N different events, the individual *CAR*s can be averaged into a cumulative average abnormal return (*CAAR*).

$$CAAR_{(-t_1,t_2)} = \sum_{t=-t_1}^{t_2} \frac{CAR_{(-t_1,t_2)}}{N} \qquad (5),$$

We assess the significance of the *CAAR* for multiple event windows and choose the most significant one, using the cross-sectional variance-adjusted Patell test statistic (Boehmer, Musumeci, and Poulsen 1991). A potential concern pertaining event studies is that the standard deviation in the daily closing prices could vary across firms. We correct for this heteroskedasticity by standardizing the returns using the standard deviation of abnormal returns over the estimation window (Gielens et al. 2008).

3.2 Operationalizing Capabilities

IT capabilities. We adopt a proxy view of IT capabilities. The proxy view holds that critical aspects of IT can be captured using surrogate measures such as dollars spent, diffusion rates, and individuals' perceptions of technology. Following Harris and Katz (1991), Tam (1998), and Weill (1992), we use annual IT expenditures as proxy for IT capabilities. To avoid scale effects that might influence our results, we standardize the IT expenditure by annual sales of the firm. Given the empirical setting (historical data required for event study for specific firms) and the fact that IT expenditure data are not routinely reported in Compustat, collecting this data was quite challenging. We carefully combed through annual reports and 10-K statements to assemble data on aggregate IT expenses or disaggregate expenses on several subcomponents as hardware, software, telecommunications, and networking.

Marketing capabilities. To operationalize marketing capabilities, we adopt the approach used by Narasimhan, Rajiv, and Dutta (2006), and Li, Shang, and Slaughter (2010). These authors argue that marketing capabilities are so intangible and diffused throughout the company that valid proxies are not readily available. They propose an input-output approach to derive marketing capabilities using a marketing transformation function. According to the input-output approach to capabilities, firms that are efficient in transforming input into output are capable of doing this because they possess the "high-level collection of routines" to make this happen. Drawing on the economics literature on efficient frontiers/transformation functions (see Kumbhakar and Lovell 2000 for a review), these authors argue that firms with higher marketing capabilities are able to use their inputs more efficiently to achieve their functional marketing outputs, which in their work is sales maximization. The marketing transformation function relates the maximum sales the firm can achieve, given the amount of productive inputs deployed if the firm were to use these resources most efficiently. Any shortfall in sales indicates inefficiency, and the greater the shortfall, the greater the inefficiency. Thus, the input-output approach pioneered in economics and applied previously by Dutta, Narasimhan, and Rajiv (1999), Narasimhan, Rajiv, and Dutta (2006), and Li, Shang, and Slaughter (2010), among others, provides a concrete measure of marketing capabilities. Any under attainment of the functional objective of sales maximization, then, is attributable to marketing inefficiency of the firm. We can use the inverse of a firm's marketing inefficiency as the measure of its marketing capabilities (Dutta, Narasimhan and Rajiv 1999, p. 552).

We adopt Narasimhan, Rajiv, and Dutta's (2006) specification of the marketing transformation function, which specifies sales as the output that firms seek to maximize and investment in marketing (MKTGSTOCK) and customer relationships (ICR) as inputs:

$$ln(\ SALES_{it}\ ) = \mu_o + \mu_1\ ln(\ MKTGSTOCK_{it}\ ) + \mu_2\ ln(\ ICR_{it}\ ) + \varepsilon_{it} - \eta_{it} \tag{6},$$

where, i = firm, t = year, $MKTGSTOCK$ is the stock of marketing expenses, ICR is investments made in developing and maintaining relationships with customers, ε_{it} is the random error component, η_{it} is the time-varying inefficiency term, and $\mu's$ are the response parameters of inputs in the marketing transformation function. The random error component captures the purely stochastic variation in the firm's output, while the inefficiency term captures the deterministic component of the firm's ability to efficiently transform its inputs to outputs. Since the objective of the firm is to maximize its sales by minimizing marketing and customer relationship investment, the more efficient firm in the industry will have lower inefficiency term and vice-versa. Following Dutta, Narasimhan, and Rajiv (1999), the firm's marketing capabilities are computed as $1/\eta_{it}$.

Consistent with the literature, we assume the random error term to be normally distributed [$\varepsilon_{it} \sim$ IID $N(0, \sigma_{\varepsilon}^2)$], the inefficiency component to be positively skewed with half normal distribution [$\eta_{it} \sim$ IID $N(0, \sigma_{\eta}^2)$, truncated at zero from below], and the random and inefficiency terms to be independent [cov(ε, η)

= 0]. Equation (6) is estimated for each industry (i.e., two-digit SIC code) separately over our 11 year time period (1996-2006). Following past research, we estimate the transformation functions using stochastic frontier estimation.[6]

To calculate the marketing stock we capture the carryover effect of marketing effort. We employ a Koyck-lag structure, where we allow for spillovers from the previous 3 years:

$$MKTGSTOCK_{it} = MKTGEXP_{it} + \lambda_i MKTGEXP_{it-1} + \lambda_i^2 MKTGEXP_{it-2} + \lambda_i^3 MKTGEXP_{it-3} \qquad (7),$$

where $MKTGEXP$ are annual marketing expenditures of the firm. We estimate the firm-specific decay parameter, λ_i using the following specification:

$$SALES_{it} = v_{i0}(1 - \lambda_i) + v_{i1}(1 - \lambda_i)MKTGEXP_{it} + \lambda_i SALES_{it-1} + \psi_{it} \qquad (8),$$

where, ψ_i is the random error term, and v_{it} is the contemporaneous effect of marketing expenses on sales.[7] The value of λ_i lies between 0 and 1and it captures the rate at which effect of marketing expenses on sales decays over time.

We test for appropriateness of three assumptions required for the stochastic frontier estimation of marketing capabilities. The pooled Shapiro-Wilk's W for ε is *.91*, indicating that random error terms are indeed reasonably normally distributed (max W=1). Given the normal distribution of random error term, one would expect the composite error term to be not normally distributed in the presence of non-negative inefficiency term. Consistent with the approach suggested by Kumbhakar (1996), we test for skewness and kurtosis of the composite error term. The pooled $\chi^2(2)$ for sum of skewness and kurtosis for composite error term τ is 22.29 ($p < .01$). Thus, we reject the normality of composite error terms. As such, this supports the assumptions of non-zero and skewed inefficiency term. Finally, the pooled correlation between ε and η is only -.04. These test results indicate the appropriateness of our specification.

3.3. Hypotheses Testing

To test our hypotheses, we regress the standardized cumulative abnormal return due to the outsourcing announcement on our set of substantive predictors and control variables:

$$
\begin{aligned}
CAR_i[-t_1, t_2] = {} & \theta_0 + \theta_1 ITCAP_i + \theta_2 MKTGCAP_i + \theta_3 ECONDIST_i + \theta_4 CULTDIST_i \\
& + \theta_5 POSTSALES_i + \theta_6 PRESALES_i + \theta_7 ITCAP_i * POSTSALES_i \\
& + \theta_8 MKTGCAP_i * PRESALES_i + \theta_9 CULDIST_i * POSTSALES_i \\
& + \theta_{10} CULDIST_i * PRESALES_i + \theta_{11} FMSIZE_i + \theta_{12-17} IDUM_i + \xi_i \qquad (9).
\end{aligned}
$$

where, *ITCAP* and *MKTGCAP* are the IT and marketing capabilities of the firm, respectively, *for the year in*

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[6] We standardize these estimates within each industry and year since our sample firms are from diverse industries.
[7] Note that equation (6) is estimated at the industry level using panel data in which firms in a two-digit SIC code represent the cross-sectional units and the 11 year data period forms the time-series component. In contrast, equation (8) is estimated at the firm level using the time-series observations across the 11 year window so that we get a firm-specific decay parameter.

which the CRM announcement occurs. ECONDIST and *CULDIST* are the economic and cultural distance between the U.S. and the country from which the vendor provides outsourcing services. *POSTSALES* and *PRESALES* indicate whether post-sales (pre-sales) function is being outsourced. We control for firm size (*FMSIZE*) and for the industry-specific effects with dummy variables (IDUM). θ's are the coefficients to be estimated, and ξ is the random error component.

A few firms have made multiple outsourcing announcements, which may give rise to correlated errors. Therefore, we use Generalized Estimating Equations. Since *MKTGCAP* and *MKTGCAP*PRESALES* are estimated variables, significance testing for these effects is based on robust standard errors derived, using the bootstrap method.

4. Empirical Setting

4.1. Data

The empirical context is CRM announcements by publicly traded U.S. firms. The data for this study were collected from numerous secondary sources. In the first stage, we combed through thousands of announcements in the archives of Lexis-Nexis, Factiva, websites of firms and vendors, and trade publications to identify CRM outsourcing announcements. The keywords used in the search were combinations of 'CRM', 'outsourcing', 'offshoring', and 'call centers'. In the second stage, we sought to distinguish between front-office CRM outsourcing and back-office CRM outsourcing announcements. We examined the content of an announcement to ensure that they pertained to outsourcing of front-office processes. We also searched multiple news sources to identify the earliest date of the announcement. This date corresponds to the period around which the stock market reaction occurs. Three coders were used for checking announcement dates. Inter-coder agreement was 94%. If there was ambiguity about the precise date, we excluded the announcement. This resulted in 189 front-office CRM outsourcing announcements by U.S firms. Additional extensive checks for concurrent events (e.g., announcement of quarterly results, announcement of new product introductions, and changes in executive positions) around the event date resulted in the elimination of 31 announcements that could potentially confound the results. Our final sample included 158 announcements by 111 firms between January 1996 and December 2006.

The largest groups in our sample are firms from SIC codes 35, 73 and 48 (n=20) which we categorize as 'Computer and Internet', and firms from SIC codes 60, 61 and 63 (n=21) which we categorize as 'Financial Services.' The other industries are 'Other Services' (SIC 45, n=8), 'Manufacturing' (SIC 28, 29 and 37, n=13), 'Telecommunications' (SIC 36, n=18), 'Retail' (SIC 57 and 59, n=12), and 'Utility' (SIC 49, n=19).

4.2. Measures

The information on daily stock prices were gathered from *Center for Research on Stock Prices* at the *University of Chicago* and information on four factors of Fama-French model was collected from Kenneth French's website at *Dartmouth College.* Following previous research, we use Selling and General Administrative

expenditure (DATA 189) and Accounts Receivable (DATA 2) as proxies for marketing expense and investment in customer relationships, respectively (see Li, Shang, and Slaughter 2010; Narasimhan, Rajiv, and Dutta 2006). Selling and General Administrative expense is a reasonable proxy for marketing expense since it captures the firm's expenditures in sales force, advertising, and promotional activities. Similarly, accounts receivable represents the credit extended by the firm to its (trade) customers to complete the transaction. Accounts receivable is thus an investment in customer relationship since the firm is inherently absorbing a part of the transactional risk by extending credit. These measures along with Sales (DATA 12), an output in the marketing production function, were derived from Compustat. Similarly, we use information technology expenditure adjusted by firm size (sales) as our measure of IT capabilities (see Harris and Katz 1991; Tam 1998; Weill 1992). The IT investment data was assembled by combing through the firm's annual reports and 10-K statements. Consistent with previous research, we collected expenditures on hardware (computers and peripheral equipment), software and telecommunication infrastructure, and aggregated them to create the annual IT expenditure variable (see Mittal and Nault 2009). [8]

Consistent with Tsang and Yip (2007), we operationalize vendor economic distance as the natural log of difference in GDP per capita between the U.S. and the country from which the vendor is providing outsourcing services. In line with Kogut and Singh (1988), we operationalize vendor cultural distance as the square root of the sum of squared deviations on the four Hofstede dimensions (i.e., Power distance, Uncertainty avoidance, Individualism/Collectivism and Masculinity/Femininity) between the U.S. and the country from which the vendor is providing outsourcing services.

We content analyzed the announcements to classify pre-sales and post-sales CRM processes. Announcements with the keywords 'Lead pre-qualification', 'Outbound Sales', 'Customer Acquisition' and 'Upselling/Cross-selling' were coded as pre-sales processes. Similarly, keywords such as 'Customer Support/Technical Support' and 'Customer Service/Customer Care' were coded as post-sales. In terms of frequency distribution, pre-sales processes accounted for 68% of the announcements and post-sales processes accounted for 80% of the announcements. 20.3% of the CRM outsourcing announcements are exclusively pre-sales, 31.6% are exclusively post-sales while 48.1% involve both pre-sales and post-sales processes. Table 2a provides the classification scheme used to code CRM processes and Table 2b provides some illustrative examples from our sample.

---Tables 2a and 2b About Here---

The correlation table and summary statistics of the key variables are reported in Table 3

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[8] We were able to collect data on IT expenses for 119 of the 158 observations in our sample. For the remainder 39 cases where IT expenses are missing in a particular year, we used the following heuristic. We searched the 10-K statements and annual reports for the firm in previous and subsequent financial years and replaced the missing value with IT expense from the previous available year. If IT expenses of a firm were not available for any financial year (11 out of 39 cases), we replaced the missing value with the average IT expense in the industry (i.e., four-digit or three-digit SIC code) for the given year.

Multicollinearity is not an issue, as the correlations between the independent variables are small, and the maximum variance inflation factor is 3.23. The average firm size in terms of annual revenues is $21.65 billion and in terms of market capitalization is $42.59 billion. As seen in Table 3, there is considerable variance in the size of the firms that outsource CRM processes.

---Table 3 About Here---

5. Results

5.1. The Main Effect of a CRM Announcement on Shareholder Value

We examined the daily average abnormal returns for the 158 outsourcing announcements for a window of ten trading days around the event day. We do not find a statistically significant abnormal return on the announcement day -.12% (p > .10). However, on day $t+1$, they experience on average a significant negative abnormal return of -.16% ($p < .05$). No significant effects are found before the announcement or after day +1. As such, our results suggest a rapid adjustment in shareholder value following the announcement. Table 4 shows the cross-sectional variance-adjusted Patell test statistic for cumulative abnormal returns for six event windows. The only time window with a significant $CAAR$ is [0,+1]: -.28% ($p < .05$).

More interesting than the overall effect is the wide variation in the CAR_i[0,+1], ranging from -11.47% to 5.87%. While 48.7% of the companies are negatively affected, the CAR is positive for 51.3% of the companies. Clearly, the performance potential of CRM outsourcing varies considerably across announcements. This can also explain the contradictory findings reported in previous, largely anecdotal accounts (Baker 2004; *ICMI Report* 2006). Is this variation due to random factors beyond the reach of the management scientist, or can we distill regularities in the variation in the performance potential of CRM announcement? To address this question, we perform cross-sectional analyses with substantive moderators and control variables.

---Table 4 About Here---

5.2. Hypothesis Testing

We estimate Equation (9) with the individual CRM outsourcing announcements' CAR_i[0,+1] as dependent variable. The results are presented in Table 5. First, we estimate a model with firm size and industry-specific fixed dummies as predictors (M1). Model M2 adds the effects of firm capabilities and vendor distance. M3 presents the full model, involving the effects of the type of CRM process. The statistical significance and direction of coefficients are consistent across the models. The model fit of full model M3 ($R^2 = .5242, p < .01$) is significantly better than the fit of M1 ($R^2 = .0804, p < .10$) and M2 ($R^2 = .2475, p < .01$).[9] Therefore, we use the full model (M3) to interpret the results. Reported are unstandardized regression coefficients.

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[9] The F statistics for M3 versus M2 is 13.69 (*p<.01*), and for M3 versus M1 is 13.40 (*p<.01*).

We find that IT capabilities of the outsourcing firm significantly and positively moderate the change in shareholder value due to the outsourcing announcement ($\theta_1 = .0089, p < .05$). This means that firms with higher IT capabilities create more shareholder value by outsourcing CRM than firms with lower IT capabilities, which supports H1. Consistent with H2, we find that the greater the marketing capabilities of the outsourcing firm, the more negatively shareholder value is affected by outsourcing of CRM processes ($\theta_2 = -.0076, p < .01$). Thus, while the financial markets believe that firms high on IT capabilities can create value by outsourcing CRM, they hold the opposite belief when the firm is high on marketing capabilities. As we argued earlier, we believe that there is a penalty from stock markets because outsourcing vendors may not be able to offer the same levels of customer satisfaction as firms with high marketing capabilities do.[10]

Consistent with H3, we find that vendor economic distance is positively related to change in shareholder value ($\theta_3 = .0012, p = .05$). However, vendor cultural distance is negatively related to change in shareholder value ($\theta_4 = -.0004, p < .01$), which supports H4. In line with H5, we find that outsourcing of pre-sales CRM processes create less value than outsourcing of post-sales CRM processes ($\theta_6 - \theta_5 = -.0182, p < .01$). While outsourcing of pre-sales CRM processes has a negative effect on shareholder value ($\theta_6 = -.0107, p < .01$) outsourcing of post-sales CRM processes is not related to changes in shareholder value ($\theta_5 = .0075, p > .10$). Thus, we find that IT capability of the outsourcing firm and vendor economic distance positively moderate the relationship between CRM outsourcing and shareholder value, whereas marketing capabilities, cultural distance between outsourcing firm and the vendor, and outsourcing of pre-sales processes negatively moderate the relationship between CRM outsourcing and shareholder value.

Our contingency framework (Figure 1) posits that the effects of IT capabilities, marketing capabilities, and vendor cultural distance are systematically moderated by the type of CRM process being outsourced. In support of H6a, we find that post-sales CRM outsourcing enhances the positive effect of IT capabilities on change in shareholder value due to the outsourcing announcement ($\theta_7 = .0314, p < .05$). Further, we find support for the notion (H6b) that the effect of marketing capabilities on shareholder value is more negative when pre-sales CRM is being outsourced ($\theta_8 = -.0252, p < .01$).

Finally, we find that post-sales CRM outsourcing mitigates the negative effect of vendor cultural distance (H7a; $\theta_9 = .0003, p < .10$) and that pre-sales CRM outsourcing substantially increases the negative effect of vendor cultural distance (H7b; $\theta_{10} = -.0003, p < .05$). In fact, when post-sales CRM is outsourced, cultural distance does not really matter as its effect on shareholder value is no longer significant ($\theta_4 + \theta_9 = -.0001$; n.s.).

6. Validation Analyses

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[10] In section 6.3., we will provide evidence supporting this contention. We will show that outsourcing of CRM by firms high on marketing capabilities has a negative effect on subsequent customer satisfaction.

6.1. Alternate Benchmark Models to Calculate CAR

We examine the stability of the results using CAR based on three alternate benchmark models: the Fama-French Three-Factor model (M4), Market Model (M5) and Market-Adjusted Returns model (M6). The correlation between CARs based on these alternate models and reported CAR based on the model employed by us are .96, .86, and .78, respectively. We also tested our hypotheses on CARs generated using these alternate benchmark models. The results are very similar to the ones obtained with the Fama-French Four-Factor model (see models M4-M6 in Table 6). This shows that our substantive results are no artifact of the specific benchmark model used to calculate CAR.

---Table 6 About Here---

6.2. Robustness to Outliers and Missing Data for IT

We examine the sensitivity of the results to influential outliers by removing six outliers whose cumulative abnormal returns were more than 3 standard deviations from the mean, and re-estimated equation (9). As seen in Table 6 (model M7), the substantive conclusions remain unchanged. We also performed a robustness check by dropping the 11 observations for which we used the industry average as the measure of IT capability. The results are very similar to the ones we report in Table 5.[11]

6.3. Alternate Dependent Variable

We test the validity of our theoretical model using an alternate dependent variable, viz., change in customer satisfaction in the year following the outsourcing event. Customer satisfaction is obtained from the firm's customers, rather than from financial markets, and occupies a central place in our theorizing as a pathway through which firm value is created. Our theorizing (Table 1) posits that outsourcing of CRM by firms high (low) on IT capabilities has a positive (negative) is associated with an increase (decrease) in customer satisfaction, and further that the negative effects are strengthened when outsourcing concerns pre-sales (Table 1). Any evidence on these relations cannot be attributed to possibly misguided stock-market reaction as we consider here a completely different constituency, the firm's customers.

We assembled data on customer satisfaction on 75 CRM outsourcing announcements in our sample from *The American Customer Satisfaction Index (ACSI)*, an authoritative data source that has been widely used in previous academic research (e.g., Anderson, Fornell, and Mazvancheryl 2004, Fornell et al. 2006). We estimate a regression model that examines the "abnormal" change in customer satisfaction (ACS) with the outsourcing firm for year *t+1* by subtracting the change in the average satisfaction in the industry in which the firm is active from "raw" change in customer satisfaction with the firm:[12]

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[11] Detailed results for the robustness analyses can be obtained from the authors.

[12] ACS is similar in spirit to the abnormal returns (AR) measure used in the main study. $CUSAT_{t+1} - CUSAT_t$ is similar to the observed return (Equation 1). In computing AR, we subtract from the firm's observed return the return that may be expected given developments in the overall market, modified to the firm context by the additional components in the Fama-French model (Equation 3). Here, our correction factor is change in the firm's satisfaction level that may be expected based on the change in satisfaction in the industry to which the firm belongs ($INDCUSAT_{t+1} - INDCUSAT_t$).

$$ACS_{t+1} = [(CUSAT_{t+1} - CUSAT_t) - (INDCUSAT_{t+1} - INDCUSAT_t)] \qquad (10)$$

ACS captures the change in customer satisfaction for a firm that outsourced CRM relative to firms in the same industry that did not outsource CRM in the period of interest. We regress ACS at time $t+1$ on IT capabilities, marketing capabilities, vendor cultural distance, interactions with pre-sales CRM processes at time t. The first differencing controls for time invariant firm specific unobserved fixed effects. We also add several control variables to account for time varying unobserved effects. More specifically, part of ACS might be due to abnormal marketing expenses. We account for this by including the abnormal change in SGA as a control variable. Consistent with our operationalization of ACS, we operationalize abnormal SGA as the change in SGA by the firm in year t minus industry-level change in SGA. Moreover, including the lagged term of the dependent variable aptly captures the 'reinforcement' effects of previous period marketing expenses and other firm specific efforts (Dekimpe and Hanssens 1999).

The results are reported in the last column of Table 6 (model M8). The findings are consistent with the predictions of our theoretical model. Specifically, we find that when firms with higher IT capabilities outsource CRM, there is a greater increase in ACS – i.e., customer satisfaction increases more than could be expected based on changes in average customer satisfaction in the industry in which the firm operates. Conversely, when firms with higher marketing capabilities outsource CRM, and when firms outsource CRM to culturally distant vendors, there is a greater decline in ACS. Finally, the main effects of marketing capabilities and vendor cultural distance are more pronounced when pre-sales activities are outsourced.

This analysis provides additional support for our theoretical model. However, these results should be regarded as indicative rather than definitive. After all, customer satisfaction data was available only for a subset of firms, our measure of ACS does not have the sophistication offered by the Fama-French model (the necessary data for this are also lacking), and there may be unobserved effects on customer satisfaction that are not captured by our control variables. Nevertheless, it is not obvious which other business process can give rise to the intricate pattern of results hypothesized in Table 1 and supported in this validation analysis.

6.4. Unobserved Time Effects

Our data set covers a period of 11 years, in which unobserved time-related events may have occurred. One thing that is observed is that the number of CRM outsourcing announcements is not stable over time. Rather, the number of outsourcing announcements increases between 1996 and 2000, and decreases afterwards. To investigate the robustness of our parameter estimates to time effects, we do three things.

First, we add the number of CRM outsourcing announcements in a given year as covariate to equation (9). It is not significant, and the substantive conclusions remained the same. Second, to account for unobserved time effects, we include year dummies to equation (9). Only one time dummy is significant, and

the substantive conclusions remain the same. The only exception is that the interaction between vendor cultural distance and post-sales CRM is significant only at p = .16.

Third, we split the data set into two temporal subsets, and estimate equation (9) for each time period separately. Following Steenkamp and Fang (2011), we test the temporal stability of the parameter estimates using (1) the (overall) Chow test as well as (2) tests on differences between individual coefficients.

The first temporal break we examine is the period before versus after the internet bubble. The NASDAQ composite index peaked in March 2000 and thereafter remained volatile throughout the year finishing the year at a two year low. We split the sample into announcements made before or in 2000 and those made after 2000. This split is meaningful as there was a lot of (unwarranted) optimism in the stock markets in the period leading up to 2000 and it is possible that CRM outsourcing announcements were greeted by investors with relatively more enthusiasm compared to the period after 2000. Moreover, this split coincides with the period of increasing versus decreasing number of CRM announcements. The Chow test indicates that the parameter estimates do not differ between the two periods $(F(18,122) = 1.026, p>.10)$. Tests on differences between individual coefficients yield only one significant result $(p < .10)$, viz., for the control variable firm size.

The second temporal break we examine is a median split on the data (July 15, 2001). The Chow test again indicates that the parameter estimates do not differ between the two periods $(F(18,122) = .713, p>.10)$. Further, for both types of sample split, the coefficients are consistent in direction and magnitude across time windows and are similar to the pooled regression results. Again, firm size was the only variable for which the parameter estimate differs between time periods. In sum, we can conclude that our results are robust across different ways to account for unobserved time effects.

6.5. Selection Bias in CRM Outsourcing Announcements

The event in our case is the decision by the firm to both outsource and announce it. However, outsourcing of CRM and its disclosure are voluntary firm choices and firms might be more likely to engage in this event when they possess some private information that is not fully known to markets. For instance, managers may have private information regarding relationship-specific investments made by the firm and the vendor, productivity of in-house CRM personnel, and anticipated cost benefits. This private information has an ex-ante mean of zero and the stock market updates this expectation when the decision to outsource CRM is publicly announced (Li and Prabhala 2006).

We identify a sample of similar size firms in the same industry that either did not outsource or did not announce outsourcing of CRM. We match firms in the outsourcing announcement sample with publicly listed firms on two criteria: industry (four-digit SIC code) and size (market capitalization). This matching procedure yielded a sample of 122 firms which either did not outsource or did not announce. Following this, we model the private information in the conditional cross-sectional regression, using a probit specification.

Consistent with Heckman's two-stage sample selection model, we estimate the inverse Mills ratio, which is subsequently included in the second stage or the main model.

The results of the selection model indicate that firms with lower ROA are more likely to outsource and disclose information about CRM outsourcing. This is consistent with the view that managers of poorly performing firms are likely to engage in actions that convey value appropriation (i.e., production cost savings). However, the selection bias term in the second stage model is not significant ($p > .80$) and all focal parameter estimates remain the same up to three digits. This suggests that sample selection has not biased our estimates.[13]

6.6. Evaluating Information Relevance of CRM Outsourcing Announcements

The Efficient Market Hypothesis underlying the event study methodology assumes that (1) an announcement has information content that is picked up by the financial markets, and (2) that the market quickly and accurately incorporates the performance implications of these announcements in the share price. In this subsection, we test the first assumption, while the second assumption is tested in the next subsection.

Despite the significance of CAAR (Table 3), most CARs are relatively small in magnitude which raises the question that perhaps the stock price reaction to the outsourcing announcement may be some combination of random chance and contrived modeling choices. Our robustness analysis using alternate benchmark models for estimating CAR already suggests that the results are not dependent on the specific model employed by us. To examine this issue further, we conduct another event study where we consider the *trading volume* instead of stock prices (Im, Dow, and Grover 2001). If an event is not newsworthy to the investor community, one would expect no appreciable increase in the volume of shares traded around the announcement. However, if the event leads to a statistically significant increase in the volume of shares traded, it provides evidence for significant uncertainty surrounding the evaluation of the event. Such uncertainty could be due to heterogeneous evaluation (between buyers and sellers) of either event information or expectation of information from the event.[14] Either explanation is inconsistent with the notion that the announcement is not noticed.

We perform the volume event analysis using standard event study procedures (i.e., market model). Consistent with Im, Dow, and Grover (2001), we calculate trading volume as number of shares traded as a percentage of total outstanding shares. The abnormal trading volume is observed volume minus the expected volume. The results show that on the event day, the trading volume for the announcing company on NYSE increases on average by 7.39% (*p<.10*) and another 7.87% (*p<.05*) the day after the announcement for a mean cumulative abnormal increase in trading volume of 15.26% (Patell test statistic = 2.0848, *p < .05*). The [0,+1]

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[13] Detailed results on the selection model and the main model with selection term can be obtained from the authors.
[14] We thank an anonymous reviewer for this suggestion.

trading window is the only significant window. This provides additional evidence that the financial markets do indeed pay attention to CRM outsourcing announcements.[15]

Since the statistical properties of share *trading volume* have been less studied than the statistical properties of share *prices*, we also computed the Beaver U Statistic.[16] Essentially, the U-test checks whether the square of the abnormal return is significantly greater than zero – that is, while the abnormal returns may cancel out if some are positive and some negative, its square should check whether the abnormal returns are significant in magnitude. We square the abnormal returns for the [0,+1] trading window and test for its statistical significance using U-Statistics (see Rohrbach and Chandra 1989; Hendricks, Singhal, and Wiedman 1995). The U-statistic is significant on day 0 (1.48, *p<.10*) and on day 1 (1.73, *p<.05*). The histogram of the U-statistic in the 230 day estimation period (i.e., -260 days to -30 days) reveals that the U-statistics for day 0 and day 1 ranks 211 and 220 out of the U_t s in the 230 estimation period respectively.[17]

These analyses provide further support for the notion that CRM outsourcing announcements have information content for stock markets.

6.7. Long-term Abnormal Returns

In this subsection, we examine whether the market quickly and accurately incorporates the performance implications of these announcements in the share price. Alternatively, it may take the market a long time to figure out the performance consequences of the CRM announcement. Support for the Efficient Market Hypothesis can be found if the long-term abnormal returns for the announcing firm in question are not significantly different from the long-term abnormal returns for a comparison benchmark. Two established methods for calculating long-term abnormal returns are Buy and Hold Abnormal Return (BHAR) and Calendar Time Portfolio (Hendricks and Singhal 2001).

In the BHAR methodology, we generate annual returns by compounding monthly returns over the desired window for which the stocks are held and compare its return relative to reference portfolios. We construct a matched sample against which the performance of the sample firms is compared. The matching is done on four dimensions: industry, size, book-to-market ratios, and return on assets (see Barber and Lyon 1996, 1997; Hendricks and Singhal 2001).[18] The sample constructed has matched firms appearing multiple

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[15] We replicated the analysis after removing the six outliers (see Section 6.2). The substantive conclusions remain the same. The mean abnormal increase in trading volume for day 0 is 6.46% and day 1 is 6.72%. The cumulative abnormal increase in trading volume for [0,+1] window after dropping the outliers is 13.18% (*p<.05*).

[16] We thank an anonymous reviewer for this suggestion.

[17] Without the outliers the U-statistics for day 0 ranked 209 (*p=.10*) and 219 (*p<.05*) out of the U_t s in the 230 estimation period.

[18] A challenge in using multiple criteria for matching is the difficulty it poses in finding a matched unit. To overcome this difficulty, we undertook the following steps. First, we identified firms in the same four-digit SIC code and searched for firms that were within 30% of the sample firm's size (i.e., market capitalization), book-to-market ratio and return on assets (ROA). We used 30% calipers for matching to facilitate the identification of a matched firm. In the event, a matching firm could not be identified using the above procedure; we expanded our search by examining firms in the same three-digit SIC code and two-digit SIC code.

times since there are firms in our sample with multiple CRM outsourcing announcements. Since cross-sectional dependence is known to influence BHAR results, we also perform an analysis on samples where a CRM outsourcing firm and the control firm appear only once. We find that the abnormal returns are not statistically significant ($p > .10$ after Bonferroni correction) for any of the time windows considered, regardless of whether we include the sample and matched firms multiple times or once.

The calendar-time portfolio methodology involves creating portfolios of stocks of firms that have announced their decision to outsource CRM processes. Firms are added to the portfolio on the date of announcement and held in the portfolio for the period of time for which we wish to calculate returns (see Fama 1998; Mitchell and Stafford 2000). We use the Fama-French Three-Factor model to calculate the one-year, three-year, and five-year stock returns. The intercept term of these models is the measure of the average monthly abnormal returns of the portfolio. We find that the intercept term is not statistically significant for either the one-year, three-year or five-year portfolio returns. In sum, there is no compelling evidence that the Efficient Market Hypothesis should be rejected in our case.

7. Discussion

7.1. Summary

Although outsourcing as an organizational practice has existed for a long time, it is only recently that firms have started to outsource CRM processes on a regular basis. Existing, largely anecdotal, evidence suggests that while this practice often improves firm performance, in many other instances, CRM outsourcing leads to reduced firm performance. Our study was motivated by the question: Why do the performance implications of CRM outsourcing vary so much across outsourcing announcements? We develop a contingency framework delineating how firm capabilities and vendor economic and cultural distance pose boundary conditions, systematically affecting the expected performance of CRM outsourcing, and how their effect differs as a function of the CRM process being outsourced. Our focal measure of performance is shareholder value, which is an important metric for evaluating the effect of managerial actions.

We find strong support for our contingency framework. CRM outsourcing is more beneficial to firms that are high on IT capabilities and low on marketing capabilities, and less beneficial when it concerns pre-sales CRM. Similarly, while vendor economic distance has a positive influence on the outsourcing firm's shareholder value, vendor cultural distance has a negative influence. We further find that the effect of firm capabilities is systematically moderated by the type of CRM process being outsourced. The negative effect of CRM outsourcing by firms high on marketing capabilities is strengthened (i.e., made more negative) when outsourcing concerns pre-sales CRM processes. Likewise, the positive effect of CRM outsourcing by firms high on IT capabilities is strengthened when outsourcing concerns post-sales CRM processes. Finally, while the performance-effect of CRM outsourcing is negatively related to vendor cultural distance, this effect disappears when outsourcing concerns post-sales processes.

7.2. Managerial Implications

Although CRM outsourcing has captured the attention of senior executives, failed outsourcing initiatives continue to frustrate and disenchant managers. Aron and Singh (2005, p. 136) note that while firms spend inordinate amount of resources in identifying outsourcing vendors and negotiating prices, little attention is devoted to which processes should be outsourced and which should be performed in-house. When firms with strong IT capabilities outsource post-sales CRM, we find that shareholder value is positively impacted. As such, it is imperative for firms to build expertise in IT to benefit more from CRM outsourcing. In contrast, our findings imply that firms with strong expertise in marketing do not benefit from outsourcing CRM as financial markets infer that farming out CRM activities erodes the firm's advantage of satisfying customers better. However, the loss in shareholder value accruing to outsourcing firms with stronger marketing capabilities versus the gain in shareholder value accruing to outsourcing firms with stronger IT capabilities are not symmetric. In our sample, we find that on average when a firm with high IT (marketing) capabilities outsources CRM, its market value appreciates (erodes) by approximately $276 million ($189 million). Thus, when outsourcing CRM, the market weighs IT capabilities more heavily than marketing capabilities.

In addition, firms need to better understand the characteristics of various CRM processes and their link to resident capabilities in order to benefit from CRM outsourcing. Our findings reveal that CRM processes significantly moderate the relationship between outsourcing firm capabilities/resources and shareholder value. The adverse effects of CRM outsourcing by strong marketers are four times stronger when outsourcing concerns pre-sales CRM than post-sales CRM. Consequently, our study cautions firms with strong marketing expertise to think twice before outsourcing pre-sales activities. We further find that shareholder value is positively impacted when firms with strong IT capabilities outsource post-sales CRM. As such, firms with strong IT capabilities benefit more from outsourcing post-sales CRM rather than pre-sales CRM.

CRM vendors are often located in multiple countries. In fact, many CRM vendors have the ability to provide CRM services from several locations across the globe. Our findings suggest that firms outsourcing to vendors in *economically* distant countries create more shareholder value for the outsourcing firm. This effect is rather straightforward and can be traced to lower production costs. However, outsourcing CRM to *culturally* distant vendors poses more complex challenges and contingencies. We find that on average, the market value of firms outsourcing to vendors providing service from culturally distant countries declines by $82 million. Our findings also suggest that firms need to especially guard against farming out complex pre-sales front-office processes to culturally distant vendors. Conversely, outsourcing post-sales CRM processes to culturally distant places has no adverse effect on shareholder value.

It is plausible that the relationship between vendor cultural distance and performance may improve

over time as firms learn to effectively manage CRM outsourcing. For example Ang and Inkpen (2008, p.340) note that "as offshoring matures into global service delivery models, firm-level cultural intelligence – the capability of firms to work effectively with others from diverse cultures- will emerge as a critical resource for firms leveraging on offshoring". Perhaps, managing vendors in distant cultures is a capability with distinct managerial, structural and competitive dimensions (Ng and Ang 2004). In addition, firms need to manage customer expectations better when outsourcing CRM to culturally distant vendors. When outsourcing CRM to offshore vendors, firms could clearly articulate the potential cost savings for customers in addition to the cost savings for the firm. As the landscape for outsourcing continues to evolve, firms are employing multiple organizational forms to manage risks embedded in different business processes. We conjecture that firms may be able to exercise better control over CRM offshoring by using hybrid organizational structures such as captive centers and/or joint ventures.

We find that stock markets often react negatively to outsourcing of CRM activities. It is reasonable to assume that managers do not set out to reduce the value of their firm, which raises the intriguing question why managers and stock markets might have differential expectations for a given decision? Our theoretical model offers some insights in this regard. We argue that the value of outsourcing CRM processes depends on the interplay between production costs, agency costs and customer satisfaction. The reason there are differential expectations from CRM outsourcing might be because managers either focus on savings in production costs, or appear to think that savings in production costs outweigh the potential increase in agency costs and decrease in customer satisfaction. However, the high frequency of negative reactions by stock markets suggests that this may not be true in all cases. The markets believe that often agency problems and diminished customer satisfaction will outweigh the production cost savings. As such, it is plausible that managers are rational in their decision making but markets might still not concur with their assessment. This begs the question: who is right? If managers are right, we would expect a positive drift in long-term abnormal returns for the outsourcing firm to reverse the short-term negative return. On the other hand, if the stock market is right, we would expect no such effect. Our analysis of long-term abnormal returns (section 6.7) indicates that there is no reversal in stock returns in the long-run. Moreover, the empirical results based on change in customer satisfaction (Table 5) lends additional support for the market's expectation that firm performance may decline post CRM outsourcing due to adverse effects on customer satisfaction. In summary, we believe that the notion of managers acting rationally and stock market being efficient are not at odds with each other.

We find a decrease in CRM outsourcing announcements in more recent years. Follow-up research on the number of CRM outsourcing announcements for the period 2007-2010, using the same procedures, confirms that the number of outsourcing announcements continues to be low. Given the overall negative response of the stock market, this finding is understandable. However, it is unclear which lesson managers

eventually learn from the disciplining action of the stock market. Do they heed the "wisdom" of the stock market and reduce CRM outsourcing or do they continue to outsource CRM but do not disclose the event?

To get an initial idea on which explanation is more likely, we identify the most frequently mentioned CRM outsourcing vendors from our announcement list and collect data on CRM outsourcing announcements from these vendors for a five-year window 2005-2010. We include nine vendors in this analysis which account for 75 of the 158 announcements in our sample: Client Logic (acquired Sitel), Convergys, CSG Systems, ICT (Sykes), Rainmaker, RMH Teleservices (NCO), TeleTech, Vertex. We content analyze their press releases (from Lexis Nexis, Factiva and corporate websites) to check the trend in vendor's disclosing the names of clients. If managers draw the lesson that they should follow the wisdom of the stock market, we would expect no trend in announcements without disclosure of the outsourcing firm. Conversely, an upward trend is consistent with the idea that managers want to avoid, rather than heed, the disciplining action of the stock markets. We find that the percentage of CRM outsourcing in which the client name is not disclosed increases from a mere 11% in 2005 to 50-60% in 2008-2010. This provides preliminary evidence that managers may indeed be learning from the disciplining action of the stock market, not by necessarily reducing CRM outsourcing activity per se, but by no longer disclosing this information. Whether that is in the best interest of the shareholders is of course an entirely different question.

7.3. Limitations and Future Research

As with any empirical endeavor in an emerging area, the current study has limitations, which provide avenues for future research. It would be interesting to examine the performance consequences of CRM outsourcing by accounting for certain deal characteristics such as size and length of the outsourcing deal, and anticipated cost savings, or more detailed information about the type of CRM processes being outsourced. In this study, we were limited by the extent of information firms disclosed in their announcements about the outsourcing deal. We are also unable to control for vendor characteristics such as reputation and the magnitude of the investments made in training its frontline employees. Many of the outsourcing vendors in this study are either privately held and/or are located in countries with varying statutory reporting requirements. The announcements do not provide more fine-grained information on which aspects of these sub-processes are retained by the firm and which aspects of the sub-processes are handled by the vendor. If such data is available, one could more closely examine the processes within pre-sales that require improvisation and customization. While we were able to gather data on customer satisfaction and proxy production cost advantage through measure of economic distance, we could not measure and test our hypotheses on agency costs, which are typically difficult to measure. Further, the variables for marketing inputs, SGA and accounts receivable, could be regarded as relatively weak proxies for marketing expenses and customer relationships, respectively. While the selection of these proxies was based on previous research,

which also provided initial encouraging evidence on their nomological validity, future research would benefit from more fine-grained or additional proxies.

It is also possible that in some cases the outsourcing announcement might signal to stock markets something latent about the firm's financial prospects. As such, a part of the negative reaction to CRM outsourcing might be attributable to such inferences. This explanation assumes that there are no other direct indicators of poor performance available to stock markets or that CRM outsourcing provides incrementally new information about the firm's performance to stock markets. There is a need for more research to understand these issues more clearly.

The agency costs generated by outsourcing CRM to culturally distant countries may be mitigated through appropriate governance structures. The appropriate governance mechanisms are also important to capturing and integrating value created by outsourcing. Cultural distance may be managed through the appropriate relationship management processes or mitigated through relational factors such as prior association.[19] For instance, one of the ways in which firms seek to mitigate the adverse reactions of customers is by training the vendor personnel. Likewise, with greater availability of technology and workflow software, it is possible for firms to use real time systems to monitor the interaction of vendor agents with customers. There is also anecdotal evidence to suggest that some firms may provide customers the choice of selecting offshore or onshore vendors. For example, the online lender E-Loan, Inc., provides its customers a choice: have your loan handled now, in India, or request your loan be processed in the U.S., and wait as long as two days more (Metters 2008). Whether such approaches mitigate customer adverse reactions and agency costs and enable firms to benefit more from CRM outsourcing, remains an issue for future research.

Further, our motivation for linking pre-sales CRM to lower shareholder value and post-sales CRM to higher shareholder value is guided by previous research on agency theory and transaction cost economics. It is known that functional complexity precipitates difficult contracting and exacerbates agency concerns (Ang and Cummings 1997; Ulrich and Barney 1984). In addition, it is possible that stock markets may believe that activities that have the potential to generate more value should be internally organized rather than outsourced. However, an alternative viewpoint is that complex, strategic processes, when managed through the right governance mechanisms, deliver greater value than simple processes. Benefits from acquiring supply chain management competences through outsourcing are greater than the benefits from outsourcing payroll or benefits management. Following this line of reasoning, it may not be appropriate to associate low complexity processes (post-sales CRM) with higher value and high complexity processes (pre-sales CRM) with lower value without controlling for the moderating effect of how the relationship is governed or complementary organizational changes that are required to extract value.[20] Unfortunately, details on governance mechanisms

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[19] We thank an anonymous reviewer for this insight.
[20] We thank an anonymous reviewer for this insight.

used to manage the relationship are rarely divulged in outsourcing announcements. As a result, we are unable to test the impact of such mechanisms in this study. While our empirical results support our view on the value generation of pre-sales versus post-sales CRM, future research should investigate the moderating role of governance mechanisms on mitigating agency costs and on the value generated by simple versus complex processes. To investigate this important issue, it may be necessary supplement secondary data with primary data through surveys.

7.4. Conclusion

In sum, valuable insights can be obtained from studying stock market reactions to CRM outsourcing announcements. The lesson is clear, albeit its clarity lies in its contingency. Unlike outsourcing of back-office IS systems, outsourcing of front-office, customer-facing IS systems are not at all "guaranteed" to lead to an improvement of the firm's ultimate metric, shareholder value. The negative effects of CRM outsourcing on agency costs and customer satisfaction may outweigh any production cost advantages. Only under specific conditions documented in this paper can a positive outcome be expected.

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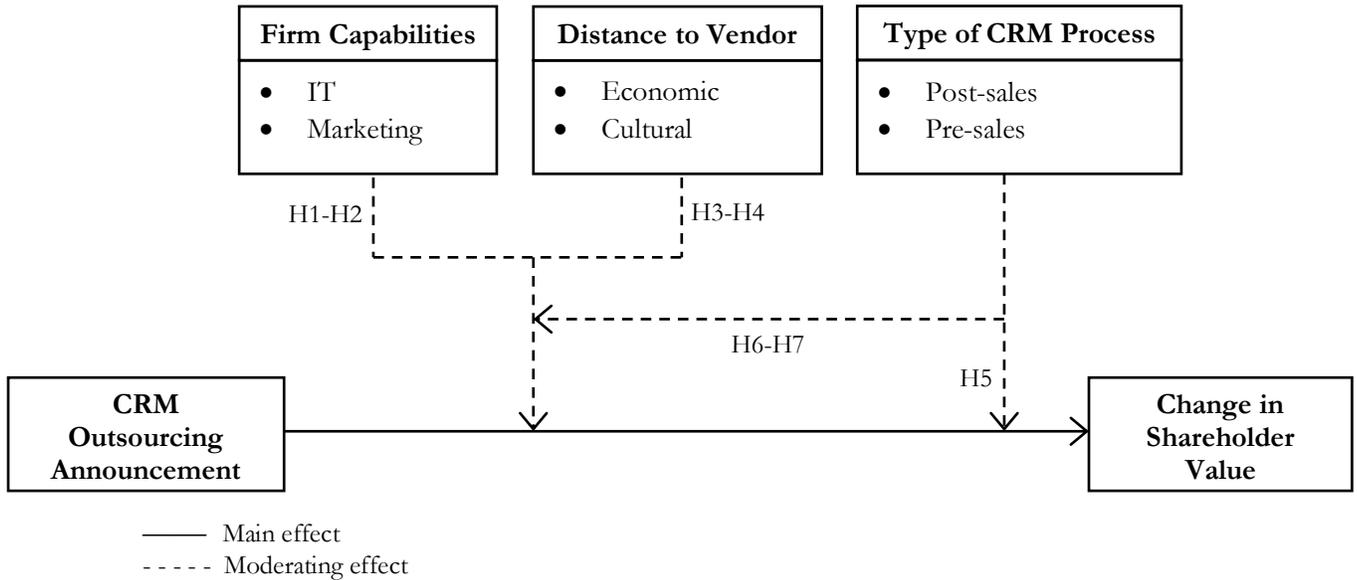
Figure 1 Conceptual Model

Firm Capabilities	Distance to Vendor	Type of CRM Process
• IT • Marketing	• Economic • Cultural	• Post-sales • Pre-sales

H1-H2   H3-H4   H6-H7   H5

CRM Outsourcing Announcement → **Change in Shareholder Value**

——— Main effect
- - - - - Moderating effect

Table 1 Conceptual Framework for Developing Hypotheses

Moderator	Demand-Side Effects	Supply-Side Effects		Net Effects
	Customer Satisfaction	Production Costs	Agency Costs	Shareholder Value
Firm Capabilities				
IT Capabilities (H1)	+[1]		−[1]	+[2]
Marketing Capabilities (H2)	−			−
Distance to Vendor				
Economic Distance (H3)		−		+
Cultural Distance (H4)	−		+	−
CRM Process				
Pre-sales CRM (vs. Post-sales CRM (H5)			+	−
Post-sales CRM x IT Capabilities (H6a)			−	+
Pre-sales CRM x Marketing Capabilities (H6b)	−		+	−
Post-sales CRM x Vendor Cultural Distance (H7a)			−	+
Pre-sales CRM x Vendor Cultural Distance (H7b)	−		+	−

Note: Plus (negative) signs represent strengthening (weakening) of the supply- or demand-side effect in question. The net effect on shareholder value is given in the last column.

[1] To be read: "CRM outsourcing by firms with high IT capabilities will lead to a larger increase in customer satisfaction and a larger decrease in agency costs than outsourcing by firms with low IT capabilities."

[2] To be read: "The net result of the supply- and demand-side effects combined is that outsourcing CRM by firms with high IT capabilities will have a more positive effect on shareholder value than outsourcing by firms with low IT capabilities."

Table 2a   Frequency Distribution of Outsourced CRM Processes and Sample Announcements

	CRM Process	Percentage
Pre-sales	Lead pre-qualification	12%
	Outbound sales	28%
	Customer acquisition	13%
	Upselling/Cross-selling	15%
Post-sales	Customer support/Technical Support	42%
	Customer care/Customer service	38%

Table 2b Illustrative Examples of the Impact of CRM outsourcing on Shareholder Value

Firm Name	Date	Excerpt from the Announcement	CAR [0,+1]	Change in Shareholder Value
Citibank	04/21/1998	"TeleTech Holdings, Inc… announced the signing of a six year agreement with Citibank, N.A., to provide a portion of that bank's customer services for financial products and services. TeleTech will deploy people, infrastructure and systems to provide these services through various communication channels. Under the agreement, TeleTech will develop a customer care center for Citibank to be located in Enfield, Connecticut."	+.77%	+ $863.88 million
IndyMac Bank	08/06/2003	"Exlservice Inc…said that it has bagged a three-year contract from IndyMac Bank, a US-based mortgage lender. The project will be executed from one of EXL's four facilities in India, according to a company statement. The value of the order has not been disclosed....Under the agreement, EXL will handle multiple processes for IndyMac Bank, including loan collections, new customer verification and certain aspects of customer service."	-.92%	- $15.56 million
Circuit City	10/18/2003	"Circuit City hired Daksh, a company in Mumbai, India, to handle phone calls from customers dialing Circuit City's toll-free help line. Soon, those workers also will be answering questions about consumer electronics products via an online live chat on the chain's Web site."	-6.70%	- $138.39 million
Office Depot	07/19/2004	"Alpine Access, Inc., … announced today a one-year agreement with Office Depot to provide inbound call center support for their commercial clients…Alpine's proprietary technology delivers calls to home-based agents in major metropolitan areas throughout the United States. As a result, Alpine can tap into a higher-quality workforce that is more competent and mature than those at a conventional facility."	+1.38%	+ $74.82 million

Note: Cumulative abnormal return is calculated by the authors using the Fama-French Four Factor model. Change in shareholder value is based on previous day's market capitalization and CAR [0,+1].

Table 3 Summary Statistics

		Mean	SD	Range	1	2	3	4	5	6	7
1	CAR [0,+1] %	-.28	.13	-11.47 - 5.87							
2	Marketing Capabilities	.90	1.12	-1.09 - 1.54	-.32						
3	IT Capabilities	.03	.07	0 - .26	.17	-.16					
4	Economic Distance	3.98	4.74	0 – 10.69	.08	-.01	-.05				
5	Cultural Distance	19.82	25.65	0 - 87.91	-.07	.02	-.03	.37			
6	CRM Pre-Sales	.68	Dummy Coded		-.20	.14	-.04	-.14	-.16		
7	CRM Post-Sales	.80	Dummy Coded		.09	-.09	.11	.02	.18	-.35	
8	Firm Size	10.21	1.92	3.91 - 12.88	.12	.13	.29	.08	.11	.10	.04
	Revenue ($b)	21.65	31.64	.10 – 190.81							
	Market Capitalization ($b)	42.59	65.23	.02 – 276.16							

Numbers greater than .13 or less than -.13 are significant at p<.10.

Table 4 Cumulative Average Abnormal Returns across Different Event Windows

Window	Mean Abnormal Return	% Positive	Patell t-Statistic[1]	p-value
[0,+1]	-.28%	51.27	-1.96	.05
[0,+2]	-.70%	44.94	-.97	.33
[-2,0]	-.51%	41.43	-.89	.37
[-1,+2]	-.74%	44.30	-1.24	.22
[-1,+1]	-.33%	43.67	-1.31	.19
[-2,+2]	-1.09%	40.51	-.71	.48

[1] Patell t-Statistic is adjusted for cross-sectional variance. The p-values are two-tailed.

Table 5 Hypotheses Testing

Dependent variable: CAR[0,+1]	Hypothesized Effect	M1	M2	M3
Intercept (θ_0)		.0117** (.0057)	.0072 (.0094)	.0084 (.0069)
Firm Capabilities				
IT Capabilities (θ_1)	$\theta_1 > 0$		.0093*** (.0034)	.0089** (.0041)
Marketing Capabilities (θ_2)	$\theta_2 < 0$		-.0078*** (.0017)	-.0076*** (.0014)
Distance to vendor				
Economic Distance (θ_3)	$\theta_3 > 0$		.0018** (.0008)	.0012** (.0007)
Cultural Distance (θ_4)	$\theta_4 < 0$		-.0004*** (.0001)	-.0004*** (.0001)
Type of CRM Process				
Post-sales CRM (θ_5)				.0075 (.0051)
Pre-sales CRM (θ_6)	$\theta_6 < \theta_5$			-.0107*** (.0036)
IT Capabilities X Post-sales CRM (θ_7)	$\theta_7 > 0$			.0314** (.0194)
Marketing Capabilities X Pre-sales CRM (θ_8)	$\theta_8 < 0$			-.0252*** (.0031)
Vendor Cultural Distance X Post-sales CRM (θ_9)	$\theta_9 > 0$			.0003* (.0002)
Vendor Cultural Distance X Pre-sales CRM (θ_{10})	$\theta_{10} < 0$			-.0003** (.0001)
Control variables				
Firm Size (θ_{11})		.0017* (.0009)	.0038*** (.0010)	.0032*** (.0008)
Industry Fixed Effects (θ_{12}-θ_{17})		2 industry dummies significant	None significant	None significant
R^2		.0804*	.2475***	.5242***

*** p < .01; ** p < .05; * p < .10 (p-values one-sided if hypothesis is offered, two-sided otherwise)

Note: N=158. Standard error in parentheses.

Table 6 Validation Analyses: Alternate Performance Metrics and Removal of Outliers

	M4 Fama-French Three-Factor Model	M5 Market Model	M6 Market-Adjusted Returns Model	M7 Removing Outliers	M8 Abnormal Change in Customer Satisfaction
Intercept (θ_0)	.0126 (.0079)	.0080 (.0083)	.0121 (.0098)	.0107 (.0073)	.1043 (.7882)
Firm Capabilities					
IT Capabilities (θ_1)	.0093*** (.0028)	.0107*** (.0040)	.0148*** (.0047)	.0078*** (.0027)	. 8490** (.4385)
Marketing Capabilities (θ_2)	-.0073*** (.0016)	-.0070*** (.0014)	-.0050*** (.0017)	-.0064*** (.0013)	-.4282*** (.1203)
Distance to vendor					
Economic Distance (θ_3)	.0011** (.0008)	.0004 (.0008)	.0009 (.0010)	.0011** (.0007)	
Cultural Distance (θ_4)	-.0003** (.0001)	-.0003** (.0001)	-.0003* (.0002)	-.0004*** (.0001)	-.0153** (.0085)
Type of CRM Process					
Post-sales CRM (θ_5)	.0067 (.0045)	.0064 (.0040)	.0101 (.0073)	.0059 (.0046)	
Pre-sales CRM (θ_6)	-.0083** (.0038)	-.0109* (.0059)	-.0076* (.0044)	-.0093*** (.0035)	-.1639 (.1865)
IT Capabilities X Post-sales CRM (θ_7)	.0358** (.0153)	.0433** (.0207)	.0475** (.0271)	.0258** (.0142)	
Marketing Capabilities X Pre-sales CRM (θ_8)	-.0234*** (.0040)	-.0195*** (.0035)	-.0185*** (.0047)	-.0227*** (.0033)	-.4869*** (.1588)
Vendor Cultural Distance X Post-sales CRM (θ_9)	.0002* (.0001)	.0001 (.0002)	.0001 (.0002)	.0002* (.0001)	
Vendor Cultural Distance X Pre-sales CRM (θ_{10})	-.0004*** (.0001)	-.0003** (.0002)	-.0002* (.0001)	-.0003** (.0001)	-.0323* (.0219)
Control variables					
Firm Size (θ_{11})	.0026** (.0011)	.0019 (.0013)	.0024* (.0014)	.0022** (.0010)	
Lagged Abnormal Change in Customer Satisfaction (θ_{12})					.3501** (.1796)
Abnormal Change in Marketing Expenses (SGA) (θ_{13})					-.0000* (.0000)
Industry Fixed Effects (θ_{14}-θ_{19})	None significant	None significant	None significant	None significant	
R^2	.4281***	.3250***	.2868***	.4834***	.3433**

*** p < .01; ** p < .05; * p < .10 (p-values one-sided if hypothesis is offered, two-sided otherwise) *Note*: N=158 for M4-M6, N=152 for M7, N=75 for M8. For M8, we do not include industry fixed effects because the dependent measure is change in customer satisfaction with respect to the industry average. Standard error in parentheses.