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**HOW CLIENT CAPABILITIES, VENDOR CONFIGURATION AND LOCATION
IMPACT BPO OUTCOMES**

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HOW CLIENT CAPABILITIES, VENDOR CONFIGURATION AND LOCATION IMPACT BPO OUTCOMES

ABSTRACT

Despite the increasing use of onshore and offshore business process outsourcing (BPO), a comprehensive literature review [Lacity et al. 2011] finds there has been limited empirical research on BPO outcomes. This paper responds to the call for research by developing and testing a conceptual model for BPO outcomes using data from 50 firms publicly traded in the U.S., including 38 firms in the Forbes Global 2000.

We find that client firm capabilities, vendor configuration and country location lead to interesting tradeoffs in BPO quality, cost and time outcomes. For example, while multi-sourcing offers advantages such as risk mitigation, client firms encounter reduced BPO time benefits when they use multiple vendors. While onshore BPO can lead to improved quality, higher onshore labor costs result in lower BPO cost savings. And while offshore destinations such as India offer lower labor costs, time zone differences lead to reduced BPO time benefits.

Keywords: Offshoring, outsourcing, BPO, outcomes, capabilities, client, configuration, vendor, location, quality, cost, time.

INTRODUCTION

Global firms are under growing pressure to simultaneously increase quality, reduce costs and decrease cycle time. In one effort to respond to this pressure, firms are reevaluating and reconfiguring the vendor and geographic platforms for their primary and support functions [48]. In particular, firms are increasingly using onshore and offshore business process outsourcing (BPO) to manage their primary and support functions and achieve their strategic objectives [44].

An extensive review of 87 BPO research papers published from 1996 – 2011 finds that Information Systems (IS) research has made important contributions to our understanding of BPO [38]. For example, IS research has provided insights on the motivation to outsource, process attributes [45], client firm characteristics [65], governance mechanisms [35], and BPO decisions [63]. However, there has been limited empirical research with BPO outcomes as the dependent variable(s). For example, [38] notes that service quality is the only BPO outcome that has been studied more than once, and other outcomes of interest such as process improvements (onshore, offshore) have only been studied once.

There are at least three reasons for the relative lack of empirical research on BPO outcomes. One reason is that researchers first focused on BPO decisions before pursuing research on BPO outcomes [6]. ITO research followed a similar pattern, where early research focused on determinants and decisions and subsequent research considered outcomes [15]. A second reason is that it is difficult for researchers to acquire credible data on BPO outcomes across a range of firms ([43] is one exception). A third reason is that the collective understanding of successful BPO outcomes is still being developed [60].

Because no analysis of a management practice such as BPO can be complete without an understanding of performance outcomes resulting from the practice, our goal in this paper is to develop and test a conceptual model of BPO outcomes based on prior research [38]. We use BPO data from *InformationWeek* magazine for North American operations of 50 firms publicly traded

in the U.S., including 38 firms in the *Forbes* Global 2000, and revenue and industry data from Compustat and Dun & Bradstreet. We find that client capabilities, vendor configuration and country location lead to interesting tradeoffs in BPO quality, cost and time outcomes. An understanding of these tradeoffs in BPO outcomes will help client firms make better BPO decisions.

The need for research on BPO performance outcomes

We begin by articulating the need for BPO research to build on prior ITO research [15]. While the ITO market was founded in the 1960s, the IT-enabled BPO market has only become more established since the early 2000s. BPO has grown much faster than ITO over the past decade, and at US\$300 billion per year the global BPO market has already achieved almost half the size of the global ITO market (US\$650 billion per year) [18]. In addition to more rapid market growth, there are two distinguishing features which suggest that the nature of BPO performance outcomes may or may not be similar to the nature of ITO performance outcomes.

First, ITO frequently involves a digital artifact where it is possible for the customer to evaluate quality on a reasonably objective basis. Two of the largest ITO segments are IT infrastructure management (*hardware artifact*) and application development and maintenance (*software artifact*) [49], and in both cases it is possible for the vendor to deliver the artifact and for the customer to engage with the artifact by using the related hardware or software. While the evaluation of a digital artifact has some differences from the evaluation of a physical product, in that the customer view of quality for digital artifacts is shaped by current use *plus* expectations of future enhancements [57], there is the fundamental similarity that *physical products, ITO infrastructure management, and ITO application development and maintenance all involve artifacts produced by the vendor and used by the customer*. This is not the case with BPO, which involves information-based process outputs instead of digital artifacts [43]. Because the nature of BPO outputs is different than the nature of ITO outputs, we cannot assume that the customer evaluation of quality for BPO is similar to the evaluation of quality for ITO.

A second difference between BPO and ITO is the scope and interdependence in processes within the firm and across firms. BPO can involve one or more major business processes in a firm, including finance and accounting, human resources, research and development, procurement, supply chain management, sales and marketing, and customer service/call center. There is a high degree of interdependence among these business processes, as the output of one process becomes an input to one or more other processes [44]. This high degree of interdependence between business processes poses challenges to achieving the desired performance outcomes, and requires extensive communication and coordination to manage outsourced processes and transfer process outputs from one or more vendors to the client firm's internal operations [65]. The interdependence also extends beyond the client firm's boundaries, as BPO vendors may communicate directly with a firm's customers (call center BPO) and suppliers (procurement BPO).

While using multiple vendors and country locations are not unique to BPO, the rapid growth of BPO has coincided with calls for further research on these topics [2]. Multi-sourcing requires client firms to effectively and efficiently manage multiple vendors across multiple locations, and presents potential benefits and challenges for performance outcomes. For example, while multi-sourcing can help firms mitigate the risk of reliance on a single vendor [41], it may introduce new risks such as gaps between vendors or additional monitoring and complexity. The choice of country location may entail temporal and cultural differences, which can impact the

ability to transfer knowledge between client and vendor, require more precise definition of requirements, introduce difficulties in managing dispersed teams, and ultimately impact BPO performance outcomes [32].

Quality, cost and time as performance outcomes

In the early 1980's, strategy literature defined two generic competitive strategies [55]. Firms that adopt the *cost leadership strategy* strive for profits by appealing to price-sensitive customers with products that have the lowest relative price, and these firms support their ability to offer low-priced products by maintaining low operating costs and/or high asset utilization. Firms that adopt the *differentiation strategy* strive for profits by appealing to customers who are willing to pay a premium for products that are distinctive along a dimension such as quality or timeliness, and these firms support their ability to offer differentiated products by investing profits from sales of premium-priced products to sustain high levels of quality production and attentive service. While subsequent strategy research argued that it might be possible for firms to simultaneously pursue cost leadership and differentiation [25], the underlying principle has endured that cost leadership and/or differentiation contribute to the financial performance of firms. Marketing research extended these concepts to show that customer satisfaction is based on the customer's evaluation of cost and quality [19], cost leadership contributes to financial performance through lower fixed and/or operating costs, and differentiation contributes to financial performance through revenue growth [58].

Concurrent with these firm-level insights from strategy and marketing research, other academic disciplines began to apply the concepts of quality, cost and time to operations *within the firm*. Operations research during the early 1980's noted that quality for manufactured products includes dimensions related to product performance, maintenance cost, uptime and lifetime [20], and that manufacturing processes can be evaluated based on quality of the resulting product, cost of production and inspection processes, and on-time performance [13]. IS research in the late 1990's extended the concepts of quality, cost and time from physical products to software and information products, by arguing that high-quality IT applications can reduce time and increase effectiveness of managerial decisions, and reduce the cost of generating new revenue by enabling firms to maximize the use of customer information to sell additional products and services [57]. In software development, advanced methodologies and certifications such as Capability Maturity Model Integration can lead to an increase in software quality with decreases in cost and cycle time [23]. Research bridging the IS and operations disciplines finds that IT investments enable manufacturing plants to modularize and outsource production processes, which in turn leads to lower costs and higher quality of manufactured products [3].

As the domain expanded from software development and IT investment to ITO [10], IS research continued to apply the concepts of quality, cost and time to evaluate performance outcomes. For example, research has defined ITO using measures of quality (project quality and functionality), cost (project budget), and time (project time schedule) [64]. Recent IS research confirms the consensus that quality, cost and time are three primary criteria to evaluate ITO outcomes, based on a Delphi study in which academics and practitioners ranked factors related to quality improvement, cost savings, and on-time delivery as three of the top four factors to define outsourcing success [60].

The discussion above demonstrates that quality, cost and time have been used across academic disciplines to evaluate firm-level and within-firm outcomes for physical and non-

physical products. Below we build a conceptual model to evaluate quality, cost and time as performance outcomes for a range of business processes beyond the single process of software development studied in prior IS research.

CONCEPTUAL MODEL

Based on prior research, we place elements of the BPO outcomes model into three categories. Similar to the model in [38], our categories include elements related to the client, vendor, governance and location. The first category is client firm capabilities, such as process management and vendor management, that enable client firms to maximize success and minimize risk in outsourcing engagements [22]. The second category is configuration, which refers to the manner in which client firms structure and govern their BPO activities. Configuration decisions include whether to use a single vendor (single-source) or multiple vendors (multi-source) [2] and whether to use captive (company-owned) centers in place of or alongside external vendors [50]. The third category is country service location, as client firms can outsource to vendors in domestic, nearshore or offshore locations [16]. Below we discuss the three categories of client capabilities, vendor configuration and country location in more detail.

Client capabilities

Client firms need three capabilities to outsource successfully with BPO vendors. One capability is maturity in process or technical standards [11]. In BPO, client firms with good performance are more likely to outsource processes that they *could* efficiently and effectively manage themselves. One indicator of process maturity is the client firm's ability to prepare business processes for outsourcing, as expressed by one CIO “We don't believe in ‘ship it and then fix it.’ We believe in ‘fix it first and then ship it.’ So we fix our processes first and then we ship them to our vendors” [51, p. 6].

A second capability to achieve success in BPO outcomes, broader than maturity in a single business process, is the ability to coordinate outsourcing engagements across multiple business processes such as human resources, finance and accounting, procurement, and call center [51]. The high degree of dependency between business processes poses challenges to understand the business value of outsourcing, and requires extensive communication and coordination to manage outsourced processes across firm boundaries and transfer process outputs from vendors to the client firm's internal operations [65].

The third capability for success in BPO outcomes is performance measurement, in which a firm establishes measurements for a business process and uses the measurements to influence performance in the desired direction [56]. While earlier performance measurements were based almost exclusively on financial and accounting measures, current performance measurements now also incorporate operational measures such as quality and time [42]. The inclusion of operational measures enables performance measurement to create a more comprehensive and forward-looking view and links performance measurement more closely with business strategy [30]. The relationship between strategy, measurement and performance applies in outsourcing engagements where client firms use performance measurements to link vendor performance to client strategic objectives [17]. For example, client firms use contracts with detail clauses to specify price, service level agreements (SLAs), warranties and penalties. These contract details define the standards of vendor performance, reduce uncertainties, clarify expectations, and define the quality of vendor

service that is necessary and acceptable [40]. The use of detailed SLAs is associated with improved relationships and positive outsourcing outcomes for the client and vendor [21].

It is particularly important for clients and vendors to measure quality performance in outsourcing engagements [54], because quality performance impacts cost and time performance [13]. Low quality products and services lead to increased inspection, rework, waste and warranty claims, and high quality products and services result in savings for these costs. The quality focus on eliminating unnecessary activities leads to improved cycle time, and the quality focus on eliminating rework and scrap leads to improved capacity utilization and lead time. While quality methodologies originated in manufacturing industries, they are now being applied to firms in services industries [26]. For example, higher process maturity levels for software development outsourcing providers are associated with improved software quality, and improved software quality drives cost and time benefits [23]. The discussion above responds to the call for research to further articulate the client firm capabilities that will improve BPO outcomes [38].

Vendor configuration

BPO engagements increasingly involve portfolios of outsourcing contracts and various sourcing models such as multi-sourcing and captive centers. Related to the capability to coordinate across multiple business processes discussed above, multi-sourcing requires client capabilities to effectively manage multiple vendors across multiple locations. Multi-sourcing presents potential benefits and challenges for BPO outcomes. While multi-sourcing can help client firms access best-of-breed vendors and mitigate the risk of reliance on a single vendor, multi-sourcing results in increased transaction costs for clients and vendors [66]. Multi-sourcing can give the client firm more power and control over BPO engagements at the price of more time and effort to manage the engagements. While multi-sourcing decreases supply chain risk, operational risk and strategic risk [41], it may introduce new risks such as gaps between processes and the hidden costs of continued monitoring. While working with multiple vendors is designed to hold vendors accountable for cost and quality [51], increasing complexity associated with multiple vendors and multiple locations makes it more challenging for client firms to realize value from BPO.

In addition to multi-sourcing, firms also use captive centers to manage their business process portfolio. Research indicates that 153 of the *Fortune* Global 250 firms use captive centers [52]. Captive centers enable firms to maintain control over critical activities while reducing cost, although captive centers still require significant investment and management attention. Client firms may establish captive centers when they have in-house economies of scale, to create an environment in which internal departments and external vendors compete to provide services [39]. While captive centers play a large role in the offshore sourcing of services, they remain understudied in the empirical BPO literature [38].

Country location

The selection of country location also plays an important role in BPO outcomes. Country location has implications for vendor labor costs [34], which can significantly impact BPO cost outcomes. Country location may also entail temporal and cultural differences, which can impact the ability to transfer knowledge between client and vendor, require more precise definition of requirements, and introduce difficulties in managing dispersed teams.

Client firms face numerous choices in service location for BPO engagements. Using U.S.-based client firms as an example, a U.S. service location may result in the lowest geographic, temporal, cultural and organizational distance between client and vendor. At the same time, a U.S. service location may entail higher labor costs than other service locations, which can reduce cost savings from BPO engagements. For this reason, some U.S.-based client firms choose to place outsourced business processes in nearshore locations such as Canada, Mexico and the Caribbean. These nearshore locations entail less geographic distance than offshore locations, and offer similar time zones to U.S. service locations. For example, service locations in Mexico are able to provide call center services to U.S. Spanish-speaking customers, while offering lower labor costs compared with U.S. service locations.

Low labor costs have been one reason for the tremendous growth in offshore BPO, including the emergence of India as the leading offshore BPO destination [46]. India offers many advantages as a service location, including low labor costs, highly-skilled workforce, rich marketplace of BPO vendors, and educational institutions and training programs to support this ecosystem [28]. India commands about 50% of the offshore BPO market [31]. While India holds the leadership position in offshore BPO, other developing economies are emerging as attractive offshore service locations. For example, China offers an educated workforce and strong government support, and is beginning to address issues of intellectual property protection and security [9]. The Philippines offers excellent English-language skills, South America offers synchronous time zones to the U.S., and Russia is geographically and culturally closer to the U.S. than India [41]. While there are an increasing number of viable offshore service locations, there are relatively few studies that involve vendors based in countries other than India [37]. It is important to study multiple offshore service locations, because practices that may work in one location may not work well in other locations.

In addition to our analysis of explanatory variables related to client capabilities, vendor configuration and country location, we control for other variables such as client firm size and industry that may account for alternative and complementary explanations of BPO outcomes. We also control for whether or not the client firm is headquartered in the U.S., to the extent that organizational structure and management practices may vary for North American operations of firms headquartered in the U.S. versus firms headquartered in Europe or other geographies.

RESEARCH DESIGN AND METHODOLOGY

The study is based on data from a survey conducted by *InformationWeek* magazine [67]. As a print publication, *InformationWeek* had the second-highest readership of any enterprise IT publication after *Computerworld*.¹ For 28 years *InformationWeek* has conducted an annual survey of firms that use business technology (formerly *InformationWeek* 500, now *InformationWeek* Elite 100), and from 1998-2014 *InformationWeek* conducted an annual salary survey of IT professionals. *InformationWeek* data has been used in numerous IS research papers, and is recognized as an objective source of IT data for firms and professionals [47, 59]. *InformationWeek* targets its firm-level surveys to IT executives and managers who are in the best position to provide an accurate picture of the firm's operations [62]. In addition to annual surveys, *InformationWeek* also conducts periodic one-time surveys on issues of interest to IT professionals. The data for this

¹ *InformationWeek* became an online-only publication in 2013 and *Computerworld* became an online-only publication in 2014.

paper comes from a one-time survey that collected detailed data on BPO activities within firms. Fifty² firms provided complete responses to the variables of interest, and 38 of these firms represent *Forbes* Global 2000 companies. We provide a more detailed profile of respondent firms and their BPO activities below. To accompany the explanatory variables collected through the *InformationWeek* survey, we collected control variables on firm revenue and industry from Compustat and Dun & Bradstreet. The use of multiple data sources helps to increase data reliability.

Variable definition

Table 1 summarizes the variables used in this study, consistent with the conceptual model described above. Appendix A lists the *InformationWeek* survey questions and response items from which the variables were derived. We applied the procedures recommended by Diamantopolous and Winklehofer [14] to establish validity of the formative index measures. Table 2 provides descriptive statistics and correlations for variables. All client firms in our sample engage in BPO, as intended by the survey design and shown in the descriptive statistics that each firm outsources at least one business process (mean 2.32). On average the firms in our sample experience positive BPO quality outcomes (mean 1.46), cost outcomes (1.96), and time outcomes (0.82). About two-thirds of firms in our data use multiple vendors. The most popular service locations are onshore in the U.S. (0.74) and offshore in India (0.54), consistent with the recognition of India as the leading destination for offshore BPO. Forty-six percent of firms in our sample use captive centers. About one-quarter of the firms in our data are in the manufacturing industry and three-quarters are in services industries. Among statistically significant correlations in our data, quality outcomes are positively correlated with cost outcomes (0.49) and time outcomes (0.53), and cost outcomes are positively correlated with time outcomes (0.41). These correlations suggest that some firms achieve multiple performance outcomes. Quality measurements are positively correlated with quality outcomes (0.51), cost measurements are positively correlated with cost outcomes (0.49), and time measurements are positively correlated with time outcomes (0.46).

² Two subsidiaries of the same *Forbes* Global 2000 parent company responded to the survey. We retained the firm with the more senior respondent, and discarded the firm with the less senior respondent.

TABLE 1
Description of variables

<i>Variable</i>	<i>Description</i>	<i>Source</i>
Quality outcomes	Four-item formative index that indicates the extent to which a client firm has received quality benefits from BPO. Quality benefits covered by this index are process improvement/transformation, more skilled workforce, higher customer satisfaction, and ability to focus attention/resources on more critical issues.	<i>InformationWeek</i> survey
Cost outcomes	Four-item formative index that indicates the extent to which a client firm has received cost benefits from BPO. Cost benefits covered by this index are reduced operations costs, lower prices on products and services, labor/arbitrage savings, and more predictable costs.	<i>InformationWeek</i> survey
Time outcomes	Three-item formative index that indicates the extent to which a client firm has received time benefits from BPO. Time benefits covered by this index are faster cycle times, faster time to market, and faster decision-making.	<i>InformationWeek</i> survey
Quality measurements	Five-item formative index that indicates the extent to which a client firm uses quality performance measurements to track success of BPO engagements. Quality measurements covered by this index are Six Sigma key performance indicators, service level agreement adherence, customer satisfaction levels, process performance levels, and revenue growth.	<i>InformationWeek</i> survey
Cost measurements	Two-item formative index that indicates the extent to which a client firm uses cost performance measurements to track success of BPO engagements. Cost measurements covered by this index are cost reduction and headcount/full-time employees.	<i>InformationWeek</i> survey
Time measurements	Binary variable that indicates whether a client firm uses the time performance measurement of schedule adherence to track success of BPO engagements.	<i>InformationWeek</i> survey
Process maturity	Binary variable that indicates, for the most recent BPO engagement, whether the client firm optimized the process before turning the process over to the BPO vendor.	<i>InformationWeek</i> survey
Extent of BPO	Ten-item formative index that indicates the number of functional areas in which a client firm outsources business processes. Functional areas included in the index are finance and accounting, human resources, sales and marketing, claims processing, call center/customer care, procurement, supply chain, inventory management, customer analytics, and training.	<i>InformationWeek</i> survey
Multi-sourcing	Binary variable that indicates whether the client firm implements BPO initiatives using multiple BPO vendors.	<i>InformationWeek</i> survey
Multi-location	Binary variable that indicates whether the client firm implements BPO initiatives using multiple service delivery locations.	<i>InformationWeek</i> survey
Captive centers	Binary variable that indicates whether the client firm implements BPO initiatives using offshore captive service centers.	<i>InformationWeek</i> survey
Onshore	Binary variable that indicates whether BPO services are conducted in the U.S. Coded based on two survey questions.	<i>InformationWeek</i> survey
Nearshore	Binary variable that indicates whether BPO services are conducted in Canada, the Caribbean, and/or Mexico.	<i>InformationWeek</i> survey
India	Binary variable that indicates whether BPO services are conducted in India.	<i>InformationWeek</i> survey
Emerging offshore	Binary variable that indicates whether BPO services are conducted in China, Central/Eastern Europe, South America, Philippines, and/or Russia.	<i>InformationWeek</i> survey
USA HQ	Binary variable that indicates whether client firm is headquartered in the U.S.	Dun & Bradstreet
Firm size	Natural log of annual firm revenue.	Compustat, Dun & Bradstreet
Services industry	Binary variable that indicates whether client firm is in the services industry sector. Base category is manufacturing and trade & logistics firms.	Compustat, Dun & Bradstreet

TABLE 2
Descriptive statistics and correlations

(n=50)

	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>	<i>14</i>	<i>15</i>	<i>16</i>	<i>17</i>	
<i>1</i> Quality outcomes	1.46	1.25	0.00	4.00	1.00																	
<i>2</i> Cost outcomes	1.96	1.28	0.00	4.00	0.49*	1.00																
<i>3</i> Time outcomes	0.82	0.87	0.00	3.00	0.53*	0.41*	1.00															
<i>4</i> Quality measurements	2.12	1.49	0.00	5.00	0.51*	0.31*	0.39*	1.00														
<i>5</i> Cost measurements	1.20	0.64	0.00	2.00	0.14	0.49*	0.25	0.25	1.00													
<i>6</i> Time measurements	0.62	0.49	0.00	1.00	0.32*	0.20	0.46*	0.57*	0.18	1.00												
<i>7</i> Process maturity	0.26	0.44	0.00	1.00	-0.18	-0.27	-0.03	-0.08	-0.26	0.09	1.00											
<i>8</i> Extent of BPO	2.32	1.43	1.00	7.00	0.18	0.19	-0.00	0.07	0.02	0.03	-0.26	1.00										
<i>9</i> Multi-sourcing	0.64	0.48	0.00	1.00	0.08	0.11	-0.11	0.17	0.11	0.10	-0.13	0.29*	1.00									
<i>10</i> Multi-location	0.70	0.46	0.00	1.00	0.03	0.19	0.12	-0.01	0.21	0.03	-0.21	0.18	0.15	1.00								
<i>11</i> Captive	0.46	0.50	0.00	1.00	-0.05	0.09	-0.04	-0.13	0.15	-0.02	-0.09	0.16	-0.06	0.17	1.00							
<i>12</i> USA	0.74	0.44	0.00	1.00	0.11	-0.16	0.14	-0.01	0.04	0.19	0.14	0.01	0.22	0.11	-0.00	1.00						
<i>13</i> Nearshore	0.32	0.47	0.00	1.00	0.13	0.23	0.09	0.12	-0.01	0.18	-0.31*	0.33*	0.34*	0.36*	0.14	0.11	1.00					
<i>14</i> India	0.54	0.50	0.00	1.00	-0.14	0.13	-0.19	-0.12	0.29*	-0.14	-0.28	0.12	0.06	0.36*	0.37*	-0.09	0.20	1.00				
<i>15</i> Emerging offshore	0.38	0.49	0.00	1.00	0.21	0.25	0.31*	0.13	0.27	0.27	-0.09	-0.09	0.07	0.06	0.27	-0.10	0.35*	0.23	1.00			
<i>16</i> USA HQ	0.66	0.48	0.00	1.00	-0.04	-0.09	0.14	-0.06	-0.04	0.22	0.23	0.01	-0.10	0.27	0.15	0.15	-0.14	0.27	-0.13	1.00		
<i>17</i> Firm size	8.87	1.92	3.98	12.17	-0.15	0.11	0.03	-0.04	0.09	0.10	-0.09	-0.08	0.14	0.03	0.22	-0.04	0.24	0.25	0.42*	-0.07	1.00	
<i>18</i> Services industry	0.74	0.44	0.00	1.00	-0.15	-0.09	0.14	-0.17	-0.03	-0.18	0.14	0.07	-0.06	0.31*	0.09	0.17	-0.08	0.18	-0.01	0.25	-0.25	1.00

* Correlation significant at $p < 0.05$.

Profile of firms and BPO activities

Of the 38 firms in our data that belong to the *Forbes* Global 2000, 10 are in the largest 75 firms, 19 are in the largest 250 firms, and 27 are in the largest 500 firms [12], which suggests that our data includes a reasonable representation of the world's largest publicly-traded companies. As expected because the BPO survey was administered to managers of North American operations (*InformationWeek* is a North American publication), most firms in our sample are headquartered in the U.S. As shown in Table 3, just over 1/3 of the firms in our sample are headquartered outside the U.S., which illustrates the global dimension of our data.

TABLE 3
Headquarter countries for client firms

<i>Region</i> <i>Country</i>	<i>Number of</i> <i>firms</i>
<i>North America</i>	
Canada	3
U.S.	33
<i>Western Europe</i>	
France	1
Germany	2
Netherlands	1
Switzerland	1
Sweden	1
U.K.	2
<i>Asia</i>	
Japan	2
Singapore	1
Other	3
Total	50

Our data includes BPO across a wide range of processes. As shown in Table 4, call center, human resources, and finance and accounting rank as the three most frequently outsourced processes by client firms in our sample. Supply-chain processes such as procurement and inventory management rank among the least frequently outsourced processes, perhaps because the majority of client firms in our sample are in the services industry sector.

TABLE 4
Outsourced processes

<i>Process</i>	<i>Number of</i> <i>client firms</i>
Call center	25
Human resources	22
Finance and accounting	18
Claims processing	13
Training	12
Customer analytics	9
Sales and marketing	7
Procurement	4
Supply chain	4
Inventory management	2

Empirical models

Based on our conceptual model that includes client capabilities, vendor configuration and country location, our equations for BPO quality, cost and time outcomes are as follows:

$$\begin{aligned}
 \text{QualityOutcomes} = & \beta_{10}\text{Constant} + \beta_{11}\text{QualityMeasurements} + \beta_{12}\text{ProcessMaturity} + \\
 & \beta_{13}\text{ExtentBPO}_+ + \beta_{14}\text{Multi-sourcing} + \beta_{15}\text{Multi-location} + \\
 & \beta_{16}\text{Captive} + \beta_{17}\text{USA} + \beta_{18}\text{Nearshore} + \beta_{19}\text{India} + \\
 & \beta_{1-10}\text{EmergingOffshore} + \beta_{1-11}\text{USAHQ} + \\
 & \beta_{1-12}\text{FirmSize} + \beta_{1-13}\text{Services} + \varepsilon_1
 \end{aligned} \tag{1}$$

$$\begin{aligned}
 \text{CostOutcomes} = & \beta_{20}\text{Constant} + \beta_{21}\text{QualityOutcomes} + \beta_{22}\text{CostMeasurements} + \\
 & \beta_{23}\text{ProcessMaturity} + \beta_{24}\text{ExtentBPO}_+ + \beta_{25}\text{Multi-sourcing} + \\
 & \beta_{26}\text{Multi-location} + \beta_{27}\text{Captive} + \beta_{28}\text{USA} + \beta_{29}\text{Nearshore} + \\
 & \beta_{2-10}\text{India} + \beta_{2-11}\text{EmergingOffshore} + \beta_{2-12}\text{USAHQ} + \\
 & \beta_{2-13}\text{FirmSize} + \beta_{2-14}\text{Services} + \varepsilon_2
 \end{aligned} \tag{2}$$

$$\begin{aligned}
 \text{TimeOutcomes} = & \beta_{30}\text{Constant} + \beta_{31}\text{QualityOutcomes} + \beta_{32}\text{TimeMeasurements} + \\
 & \beta_{33}\text{ProcessMaturity} + \beta_{34}\text{ExtentBPO}_+ + \beta_{35}\text{Multi-sourcing} + \\
 & \beta_{36}\text{Multi-location} + \beta_{37}\text{Captive} + \beta_{38}\text{USA} + \beta_{39}\text{Nearshore} + \\
 & \beta_{3-10}\text{India} + \beta_{3-11}\text{EmergingOffshore} + \beta_{3-12}\text{USAHQ} + \\
 & \beta_{3-13}\text{FirmSize} + \beta_{3-14}\text{Services} + \varepsilon_3
 \end{aligned} \tag{3}$$

We use three-stage least squares (3SLS) to estimate equations (1) through (3) [68]. Three-stage least squares supports a system of structural equations such as ours where some equations contain endogenous variables (e.g., quality outcomes) that are dependent variables of other equations in the system. Error terms among equations may be correlated in this type of system, and 3SLS accounts for this correlation by using generalized least squares to transform the variables and obtain a consistent estimate of error terms [33]. Because 3SLS depends on the consistency of estimates for error terms, if one equation in the system is misspecified, the error terms will not be consistent and coefficients for other equations in the system will be biased and inconsistent [27]. Therefore, as a robustness check, we also computed equation-by-equation analysis using ordinary least squares (OLS) in which the specification of one equation does not impact the coefficients of another equation in the system. The OLS estimates are similar in sign, magnitude and significance to the 3SLS estimates, which provides additional confidence in the 3SLS results.

We tested for multi-collinearity by computing variance inflation factors (VIF). The highest VIF was 2.05, indicating that multi-collinearity is not a concern in our data [5]. We checked for heteroskedasticity on an equation-by-equation basis using Engle's ARCH test and for the entire system using the Breusch-Pagan Lagrange Multiplier test [7]. The results of these tests do not indicate heteroskedasticity in our model. Because it is possible that quality outcomes, cost outcomes and time outcomes are determined simultaneously, we checked for endogeneity in our models using the Durbin-Wu-Hausman test and Hausman specification test [24]. The results of these tests do not indicate endogeneity, which suggests that the OLS estimators are consistent. We checked normality of data on an equation-by-equation basis using the Anderson-Darling test [1],

which does not indicate non-normality of data. We also conducted a sensitivity analysis using ordered probit and found results similar to the OLS results.³

RESULTS AND DISCUSSION

Table 5 provides 3SLS results from estimation of equations (1) through (3). As we discuss results using the categories of client capabilities, vendor configuration and country location, we note that *all* client firms in our sample engage in BPO. Therefore, coefficients for variables in equations (1) through (3) represent relative quality outcomes, cost outcomes and time outcomes compared with a sample of firms that also engage in BPO.

We empirically test the relationship between three client capabilities and BPO outcomes. The first capability is process maturity, which represents the client firm's ability to manage a business process. Interestingly, a client firm's process maturity is negatively associated with BPO quality outcomes ($\beta_{12} = -0.503, p < 0.10$). This counter-intuitive finding could be explained by the fact that when a client firm optimizes a business process prior to outsourcing, this shifts the client firm's quality performance "baseline" for the process. An optimized process already has quality performance, and while a vendor may deliver other benefits to the client firm (such as relief from non-core processes), it may be difficult for the vendor to further improve process quality. The second capability is the client firm's ability to manage vendors, as indicated by the number of business processes outsourced. Vendor management capability is positively associated with BPO quality outcomes ($\beta_{13} = 0.170, p < 0.10$). This finding suggests that client firms with the capability to manage vendor relationships are able to achieve greater quality benefits from BPO engagements. The third capability is performance measurement, as indicated by the client firm's use of measures to track the success of BPO engagements. Performance measurement capability is positively associated with BPO quality outcomes ($\beta_{11} = 0.337, p < 0.01$), cost outcomes ($\beta_{22} = 0.929, p < 0.01$), and time outcomes ($\beta_{33} = 0.379, p < 0.05$). Consistent with research on the Balanced Scorecard ("what you measure is what you get") [29], these findings support the notion that once a client firm establishes and uses contract details and SLAs to track vendor performance, the client firm is able to allocate internal and vendor management resources to achieve quality, cost and time BPO outcomes based on its business strategy.

³ OLS (robustness check) and ordered probit (sensitivity analysis) empirical results available from authors on request.

TABLE 5
Three-Stage Least Squares Parameter Estimates

Category	Variable	(1) Quality outcomes		(2) Cost outcomes		(3) Time outcomes	
	Quality outcomes	-	-	β_{21}	0.347* (0.258)	β_{31}	0.388** (0.183)
Client capabilities	Quality measurements	β_{11}	0.337*** (0.095)	-	-	-	-
	Cost measurements	-	-	β_{22}	0.929*** (0.226)	-	-
	Time measurements	-	-	-	-	β_{32}	0.379** (0.219)
	Process maturity	β_{12}	-0.503* (0.357)	β_{23}	0.040 (0.371)	β_{33}	-0.207 (0.246)
	Extent of BPO	β_{13}	0.170* (0.109)	β_{24}	0.046 (0.114)	β_{34}	-0.033 (0.075)
Vendor configuration	Multi-sourcing	β_{14}	-0.206 (0.314)	β_{25}	0.001 (0.296)	β_{35}	-0.320** (0.194)
	Multi-location	β_{15}	0.183 (0.357)	β_{26}	0.087 (0.350)	β_{36}	0.091 (0.226)
	Captive	β_{16}	-0.083 (0.303)	β_{27}	0.024 (0.289)	β_{37}	-0.111 (0.190)
Country location	USA	β_{17}	0.551** (0.329)	β_{28}	-0.780** (0.343)	β_{38}	0.001 (0.224)
	Nearshore	β_{18}	-0.261 (0.373)	β_{29}	0.570* (0.378)	β_{39}	0.056 (0.239)
	India	β_{19}	-0.362 (0.337)	β_{2-10}	-0.175 (0.349)	β_{3-10}	-0.489** (0.226)
	Emerging offshore	β_{1-10}	0.947*** (0.343)	β_{2-11}	-0.222 (0.453)	β_{3-11}	0.222 (0.293)
Control variables	USA HQ	β_{1-11}	0.196 (0.333)	β_{2-12}	-0.001 (0.325)	β_{3-12}	0.278 (0.224)
	Firm size	β_{1-12}	-0.166** (0.084)	β_{2-13}	0.091 (0.095)	β_{3-13}	0.103* (0.064)
	Services	β_{1-13}	-0.527* (0.361)	β_{2-14}	0.191 (0.389)	β_{3-14}	0.659*** (0.255)
	Constant	β_{10}	1.768** (0.898)	β_{20}	-0.222 (1.106)	β_{30}	-1.083* (0.721)
	Chi square		39.40		39.00		52.13
	Prob > Chi square		0.000		0.000		0.000
	Pseudo R square		0.439		0.520		0.551
	Observations		50		50		50

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1% (all one-tailed)

We find that BPO quality outcomes are positively associated with cost outcomes ($\beta_{21}=0.347$, $p<0.10$) and time outcomes ($\beta_{31}=0.388$, $p<0.05$). Similar to the software development context [36], the upfront quality of business processes prevents rework and waste which saves cost and time. BPO vendors are able to provide quality services through the training and development of their personnel and the consistent application of process methodologies [40]. As vendor personnel are properly trained and apply the methodologies, and as they gain experience on various engagements, they can make continuous improvements to business processes that will result in additional cost and time benefits. By outsourcing the administration of non-core

processes, the client firm's management can refocus its time to resolve core business issues that may result in further cost and time improvements.

For configuration, we empirically test the relationship of multi-sourcing, multiple service delivery locations, and captive centers with BPO quality, cost and time outcomes. We find a negative association of multi-sourcing with BPO time outcomes ($\beta_{11} = -0.320, p < 0.05$). While multi-sourcing is recognized to generate overall benefits for client firms, this practice may involve tradeoffs across various types of benefits. For example, as a client firm coordinates an increasing number of vendors for outsourced processes, this may reduce the timeliness with which a client firm can receive process outputs from vendors and integrate those outputs back into the firm's internal operations. We are surprised that our results do not show a statistically-significant relationship of multiple service delivery locations or captive centers with BPO outcomes. One potential explanation for this lack of finding relates to the nature of firms in our sample. The majority of firms in our study are *Forbes* Global 2000 firms that are already accustomed to coordinating across multiple global locations, and the delivery of BPO from multiple service locations may not be a significant complicating factor for these global firms. *Forbes* Global 2000 firms also have enough scale to outsource business processes to external vendors and maintain part of their processes in-house with captive centers. Firms with this degree of scale may or may not achieve quality, cost or time benefits solely by outsourcing to a vendor that specializes in the business process. In fact, 46% of firms in our sample use captive centers, a percentage reasonably similar to 61% of *Fortune* Global 500 firms using captive centers as reported in [52]. While we did not find a statistically-significant association of captive centers with outcomes in our sample of firms, we believe there is a need for further empirical research on captive centers.

For country location, we test the relationship of service locations in the U.S., nearshore, India and emerging offshore countries with BPO quality, cost and time outcomes. Because our sample is focused on North American operations, a U.S. service location represents onshore outsourcing in our study. Relationships among location variables illustrate tradeoffs in BPO outcomes. For example, we find a positive association of quality outcomes with BPO services performed in the U.S. ($\beta_{11} = 0.551, p < 0.05$). While our data does not indicate the specific reason(s) for this association, it may be because onshore outsourcing does not present challenges related to cultural distance or time zone differences that could negatively impact BPO quality outcomes. While onshore outsourcing is *positively* associated with quality outcomes, onshore outsourcing is *negatively* associated with cost outcomes ($\beta_{11} = -0.780, p < 0.05$), consistent with higher labor costs in the U.S. compared with other countries.

While onshore outsourcing is *negatively* associated with cost outcomes, nearshore outsourcing (for firms in our sample, to Canada, the Caribbean and Mexico) is *positively* associated with cost outcomes ($\beta_{29} = 0.570, p < 0.10$), which suggests that nearshore locations offer a cost advantage with similar cultural distance and time zones to the U.S. While nearshore locations may not have the lowest labor costs, client firms may consider BPO cost benefits in light of quality benefits [19], and may value the cost savings of nearshore locations combined with the time zone and cultural compatibility offered by these locations. Overall, these empirical relationships suggest that clients may be willing to tradeoff quality vs. cost outcomes in considering the country location for various BPO engagements.

The notion of tradeoffs is also suggested by results for other country locations. For example, even though India is generally recognized as the market leader for offshore BPO, we find a negative association between the India location and time outcomes ($\beta_{3-10} = -0.489, p < 0.05$). This finding suggest that the time zone difference between India and the U.S. (for example, 9.5 hours

between Bangalore and New York City during Daylight Savings Time) may impede the timeliness of outsourced business processes, even if vendors in India are able to deliver quality and cost benefits for those processes.

Interestingly, we found a positive association of outsourcing in emerging locations (China, Eastern Europe, Philippines, South America, and Russia) with BPO quality outcomes ($\beta_{1-10} = 0.947, p < 0.01$). While our data does not indicate the specific reason(s) for this association, it is possible that as vendors in emerging locations enter the BPO market, those vendors are careful to signal and provide quality service (for example, earning designations such as Capability Maturity Model Integration level 5) to establish a positive reputation with client firms and earn new and repeat business.

[38] indicates that prior research has not found a consistent relationship of characteristics such as firm size and industry with BPO decisions and outcomes. In our sample of firms, firm size has a *negative* association with BPO quality outcomes ($\beta_{1-12} = -0.166, p < 0.05$), and a *positive* association with BPO time outcomes ($\beta_{3-13} = 0.103, p < 0.10$). Our findings suggest that large firms have the scale to execute business processes in a quality manner, and may not achieve a net increase in quality solely by outsourcing to a vendor. Where large firms in our sample do achieve benefits is in the time dimension, which suggests that external vendors may be more agile in the execution and delivery of business processes compared with internal operations. We also find similar relationships for client firms in the services industry, with a *negative* association for BPO quality outcomes ($\beta_{1-13} = -0.527, p < 0.10$) and a *positive* association for time benefits ($\beta_{3-14} = 0.659, p < 0.01$). The time dimension of competition is particularly important for firms that provide an intangible service rather than a tangible product. These findings are consistent with the premise that while there are transaction costs that can impact the quality of BPO engagements, BPO can help client firms focus on their core competencies and improve the responsiveness of their operations.

We anticipated that there could be a difference in BPO time outcomes for firms headquartered in the U.S., because offshore BPO for North American operations could represent an additional layer of abstraction for a client firm that is headquartered outside the U.S.[4]. While the coefficient was positive, the p value fell just outside the range of statistical significance. An explanation for this non-finding could be that the U.S. represents one of the largest markets for many *Forbes* Global 2000 companies, including companies headquartered in the U.S. and outside the U.S. As an example, even though Toyota (which is not one of our sample firms) is headquartered in Japan, North America is the company's largest market. Accordingly, Toyota has significant production, sales and back office facilities in the U.S., and the coordination of BPO for Toyota's U.S. operations may be similar in complexity to the coordination of BPO for Toyota's Japanese operations. The geographic location of firms and vendors is an important topic for further research.

CONTRIBUTIONS, LIMITATIONS AND FUTURE RESEARCH

This study makes two research contributions. First, we answer the call for empirical research on BPO outcomes as a dependent variable(s). Our conceptual model discusses how BPO outcomes may be influenced by client firm capabilities, vendor configuration and location, which can be considered as 'base-level' characteristics of clients, vendors and governance [38]. A more solid foundation of BPO data and results will enable researchers to theorize and test additional elements that impact BPO outcomes such as contractual details and vendor capabilities that are

found in the more extensive outcomes model for the more mature management practice of ITO [37]. Our second research contribution is to test a richer set of BPO outcomes including multiple dimensions of quality, cost and time. The inclusion of multiple outcome dimensions helps to connect BPO research with broader academic research on corporate performance outcomes. Testing multiple dimensions of BPO outcomes simultaneously also helps to identify the tradeoffs that client firms make across quality, cost and time outcomes as they structure BPO engagements. In other words, it may be difficult for client firms to achieve all desired outcomes simultaneously, or clients may be able to achieve certain performance outcomes only at the expense of other performance outcomes. This subtlety cannot be captured by ‘client satisfaction’ or any other single measure of BPO performance.

Our findings generate two important insights for practitioners, in addition to the value of identifying outcome tradeoffs for various configuration and country location decisions. First, while previous research suggests that firms outsource with a focus on cost [8], our findings suggest that practitioners should place a primary focus on quality in the BPO decision and vendor selection process, because quality benefits will lead to subsequent cost and time benefits. Second, our findings suggest that performance measurement is an integral component of success in outsourcing [54]. Firms must understand the BPO benefits that are crucial to their business strategies, and make the necessary investments to measure these benefits and monitor their outsourcing engagements. While client firms can outsource some activities to focus on core competencies, they are unlikely to achieve desired benefits if they completely “abdicate responsibility” once a process is outsourced to a vendor [53]. Firms must understand the value of and invest in performance measurement for outsourced business processes.

There are two primary limitations to this study, associated with the secondary data used for analysis. First, the quality, cost and time outcomes used as dependent variables are all perceptual in nature, rather than formal quantitative measures based on firm records. While *InformationWeek* makes efforts to ensure that respondents are in appropriate management positions with sufficient knowledge of the firm’s IT department and operations [62], for future research it would be useful to have quantitative data on BPO outcomes. Quantitative data would enable further testing on the relationships between quality, cost and time outcomes, to provide an understanding of the magnitude of these relationships. A second limitation is that client capabilities, vendor configuration and country location are indicated once for each client firm, rather than being indicated on an engagement-by-engagement basis. In fact, client firms may or may not deploy capabilities, configuration and country location consistently across all BPO engagements. The same client may also change the nature of their outsourcing engagements over time [61]. It would be useful for future research to have more detailed data on the practices for each specific BPO engagement to understand whether these practices may lead to different quality, cost and time outcomes across different BPO engagements over time within the same client firm.

To conclude, this paper develops and tests a conceptual model for the relationship of client capabilities, vendor configuration and country location with BPO quality, cost and time outcomes. We find that client firms must evaluate tradeoffs across BPO outcomes when they make investments in capabilities and decisions on configuration and country location. For example, while process maturity is a recommended capability for client firms to engage in BPO, client firms with high process maturity may experience limited incremental quality when they outsource processes to an external vendor. While multi-sourcing can mitigate operational risks, client firms may experience lower time benefits when they use multiple vendors. While onshore BPO can lead to improved quality, higher labor rates can result in lower cost savings. And while many offshore

country locations may involve lower labor costs, our results suggest that time zone differences between the U.S. and India result in lower time benefits. These findings suggest that as global firms increasingly use BPO to coordinate their operations, they can evaluate the tradeoffs in BPO outcomes to inform and improve their future BPO decisions.

REFERENCES

- [1] Anderson TW, Darling DA. 1954. A Test of Goodness-of-Fit. *Journal of the American Statistical Association* 49(268):765–769.
- [2] Bapna R, Barua A, Mani D, Mehra A. 2010. Cooperation, Coordination, and Governance in Multisourcing: An Agenda for Analytical and Empirical Research. *Information Systems Research* 21(4):785-795.
- [3] Bardhan IR, Whitaker J, Mithas S. 2006. Information Technology, Production Process Outsourcing, and Manufacturing Plant Performance. *Journal of Management Information Systems* 23(2):13-40.
- [4] Barthélemy J, Geyer D. 2004. The Determinants of Total IT Outsourcing: An Empirical Investigation of French and German Firms. *Journal of Computer Information Systems* 44(3):91-97.
- [5] Belsley DA, Kuh E, Welsch RE. 1980. *Regression Diagnostics: Identifying Influential Data and Sources of Collinearity*. New York: John Wiley & Sons.
- [6] Borman M. 2006. Applying Multiple Perspectives to the BPO Decision: A Case Study of Call Centres in Australia. *Journal of Information Technology* 21(2):99-115.
- [7] Breusch TS, Pagan AR. 1979. A Simple Test for Heteroscedasticity and Random Coefficient Variation. *Econometrica* 47(5):1287–1294.
- [8] Bruce DJ, Martz WB. 2007. Information Systems Offshoring: Differing Perspectives of the Value Statement. *Journal of Computer Information Systems* 47(3):17-23.
- [9] Carmel E, Gao G, Zhang N. 2008. The Maturing Chinese Offshore IT Services Industry: It Takes 10 Years to Sharpen a Sword. *MISQ Executive* 7(4):157-170.
- [10] Chakrabarty S, Whitten D, Green K. 2007/2008. Understanding Service Quality and Relationship Quality in IS Outsourcing: Client Orientation & Promotion, Project Management Effectiveness, and the Task-Technology-Structure Fit. *Journal of Computer Information Systems* 48(2):1-15.
- [11] Chou SW, Techatassanasoontorn AA, Hung IH. 2015. Understanding Commitment in Business Process Outsourcing Relationships. *Information & Management* 52(1):30-43.
- [12] DeCarlo S. 2005. The World's Leading Companies. *Forbes*. April 18:164-230.
- [13] Deming WE. 1982. *Quality, Productivity, and Competitive Position*. Cambridge, MA: Massachusetts Institute of Technology Center for Advanced Engineering Study.
- [14] Diamantopoulos A, Winklhofer HM. 2001. Index Construction with Formative Indicators: An Alternative to Scale Development. *Journal of Marketing Research* 38(2):269-278.
- [15] Dibbern J, Goles T, Hirschheim R, Jayatilaka B. 2004. Information Systems Outsourcing: A Survey and Analysis of the Literature. *DATA BASE for Advances in Information Systems* 35(4):6-102.
- [16] Doh JP, Bunyaratavej K, Hahn ED. 2009. Separable But Not Equal: The Location Determinants of Discrete Services Offshoring Activities. *Journal of International Business Studies* 40(6):926-943.
- [17] Domberger S, Fernandez P, Fiebeg DG. 2000. Modelling the Price, Performance and Contract Characteristics of IT Outsourcing. *Journal of Information Technology* 15(2):107-118.
- [18] Fersht P, Snowdon J. *State of the Outsourcing Industry 2013: Executive Findings*. Cambridge, MA: HfS Research, 2013.
- [19] Fornell C, Johnson MD, Anderson EW, Cha J, Bryant BE. 1996. The American Customer Satisfaction Index: Nature, Purpose, and Findings. *Journal of Marketing* 60(4):7-18.
- [20] Garvin DA. 1984. What Does "Product Quality" Really Mean? *MIT Sloan Management Review* 26(1):25-43.
- [21] Goo J, Kishore R, Rao HR. 2009. The Role of Service Level Agreements in Relational Management of Information Technology Outsourcing: An Empirical Study. *MIS Quarterly* 33(1):119-145.
- [22] Han H-S, Lee J-N, Seo Y-W. 2008. Analyzing the Impact of a Firm's Capability on Outsourcing Success: A Process Perspective. *Information & Management* 45(1):31-42.
- [23] Harter DE, Krishnan MS, Slaughter SA. 2000. Effects of Process Maturity on Quality, Cycle Time and Effort in Software Product Development. *Management Science* 46(4):451-466.
- [24] Hausman JA. 1978. Specification Tests in Econometrics. *Econometrica* 46(6):1251-1271.

- [25] Hill CWL. 1988. Differentiation Versus Low Cost or Differentiation and Low Cost: A Contingency Framework. *Academy of Management Review* 13(3):401-412.
- [26] Hough M. 2004. Updating our TQM Thinking for a Knowledge and Service Economy. *Total Quality Management* 15(5-6):753-791.
- [27] Johnston J, DiNardo J. 1997. *Econometric Methods*. New York: McGraw-Hill.
- [28] Joshi K, Mudigonda S. 2008. An Analysis of India's Future Attractiveness as an Offshore Destination for IT and IT-Enabled Services. *Journal of Information Technology* 23(4):215-227.
- [29] Kaplan RS, Norton DP. 1992. Balanced Scorecard - The Measures that Drive Performance. *Harvard Business Review* 70(1):71-79.
- [30] Kaplan RS, Norton DP. 1996. Using the Balanced Scorecard as a Strategic Management System. *Harvard Business Review* 74(1):75-85.
- [31] Kim K, Mithas S, Whitaker J, Roy PK. 2014. Industry-Specific Human Capital and Wages: Evidence from the Business Process Outsourcing Industry. *Information Systems Research* 25(3):618-638.
- [32] King WR, Torzadeh G. 2008. Information Systems Offshoring: Research Status and Issues. *MIS Quarterly* 32(2):205-225.
- [33] Kmenta J. 1997. *Elements of Econometrics*. Ann Arbor, MI: University of Michigan Press.
- [34] Kotlarsky J, Oshri I. 2008. Country Attractiveness for Offshoring and Offshore Outsourcing: Additional Considerations. *Journal of Information Technology* 23(4):228-231.
- [35] Kotlarsky J, Scarbrough H, Oshri I. 2014. Coordinating Expertise Across Knowledge Boundaries in Offshore-Outsourcing Projects: The Role of Codification. *MIS Quarterly* 38(2):607-627.
- [36] Krishnan MS, Kriebel CH, Kekre S, Mukhopadhyay T. 2000. An Empirical Analysis of Productivity and Quality in Software Products. *Management Science* 46(6):745-759.
- [37] Lacity MC, Khan S, Yan A, Willcocks LP. 2010. A Review of the IT Outsourcing Empirical Literature and Future Research Directions. *Journal of Information Technology* 25(4):395-433.
- [38] Lacity MC, Solomon S, Yan A, Willcocks LP. 2011. Business Process Outsourcing Studies: A Critical Review and Research Directions. *Journal of Information Technology* 26(4):221-258.
- [39] Lacity MC, Willcocks LP, Feeny DF. 1995. IT Outsourcing: Maximizing Flexibility and Control. *Harvard Business Review* 73(3):84-93.
- [40] Levina N, Ross JW. 2003. From the Vendor's Perspective: Exploring the Value Proposition of Information Technology Outsourcing. *MIS Quarterly* 27(3):331-364.
- [41] Levina N, Su N. 2008. Global Multisourcing Strategy: The Emergence of a Supplier Portfolio in Services Offshoring. *Decision Sciences* 39(3):541-570.
- [42] Liu L, Yetton P. 2010. Sponsorship and IT Vendor Management of Projects. *Journal of Information Technology* 25(1):56-64.
- [43] Mani D, Barua A, Whinston AB. 2010. An Empirical Analysis of the Impact of Information Capabilities Design on Business Process Outsourcing Performance. *MIS Quarterly* 34(1):39-62.
- [44] Mani D, Barua A, Whinston AB. 2012. An Empirical Analysis of the Contractual and Information Structures of Business Process Outsourcing Relationships. *Information Systems Research* 24(4):1028-1049.
- [45] Mani D, Srikanth K, Bharadwaj A. 2014. Efficacy of R&D Work In Offshore Captive Centers: An Empirical Study of Task Characteristics, Coordination Mechanisms And Performance. *Information Systems Research* 25(4):846-864.
- [46] Marriott I. *Gartner's 30 Leading Locations for Offshore Services, 2010-11*. Stamford, CT: Gartner, 2010 December 13.
- [47] Mithas S, Krishnan MS. 2008. Human Capital and Institutional Effects in the Compensation of Information Technology Professionals in the United States. *Management Science* 54(3):415-428.
- [48] Mithas S, Whitaker J. 2007. Is the World Flat or Spiky? Information Intensity, Skills and Global Service Disaggregation. *Information Systems Research* 18(3):237-259.
- [49] Orlikowski WJ, Iacono CS. 2001. Desperately Seeking the "IT" in IT Research—A Call to Theorizing the IT Artifact. *Information Systems Research* 12(2):121-134.
- [50] Oshri I. 2013. Choosing an Evolutionary Path for Offshore Captive Centers. *MIS Quarterly Executive* 12(3):151-165.
- [51] Oshri I, Kotlarsky J. *Realising the Real Benefits of Outsourcing: Seven Steps to Effective Outsourcing Measurement*. Coventry, UK: Warwick Business School, 2009.
- [52] Oshri I, Kotlarsky J, Rottman J, Willcocks LP. 2009. Global Sourcing: Recent Trends and Issues. *Information Technology & People* 22(3):192-200.
- [53] Perkins B. 2006. Outsourcing: Out of Sight, Out of Mind? *Computerworld*. March 13:52.

- [54] Plugge A, Bouwman H, Molina-Castillo F-J. 2013. Outsourcing Capabilities, Organizational Structure and Performance Quality Monitoring: Toward a Fit Model. *Information & Management* 50(6):275-284.
- [55] Porter ME. 1980. *Competitive Strategies: Techniques for Analyzing Industries and Competitors*. New York: The Free Press.
- [56] Powell SG, Schwaninger M, Trimble C. 2001. Measurement and Control of Business Processes. *Systems Dynamics Review* 17(1):63-91.
- [57] Prahalad CK, Krishnan MS. 1999. The New Meaning of Quality in the Information Age. *Harvard Business Review* 77(5):109-118.
- [58] Rust RT, Moorman C, Dickson PR. 2002. Getting Return on Quality: Revenue Expansion, Cost Reduction, or Both? *Journal of Marketing* 66(4):7-24.
- [59] Santhanam R, Hartono E. 2003. Issues in Linking Information Technology Capability to Firm Performance. *MIS Quarterly* 27(1):125-153.
- [60] Schwarz C. 2014. Toward an Understanding of the Nature and Conceptualization of Outsourcing Success. *Information & Management* 51(1):152-164.
- [61] Solli-Sæther H, Gottschalk P. 2015. Stages-of-Growth in Outsourcing, Offshoring and Backsourcing: Back to the Future? *Journal of Computer Information Systems* 55(2):88-94.
- [62] Tallon PP, Kraemer KL, Gurbaxani V. 2000. Executives' Perceptions of the Business Value of Information Technology: A Process Oriented Approach. *Journal of Management Information Systems* 16(4):145-173.
- [63] Tanriverdi H, Konana P, Ge L. 2007. The Choice of Sourcing Mechanisms for Business Processes. *Information Systems Research* 18(3):280-299.
- [64] Westner M, Strahringer S. 2010. Determinants of Success in IS Offshoring Projects: Results from an Empirical Study of German Companies. *Information & Management* 2010(5-6):291-299.
- [65] Whitaker J, Mithas S, Krishnan MS. 2011. Organizational Learning and Capabilities for Onshore and Offshore Business Process Outsourcing. *Journal of Management Information Systems* 27(3):11-42.
- [66] Willcocks LP, Oshri I, Kotlarsky J, Rottman J. 2011. Outsourcing and Offshoring Engineering Projects: Understanding the Value, Sourcing Models, and Coordination Practices. *IEEE Transactions on Engineering Management* 58(4):706-716.
- [67] Zaino J. 2005. Letting the Process Go. *InformationWeek*. June 13:45-48.
- [68] Zellner A, Theil H. 1962. Three Stage Least Squares: Simultaneous Estimate of Simultaneous Equations. *Econometrica* 29(1):54-78.

APPENDIX A

InformationWeek Questionnaire Items

<i>Variable(s)</i>	<i>Questionnaire Items</i>		
Quality outcomes Cost outcomes Time outcomes <i>categories in italics</i>	What benefits, if any, has your company already seen from its BPO outsourcing efforts? (choose all that apply) Selections include: <ul style="list-style-type: none"> • More skilled workforce (<i>quality</i>) • Ability to focus attention/resources on more critical issues (<i>quality</i>) • Higher customer satisfaction (<i>quality</i>) • Process improvement/transformation (<i>quality</i>) • Reduced operation costs (<i>cost</i>) • More predictable costs (<i>cost</i>) • Lower prices on products and services (<i>cost</i>) • Labor arbitrage/savings (<i>cost</i>) • Faster time to market (<i>time</i>) • Faster decision-making (<i>time</i>) • Faster cycle times (<i>time</i>) 		
Quality measurements Cost measurements Time measurements <i>categories in italics</i>	How does your organization measure the success of its business/IT process outsourcing efforts? (choose all that apply) Selections include: <ul style="list-style-type: none"> • Customer satisfaction levels (<i>quality</i>) • Process performance levels (<i>quality</i>) • Revenue growth (<i>quality</i>) • Six Sigma KPIs (<i>quality</i>) • Service level agreement/SLA adherence (<i>quality</i>) • Cost reduction (<i>cost</i>) • Headcount/full-time employees (<i>cost</i>) • Adherence to schedules/timelines (<i>time</i>) 		
Process maturity	Thinking of the most recent BPO engagement, did your organization choose to optimize the process before sending it to a service provider or ask the service provider to optimize it once the process was turned over to them? (choose one) Selections include: <ul style="list-style-type: none"> • Optimized process first, then gave it to BPO provider 		
Extent of BPO	Formative index drawn from three questions: <p>Does your organization conduct business process outsourcing for its finance and accounting needs (tax, audit, accounts payable and accounts receivable)? (yes or no)</p> <p>Does your organization use business process outsourcing for its human resources (including benefits administration, payroll, and recruitment)? (yes or no)</p> <p>Does your organization conduct one or more of the following types of business process outsourcing? (choose all that apply) Selections include:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> • Sales and marketing • Claims processing • Call center/customer care • Procurement </td> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> • Supply chain • Inventory management • Customer analytics • Training </td> </tr> </table>	<ul style="list-style-type: none"> • Sales and marketing • Claims processing • Call center/customer care • Procurement 	<ul style="list-style-type: none"> • Supply chain • Inventory management • Customer analytics • Training
<ul style="list-style-type: none"> • Sales and marketing • Claims processing • Call center/customer care • Procurement 	<ul style="list-style-type: none"> • Supply chain • Inventory management • Customer analytics • Training 		

Appendix A (continued)

<i>Variable(s)</i>	<i>Questionnaire Items</i>
Multi-sourcing Captive	<p>Does your organization implement its BPO initiatives in one or more of the following ways?</p> <ul style="list-style-type: none"> • We use multiple BPO providers (human resource, finance and accounting, customer-service outsourcing) (yes or no) • We use offshore, captive (company-owned) service centers (yes or no)
USA Nearshore India Emerging offshore <i>categories in italics</i>	<p>Variables constructed based on answers to two questions:</p> <p>In which countries or regions are BPO services conducted? (choose all that apply) Selections include:</p> <ul style="list-style-type: none"> • Canada (<i>nearshore</i>) • Caribbean (<i>nearshore</i>) • China (<i>emerging offshore</i>) • Central/Eastern Europe (<i>em. off.</i>) • India (<i>India</i>) • Mexico (<i>nearshore</i>) • Philippines (<i>emerging offshore</i>) • Russia (<i>emerging offshore</i>) • South America (<i>emerging offshore</i>) • United States (<i>USA</i>) <p>Thinking of your organization's BPO deals, where is the service delivery work conducted? (choose one)</p> <ul style="list-style-type: none"> • Inside of the U.S. • Outside of the U.S. • Combination of onshore/offshore