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ANTECEDENTS OF ONSHORE AND OFFSHORE BUSINESS PROCESS OUTSOURCING

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Abstract

This paper proposes a theoretical framework for adoption of onshore and offshore business process outsourcing (BPO) by firms. Our analysis of data from 244 firms publicly traded in the United States indicates that firms with a stronger information technology infrastructure and business process knowledge are more likely to engage in onshore and offshore BPO. We also find a positive association between offshore BPO and cost-cutting business strategy, and between offshore BPO and IT department focus on innovation.

This study makes three contributions. First, we integrate multiple streams of literature (transaction cost economics and capabilities) to create a theoretical framework to understand the drivers of BPO. This theoretical framework extends the emerging literature on BPO. Second, we establish a link between IT infrastructure and BPO, using contributions from the information systems literature on IT outsourcing and business process management. Third, we distinguish between onshore and offshore BPO, including contributions from the international business literature on internationalization, to identify any differences between onshore and offshore BPO.

Keywords: Business process outsourcing, BPO, onshore, offshore, process knowledge, internationalization

Introduction

Digitization and competition are forcing and enabling firms to scale new frontiers and find better ways to leverage globally dispersed talent and assets. Business process outsourcing (BPO) is the delegation of one or more information technology intensive business processes to an external provider, and is the fastest growing segment of the IT services market. Gartner projects that the worldwide BPO market will grow 9 percent per year from \$113 billion in 2003 to \$176 billion in 2007, with delivery of 14 percent of BPO services using offshore resources (Scardino et al. 2004). BPO involves a broad range of IT-enabled processes beyond the IT function. Processes typically outsourced in BPO include human resources, finance and accounting, logistics, and procurement (Stone and Brown 2005). Pfannenstien and Tsai (2004) suggest that BPO emerged as IT outsourcing vendors gained understanding during the 1990s, and then began specializing in functional areas where they would handle business processes along with the underlying IT. Because BPO involves critical processes that are entwined with other core processes in the firm, it is more difficult to specify the transaction characteristics and contingencies in BPO compared with those in the outsourcing of other goods and services.

Despite the growing significance of business process outsourcing, there is limited understanding of the factors that enable firms to engage in BPO. We build on two streams of literature in this research. The first stream of information systems research has identified the potential for IT to enable new organizational forms (Palvia 1998). However, with a few notable exceptions (Bardhan et al. 2005, 2006), much of this literature focuses on the outsourcing of the IT function (Ang and Straub 1998; Apte et al. 1997; Carmel and Agarwal 2002; Dibbern et al. 2004; Lacity and Willcocks 1998; Loh and Venkatraman 1992; Sobol and Apte 1995; Teng et al. 1995). Related work in this stream conceptualizes the factors that make some services more amenable for offshore BPO (Apte and Mason 1995; Mithas and Whitaker 2005; Venkatraman 2004), and examines supplier capabilities, best practices, and lessons from BPO using case-based research (Cullen et al. 2005; Feeny et al. 2005; Lacity et al. 2003).

The second stream of research suggests that IT infrastructure and digital platforms enable organizational competencies and firm performance (Bharadwaj 2000; Kohli and Devaraj 2003; Pavlou et al. 2004; Sambamurthy et al. 2003; Santhanam and Hartono 2003; Tallon et al. 2000; Zhu and Kraemer 2002). Similarly, research shows that the IT investments and IT capabilities of firms are associated with organizational capabilities and firm performance (Barua and Lee 1997; Brynjolfsson and Hitt 1996; Mithas, Krishnan and Fornell 2005a; Mithas et al. 2005; Rai et al. 1997). While these studies provide useful insights, we are not aware of any large scale empirical studies that address the effect of IT infrastructure on BPO, and whether IT infrastructure and other antecedents may have a differential effect on onshore and offshore BPO.

To study the antecedents of BPO, we performed an empirical study across a broad cross-section of publicly traded firms in the United States. We draw on the transaction cost economics and capabilities literature to develop our theoretical model. We validate our theoretical model by collecting outsourcing-related and financial data on 244 firms publicly traded in the United States from *InformationWeek*, Compustat, and Securities and Exchange Commission (SEC) filings.

This study is important for both research and managerial practice. From a research perspective, there is a need to identify the conditions under which firms are more likely to outsource their critical business processes. An understanding of the antecedents of BPO will contribute to cumulative knowledge and theory in the area of outsourcing IT-enabled services (Dibbern et al. 2004). We also provide some direction on whether the antecedents of BPO differ between the offshore and onshore contexts. From a practice perspective, insights from our study will be helpful for BPO vendors to target potential customers based on their observed characteristics such as IT infrastructure, process knowledge, and degree of internationalization.

The rest of the paper is structured as follows. The next section reviews the theory and develops hypotheses. The following section discusses the methodology and presents results. The final section outlines implications of the study.

Theory and Research Model

The use of BPO is a technology-enabled administrative innovation, and researchers have shown that organizational characteristics are a significant factor that dictate which firms adopt such innovations (Kimberly and Evanisko 1981; Tornatsky and Fleischer 1990). We draw on the transaction cost economics and capabilities literatures to develop the theory underlying our hypothesized research model, and to identify relevant firm characteristics that explain BPO use by firms. We complement insights from this literature with relevant considerations from the information systems and business process management literature.

IT Infrastructure and BPO

Transaction cost economics (TCE) provides one theoretical perspective to evaluate outsourcing considerations. The transaction cost literature argues that firm boundaries are determined by a tradeoff between the production cost advantages of outside procurement in market relationships and the transaction cost advantages of internal production within hierarchies (Williamson 1975). Markets and hierarchies entail different levels of production and transaction costs. Markets may offer lower production costs through economies of scale or specialization, but these advantages come at the expense of higher transaction costs. Transaction costs include finding and contracting with a reliable supplier, monitoring and enforcing the contract, and coordinating with the supplier during the contract term. Transaction costs are presumed to increase with an increase in asset specificity. As asset specificity increases, more complex governance structures are required to ease costly bargaining over profits from specialized assets (Williamson 1985). High transaction costs may overwhelm the savings in production costs from a market transaction, which would in turn lead the firm to vertically integrate the activity and produce internally.

The information systems literature builds on transaction cost theory by suggesting that an increase in the use of IT would lead to increased outsourcing and a shift in firm boundaries for three primary reasons. First, IT reduces coordination costs. Malone et al. (1987) note that IT reduces the time and cost of communicating information, which leads to a tighter coupling of processes

that create and use information. They argue that the widespread use of IT decreases the unit costs of coordination, which will lead to the increased use of market transactions between firms. Second, IT mitigates transaction risk by enabling a firm to better monitor vendors (Clemons et al. 1993). This would encourage firms to invest in IT for interfirm coordination, and lead to increased outsourcing of IT intensive activities. Zenger and Hesterly (1997) concur that innovations in IT ease monitoring and communications across firms and facilitate the disaggregation of firms. Third, IT assets are increasingly standardized and not relationship-specific (Clemons et al. 1993), alleviating the opportunistic behavior typically associated with asset specificity in transaction cost economics. Segal-Horn (1991) also notes that IT increases a firm's ability to coordinate its activities with business partners located nationally and internationally.

Although previous research has found support for the conjectures relating to the effect of IT on firm boundaries, there is no empirical work that examines the effect of IT on BPO. Brynjolfsson et al. (1994) find that IT investment is significantly associated with subsequent decreases in the average size of firms. In a separate study, Hitt (1999) also finds that IT causes a decrease in vertical integration. We extend this stream of work by testing the implications of TCE in the BPO context.

H1a: Firms with stronger IT infrastructure are more likely to engage in onshore BPO.

H1b: Firms with stronger IT infrastructure are more likely to engage in offshore BPO.

Process Knowledge and BPO

BPO involves outsourcing critical business process that underlie the competitive advantage of a firm (Teece et al. 1997). Davenport and Short (1990) define business processes as a set of logically related tasks performed to achieve a defined business outcome, and note that business processes create value for customers and cross organizational boundaries. The concept of processes at the core of a firm extends back to IBM's business system planning methodology, based on the idea that a firm could be considered as a set of processes linked between the various functional units (IBM 1975).

The capabilities approach provides one perspective on the make versus buy decision, suggesting that firms vertically integrate into activities where they have greater competence, production experience, and/or organizational skills than potential suppliers, and outsource activities where they have inferior capabilities (Argyres 1996; Prahalad and Hamel 1990). The capabilities approach extends beyond production skills into other business processes (Teece et al. 1997).

While relative capabilities may be one factor in BPO decisions, other considerations such as capacity, structural capital, and value for new markets are also important factors and may point in a different direction. Let us first consider capacity. Fine and Whitney (1996) argue that it is important to distinguish dependence for capacity from dependence for knowledge. For example, a firm may be able to make an item (or perform a process), but for reasons of time, money, space, or management attention may instead choose to extend its capacity through a supplier. Second, structural capital is equally important as human capital (Willcocks et al. 2004). For example, even when a firm has the capability to perform a process, it may still choose to outsource because the supplier has stronger structural capital (such as better call center facilities). Finally, the decision to make or buy also depends on the value of the capability as a platform into new markets (Kogut and Zander 1992). Again, even when a firm has strong knowledge of a process, it may still outsource the process (for example, procurement) because that knowledge may not help the firm grow its business relative to other capabilities.

Based on the above considerations, we argue that a firm with process knowledge is better able to effectively outsource business processes, because process knowledge enables a firm to modularize its business processes, identify processes as candidates for outsourcing, outsource to a vendor with greater capacity or structural capital, and monitor and evaluate vendor performance.

H2a: Firms with stronger process knowledge are more likely to engage in onshore BPO.

H2b: Firms with stronger process knowledge are more likely to engage in offshore BPO.

While IT infrastructure and process knowledge have their individual effects on BPO, the presence of strong IT infrastructure may have a moderating effect on the relationship between process knowledge and BPO. This is because IT infrastructure can support organizational business processes (Finlay and King 1999), enhance process knowledge (Davenport 1993), and enable new and redesigned business processes (Davenport and Short 1990; Hammer 1990). Some firms even have the IT function drive business process initiatives (Earl et al. 1995). Thus,

H2c: Business process knowledge will be associated with an increased likelihood of onshore BPO in the presence of strong IT infrastructure.

H2d: Business process knowledge will be associated with an increased likelihood of offshore BPO in the presence of strong IT infrastructure.

Internationalization and BPO

The internationalization of a firm may also be important in affecting its degree of offshore outsourcing. Fayerweather (1981) notes that the unique capabilities of the international corporation lie in its capacity to coordinate activities on a global basis. Doz and Prahalad (1991) argue that the capability to coordinate the use of resources across the globe is a source of competitiveness for diversified multinational corporations. Based in part on Porter's (1998) assertion that the ability of multinational firms to access foreign-based clusters of excellence is a source of competitive advantage, Tallman and Fladmoe-Lindquist (2002) suggest that multinational firms can leverage their existing capabilities through greater international presence.

If a firm already has an international presence, it is in better position to coordinate with international partners. The firm has the capability of international management, and can more effectively evaluate and select international vendors, monitor performance, and reduce risk.

H3: Firms with greater international presence are more likely to engage in offshore BPO, compared with firms with lesser international presence.

Strategic Orientation and BPO

The strategic orientation of a firm may affect its propensity to outsource business processes (Teng et al. 1995). Following Rust et al. (2002), firms generally have a primary strategy of either revenue expansion, cost reduction, or both simultaneously. Some practitioners assert that firms engage in offshore BPO primary for cost-cutting reasons (Madigan and Mandell 2003), while others argue that innovative firms have greater propensity to engage in offshore BPO (Engardio et al. 2005; Prahalad and Krishnan 2004). The information systems literature also recognizes offshore sourcing as a response to the simultaneous pressures to contain costs and innovate with IT (Carmel and Agarwal 2002).

While the theory is still developing because offshore BPO is in the early stages, we will empirically explore whether firm strategies and innovation are associated with offshore BPO. Hypotheses 4a and 4b are exploratory in nature, with emphasis on testing relationships suggested by the IT outsourcing literature, rather than developing a model to predict the relationship between offshore BPO and cost cutting, and between offshore BPO and innovation. A similar approach was taken in Teng et al. (1995), one of the first information systems papers to explore the link between firm strategy and IT outsourcing.

H4a: We hypothesize that offshore BPO outsourcing will differ between firms that have a cost cutting strategy and firms that do not have a cost cutting strategy.

H4b: We hypothesize that IT and process innovations will differ between firms that engage in offshore BPO and firms that do not engage in offshore BPO.

We control for other relevant variables to account for alternative and complementary explanations. We control for firm size because that may influence a firm's propensity to outsource (Ang and Straub 1998; Sobol and Apte 1995). Finally, we control for industry sectors to account for differences in outsourcing across industry sectors (Sobol and Apte 1995).

Research Design and Methodology

The study is based on 2003 data for 244 firms that responded to an annual survey of top IT managers in large firms. All 244 firms are publicly traded in the United States. We obtained this data from *InformationWeek*, a leading and widely circulated IT publication. *InformationWeek* is considered to be a reliable source of information, and previous academic studies also have used data from *InformationWeek* surveys (Bharadwaj et al. 1999; Mithas, Krishnan and Fornell 2005b; Rai et al. 1997; Santhanam and

Hartono 2003). We complemented the *InformationWeek* data with revenue and industry data from Compustat, and offshore revenue and asset data from audited financial information in company 10-K and 6-K SEC filings.¹

Variable Definition

The variables used in the study are as follows:

- *Onshore BPO*: This variable indicates whether the firm has outsourced one or more business processes to an onshore BPO vendor (1 = yes, 0 = no). The variable is from the *InformationWeek* survey.
- *Offshore BPO*: This variable indicates whether the firm has outsourced one or more business processes to an offshore BPO vendor (1 = yes, 0 = no). The variable is from the *InformationWeek* survey.
- *IT infrastructure*: This is an eight-item summative index indicating the deployment of IT systems in a firm. The IT systems covered by this scale are customer relationship management (CRM), enterprise resource planning (ERP), supply chain management (SCM), data warehouse, business intelligence, web services, content management, and product lifecycle management (PLM). This variable is from the *InformationWeek* survey.
- *Business process knowledge*: This is a three-item summative index indicating the business process knowledge of a firm. The three indicators of business process knowledge are business process management software, modeled business processes using CASE, and defined technology business processes. This variable is from the *InformationWeek* survey.
- *International revenue*: Offshore revenue as a percentage of total revenue, to indicate the degree of internationalization. The most common measure of internationalization is foreign sales as a percentage of total sales (Stopford and Dunning 1983). Most empirical studies which look at the impact of internationalization on firm performance use foreign share of total sales to measure internationalization (Sullivan 1994). We also use the variable *international assets* (offshore fixed assets as a percentage of total assets) as an alternate measure of internationalization (Daniels and Bracker 1989). Both of these variables are from audited financial information in company SEC 10-K and 6-K filings.
- *Industry sector*: Based on the North American Industry Classification System (NAICS) code for each firm, we divided firms into five sectors and created a dummy (control) variable for each sector: manufacturing, other industrial, wholesale and retail trade, finance and real estate, and services. These five sectors represent substantially all manufacturing and service industries in the United States, and are similar to those used in other IT outsourcing studies (Brynjolfsson et al. 1994). The NAICS data is from Compustat, and the sector groupings are based on the NAICS codes (www.census.gov).
- *Revenue*: To control for effects of firm size, we included the log of annual revenue for each firm. This variable is from Compustat.
- *Cost cutting strategy*: This variable indicates whether the firm's business technology strategy in the past 12 months has been primarily focused on cutting costs as least as much or more than on generating revenue (1 = yes, 0 = no). This variable is from the *InformationWeek* survey.
- *Innovation*: This variable indicates whether the firm's IT organization invested more time in the past year creating business process efficiencies versus business innovations (1 = innovation, 0 = efficiency). IT departments are frequently viewed as a leader in business process efforts (Davenport and Stoddard 1994; Earl et al. 1995), so the IT department can indicate the firm's overall focus. This variable is from the *InformationWeek* survey.

Because several variables were collected from the *InformationWeek* survey, we assessed the potential concern of common method bias using Harman's one factor test. Results of this test suggest that common method bias is unlikely to be a serious problem in the data. The routine tests for reliability of variables are not applicable because we use formative (i.e., summative) scales for IT infrastructure and business process knowledge (Diamantopoulos and Winklhofer 2001). We assessed the accuracy and validity

¹A Form 10-K is an annual report that provides a comprehensive overview of the firm's business. A Form 6-K is a report that provides information for foreign companies that are publicly traded in the United States.

of survey responses by correlating revenue figures provided by survey respondents with the revenue figures obtained from Compustat. A high value of correlation (0.80) provides evidence for reasonable accuracy of survey responses.

In our sample of firms, 33 percent of firms use onshore BPO and 18 percent of firms use offshore BPO. On average, firms have a high degree of IT infrastructure (5.7 on a scale of 0 to 8), a moderate level of business process knowledge (1.5 on a scale of 0 to 3), and a moderate degree of internationalization with 22 percent of revenues from offshore. There is a high correlation of 0.44 among onshore BPO and offshore BPO, because some firms use both forms of BPO. Firms with a business technology strategy of cost cutting tend to have IT organizations that invest less time in innovation focused activities (correlation = -0.53).

Discrete Choice Models

In our dataset, the dependent variables onshore BPO and offshore BPO appear as binary choices. The ordinary least squares approach for modeling binary dependent variables is not appropriate because of heteroskedastic error distribution, and a linear model may result in predicted probabilities below zero or above one. In addition, a linear model does not allow us to consider the nonlinear effect of other continuous variables such as IT infrastructure, business process knowledge or internationalization. To overcome these estimation problems inherent in the ordinary least squares approach, we conducted analysis for these models using the probit approach (Greene 2000; Long 1997). The functional form of our empirical models is as follows:

$$\text{Probability (Onshore BPO=1)} = \Phi [\beta X + \varepsilon] \quad (1)$$

$$\text{Probability (Offshore BPO=1)} = \Phi [\beta X + \varepsilon] \quad (2)$$

where the X's are variables such as IT infrastructure, process knowledge, internationalization, strategic orientation, and the industry and revenue control variables, and β s are parameters for the respective variables. Φ denotes the normal cumulative distribution function (the area under the normal curve).

Because we use an interaction term involving IT infrastructure and process knowledge in our probit models, we mean centered these variables for easy interpretation of results (Aiken and West 1996).

Results

Table 1 provides a summary showing the hypotheses that are supported in this study.

Hypothesis 1a predicted a positive association between IT infrastructure and the likelihood of onshore BPO. This hypothesis is supported. Consistent with hypothesis 1b, IT infrastructure is associated with an increase in the likelihood of offshore BPO, although the strength of this relationship is only moderately significant.

Consistent with hypothesis 2a, business process knowledge is associated with the likelihood of onshore BPO. As predicted by hypothesis 2b, business process knowledge is also associated with the likelihood of offshore BPO.

Among interaction effects, hypothesis 2c predicted that IT infrastructure will have a positive effect on the relationship between business process knowledge and onshore BPO. This hypothesis is not supported. Hypothesis 2d predicted that IT infrastructure will have a positive effect on the relationship between business process knowledge and offshore BPO. This hypothesis is supported.

Hypothesis 3 predicted a positive association between the internationalization of a firm and offshore BPO. This hypothesis is not supported. We also estimated this equation using the alternative definition of international presence described in the international business literature (international assets) and did not find a statistically significant association with offshore BPO. We discuss potential explanations for this result in the next section.

Hypothesis 4a explored the association between the strategic orientation of a firm and offshore BPO. This hypothesis is supported, as firms with a business strategy of cutting costs or an equal focus on cost cutting and revenue growth have a higher association with offshore BPO than firms with a revenue growth strategy, although the strength of this relationship is only moderately

Table 1. Summary of Hypothesis Tests

Hypothesis	Description	Supported
1a	IT Infrastructure → Onshore BPO	Yes
1b	IT Infrastructure → Offshore BPO	Yes
2a	Process Knowledge → Onshore BPO	Yes
2b	Process Knowledge → Offshore BPO	Yes
2c	IT Infrastructure × Process Knowledge → Onshore BPO	No
2d	IT Infrastructure × Process Knowledge → Offshore BPO	Yes
3	Internationalization → Offshore BPO	No
4a	Cost Cutting Strategy → Offshroe BPO	Yes
4b	IT Innovation → Offshore BPO	Yes

significant. Hypothesis 4b explored the association between offshore BPO and the IT organization's emphasis on innovation. This hypothesis is also supported, as IT organizations with a primary focus on business process innovations are associated with offshore BPO.

The results showing the effect of control variables on BPO also provide useful insights. Financial services firms were associated with an increased likelihood of offshore BPO compared with other industrial firms, although the strength of this relationship is only moderately significant. This finding is corroborated by the observation that large financial services organizations such as GE Capital were among the first to engage in large-scale offshore initiatives. While firms are not required to disclose specific BPO relationships, the National Association of Software and Service Companies (NASSCOM) reports that American Express, AXA, Fidelity, GE Capital, HSBC, and Standard Chartered Bank have some of the largest remote services operations in India (www.nasscom.org).

We also find that large firms tend to engage in both onshore BPO and offshore BPO with greater likelihood than small firms. This finding is consistent with the theory that slack resources and economies of scale facilitate large firms to adopt technology innovations (Dewar and Dutton 1986; Mock and Morse 1977).

Discussion and Conclusion

Our goal in this paper was to study the antecedents of onshore and offshore business process outsourcing (BPO). We developed our theoretical model by drawing on the transaction cost economics and capabilities literature. We obtained archival data from *InformationWeek* on IT infrastructure and business process knowledge for 244 firms publicly traded in the United States. We complemented this data with audited financial information on revenues and offshore revenues and assets from Compustat and SEC filings.

Consistent with our expectations, we find that a stronger IT infrastructure is associated with an increased likelihood of both onshore BPO and offshore BPO. As a firm strengthens its IT infrastructure by implementing systems such as enterprise resource planning (ERP), customer relationship management (CRM), and supply chain management (SCM), the firm is better able to integrate the outcomes of BPO providers back into its core business operations. The stronger IT infrastructure also enables the firm to better monitor its business operations and identify exceptions, which increases the confidence of the firm to place critical business processes with outside vendors. Particularly with offshore BPO, where frequent face-to-face contact between the client and the vendor is not realistic, a strong IT infrastructure is important for the firm to monitor the vendor and integrate BPO outcomes back into its core business operations.

We also find that business process knowledge is associated with an increased likelihood of both onshore BPO and offshore BPO. As a firm develops its process knowledge, the firm is better able to identify potential processes as candidates for outsourcing, better able to scope projects, better able to select vendors, and better able to monitor and evaluate vendor performance. Similar to IT infrastructure, process knowledge gives the firm increased confidence to proceed with BPO, and reduces the likelihood of disruption as various processes are placed with outside vendors. The fact that process knowledge is critical for both onshore and offshore BPO suggests that a solid understanding of business processes is a prerequisite for firms to successfully engage in BPO.

An interesting finding of our study is that strong IT infrastructure facilitates a firm's offshore BPO much more than it does a firm's onshore BPO at a given level of process knowledge. In other words, as firms enhance their IT infrastructure, they are much more likely to outsource to vendors located abroad. This finding suggests that strong IT infrastructure may help firms in overcoming the geographical and temporal barriers involved in dealing with overseas partners. This result also explains the sharp increase in offshore BPO with the increasing sophistication of firms' IT infrastructures during the past few years.

We did not find a statistically significant relationship between a firm's degree of internationalization and the likelihood of offshore BPO. Although surprising, one reason for this null finding may be the imperfect measurement of internationalization. While we operationalized our internationalization variables following previous studies, these variables may not truly represent the internationalization of a firm. Consider two examples.

Affiliated Computer Services (ACS) is a provider of technology and outsourcing services based in Dallas, Texas. ACS does a significant portion of its business with U.S. federal and state government entities, and over 99 percent of its revenue is considered U.S. domestic revenue. According to the traditional revenue measure, ACS is considered almost entirely a domestic firm. However, a close examination of the ACS 10-K SEC filing shows that almost 10,000 of ACS' 40,000 employees are based in foreign countries such as India, Ireland, and China. Clearly, ACS has an extensive international presence that is not captured by the traditional revenue and asset measures.

Footstar is a retailer of footwear and athletic apparel based in West Nyack, New York. Footstar operates stores only in the United States and Canada. Using the traditional measures of revenues or assets, Footstar would also be considered a North American firm. Again, however, a close examination of the Footstar 10-K SEC filing shows that 90 percent of the shoes Footstar sells are manufactured in China. Yet, Footstar is not considered an international company using the traditional measures.

The examples of ACS and Footstar, which have significant offshore employees and suppliers (respectively) yet have very low offshore revenues and assets, raise question whether offshore revenues or assets are the most appropriate indicators of internationalization. The SEC does not require reporting for offshore employees and/or offshore supplier relationships, so from publicly available data we are unable to evaluate whether these measures would produce findings consistent with the original hypothesis. There is a need to develop alternative and better measures of internationalization to further examine the relationship between internationalization and BPO.

Beyond the measurement of internationalization, there are at least three other potential explanations why the internationalization variable is not significant. First, other factors, such as lower labor costs in developing countries, may be more important in explaining offshoring. Because the lower labor costs from offshore BPO are presumably equally available to all firms, firms may equally pursue offshore BPO regardless of their degree of internationalization. Similarly, industry factors may also drive the offshore BPO decision. For example, McFarlan et al. (1983) show that the position of IS activities varies by industry. In a BPO context, the nature and complexity of processes vary by industry, and industry considerations may deserve further exploration.

A second potential explanation is that exceptionally large international firms (such as GE and Microsoft) may establish company-owned offshore service centers to directly take advantage of lower labor costs, rather than pursue an outsourcing arrangement. If the practice of establishing company-owned offshore service centers was widespread, this would disrupt the hypothesized relationship between internationalization and offshore BPO. A third and final potential explanation concerns the measurement of offshore BPO itself. It is possible that the country in which a BPO contract is signed is not the same country in which work takes place. For example, because certain countries such as the United States have stronger technical and political institutions (Reinhard et al. 1997), there may be an incentive for U.S. companies to formalize BPO contracts at headquarters even if services will be provided by offshore vendor employees. Previous researchers have discussed this issue in the context of IT applications and infrastructure, and this issue may also need to be addressed in the context of BPO.

Research Implications

This study makes three contributions. First, we integrate multiple streams of literature (transaction cost economics and capabilities) to create a theoretical framework to understand the drivers of BPO. This theoretical framework extends the emerging literature on BPO (Cullen et al. 2005; Lacity et al. 2003). Second, we establish a link between IT infrastructure and BPO, using contributions from the information systems literature on IT outsourcing and business process management. Third, we distinguish between onshore and offshore BPO, including contributions from the international business literature on internationalization, to identify any differences between onshore and offshore BPO.

While our study takes initial steps to develop and test a theoretical model of antecedents of onshore and offshore BPO, there are several opportunities to extend this work. First, we used dichotomous measures of onshore and offshore BPO in this study. Loh and Venkatraman (1992) suggest that as outsourcing relationships grow more varied and complex, a richer description becomes necessary. The extent to which firms outsource business processes differs across firms. While some firms may outsource only a small number of business processes in certain subsidiaries, other firms may outsource a larger number of business processes across the firm. Similarly, some firms may have BPO as only a small part of their operational strategy, dedicating limited managerial and financial resources to BPO initiatives, while other firms may have BPO as a significant component of their global sourcing strategy, dedicating significant managerial and financial resources to BPO initiatives. It would be helpful to understand the effect of IT infrastructure and business process knowledge on the *extent* of BPO within a firm.

Second, the results of our findings on the relationship between offshore revenues and assets and offshore BPO shows that there is a need for future research to examine the effect of internationalization on BPO. While U.S. publicly traded firms are currently not required to report data on offshore employees and offshore suppliers in SEC filings, the availability of this data in the future would help us understand the relationship between a firm's international presence and offshore BPO.

Finally, while many firms pursue BPO with the belief that BPO will reduce costs and enable the firm to focus on its core business operations, Prahalad and Krishnan (2004) argue that firms may be able to use BPO to boost innovation by accessing a more skilled workforce and advanced technologies. There is a need for future research to explicitly consider the consequences of BPO including measures such as decreased costs, increased revenues and enhanced innovation capability.

Managerial Implications

This study also has implications for managers. First, from a BPO vendor perspective, as vendors make increased investments to deliver BPO services from onshore and offshore locations, they will be competing for the client firms that would establish mutually beneficial relationships. Vendors will want to identify firms that are prepared to field successful BPO engagements, and will need to know the characteristics of these firms. A prepared client firm can reduce problems in the BPO implementation, and simultaneously reduce the workload of BPO vendors and lead to more positive outcomes. Our study indicates that vendors should focus their marketing efforts on firms with strong IT infrastructure and business process knowledge, and that these firms are more likely to produce successful and mutually beneficial BPO relationships.

A second implication is that when considering BPO, a firm must also evaluate its IT infrastructure. A strong IT infrastructure would give the firm more confidence that it can successfully connect with the BPO vendor to integrate BPO outcomes back into its core business operations. A weak IT infrastructure would indicate that the firm may need to make some internal investments prior to pursuing BPO.

Finally, firms must also evaluate their understanding of the business process to be outsourced, because process knowledge is associated with an increased likelihood of onshore and offshore BPO. A good understanding of the business process would give the firm confidence that it can properly identify and scope the BPO project, and select and evaluate the BPO vendor. In contrast, a poor understanding of the process may put the firm in a disadvantageous position, where it may not be able to properly identify the project or the vendor, and may be subject to suboptimal vendor performance and/or financial savings.

To conclude, this paper empirically tests the effect of IT infrastructure, process knowledge, internationalization, and strategic orientation on onshore and offshore business process outsourcing. Based on 2003 data from 244 firms publicly traded in the United States, we find that there is a positive effect of IT infrastructure and business process knowledge on onshore and offshore BPO. These results suggest that firms with strong IT infrastructure and business process knowledge are more likely to use BPO. These findings are important as firms more broadly incorporate BPO into their global sourcing strategies.

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