

Capability, Quality and Performance of Offshore IS Vendors: A Theoretical Framework and Empirical Investigation.

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[Palvia, P.](#), [King, R.C.](#), Xia, W. and Palvia, S. “Capability, Quality and Performance of Offshore IS Vendors: A Theoretical Framework and Empirical Investigation.” Decision Sciences. Volume 41 Number 2, May 2010.

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Abstract:

Information systems (IS) offshoring has become a widespread practice and a strategic sourcing choice for many firms. While much has been written by researchers about the factors that lead to successful offshoring arrangements from the client's viewpoint, the vendor's perspective has been largely scarce. The vendor perspective is equally important as offshore IS vendors need to make important decisions in terms of delivering operational and strategic performance and aligning their resources and processes in order to meet or exceed targeted outcomes. In this article, we propose and test a three-level capability–quality–performance (CQP) theoretical framework to understand vendor outcomes and their antecedents. The first level of the framework represents three vendor capabilities: relationship management, contract management, and information technology management. The second level has three mediating variables representing process quality: partnership, service, and deliverable quality. The third level has three dependent variables representing vendor outcomes: operational performance, strategic performance, and satisfaction. The model was tested with 188 vendor firms from India and China, the two most popular destinations for IS offshoring. Results support the CQP framework; vendor capabilities are significant predictors of intermediate quality measures, which in turn affect vendor outcomes. Implications of the study findings to both theory development and IS offshore vendor strategic decision making are discussed.

Keywords: contract management | deliverable quality | IT management capability | IT offshoring | partnership quality | relationship management | service quality | vendor performance | information systems

Article:

INTRODUCTION

Offshoring of information systems (IS) activities to distant locations such as India and China has become important components of IS strategy for firms in the developed world, including the United States, Japan, and many Western European countries. Increasingly, IS activities, which were once performed almost exclusively in-house by most firms, are now outsourced to offshore vendors who are specialists in some phase(s) of IS activity such as programming, help-desk operation, or data center operations (King, 2007). Simultaneously, many vendors are “moving up the value chain” to offer more sophisticated services. Much has been written in the past decade in both academic and practitioner literature about the factors that lead to successful results in offshoring arrangements, specifically from the client's perspective (Lacity & Willcocks, 2001; Carmel & Agarwal, 2002). Historically, the focus has been on the sourcing decision itself, examining why client organizations outsource and the factors relevant in selecting the vendor (Chalos & Sung, 1998; Currie & Willcocks, 1998; Hall & Liedtka, 2005). However, little is known about the factors that affect the vendor's success in the outsourcing relationship. There is a general lack of research that conducts a theory-based empirical examination of vendor performance, its antecedents, and any mediating variables. Theories of information technology (IT) sourcing would be incomplete without understanding the vendor side of the dyadic outsourcing relationship.

Consider the case of an offshore vendor in Mumbai, India or Beijing, China. The vendor needs to make important decisions in order to maintain or improve operational performance, such as the effective utilization of technology resources and IS talent, in order to sustain itself in the short term. The vendor may also decide to focus on strategic goals, such as attracting new clients and increasing market share, for a long-term orientation. How are these goals achieved? What resources are critical in achieving these goals and what aspects of process quality need to be emphasized? These concerns not only significantly impact the vendor's performance and survivability but also affect the client because of their mutual interdependence on inputs, processes, and outcomes.

The purpose of this article is to address these questions and fill a void in the literature. We undertake a careful examination of the factors that influence vendor effectiveness in an offshore outsourcing relationship. Specifically investigated are vendors in India and China, the two most popular destinations for IS offshoring today. This article contributes to the literature in three ways. First, it shifts away from the heavily client-focused research to a vendor focus, an important step in building cumulative knowledge in this line of inquiry. Second, it develops an integrated theoretical model based on a process perspective that includes three levels of constructs: capability, quality, and performance (CQP). And finally, it empirically examines the theory-based CQP framework using IT vendors in China and India.

The article is organized as follows. The next section reviews relevant literature related to IS outsourcing developments, its effectiveness, and its antecedents. Several theories applicable to IS outsourcing are examined next and a theory-driven CQP model is developed. After describing methodological details, we present analysis and results. The article concludes with a discussion of the findings, their implications, and limitations.

BACKGROUND AND LITERATURE

The scope of offshoring has expanded enormously in the past decade both in terms of the total amount as well as the range of value chain activities. In fact, the functions that are offshored have steadily moved up the value chain. Offshored functions now include IS, accounting, human resources, customer relationships management, call centers, tax preparation, radiology analysis, medical tourism, films and cartoon production, and research and development (Palvia, 2007). In terms of value chain, while IS offshoring started out more than two decades ago with data coding and programming, current activities include application development, infrastructural support, IS planning, and even complete takeover of the IS function by offshore vendors (Palvia, 2004; Fjermestad & Saitta, 2005).

By definition, offshore outsourcing (or offshoring) refers to outsourcing outside the boundaries of one's country (King, 2007). The scope of this article is IS offshore outsourcing to vendors in India and China. These two nations are among the most popular destinations for IS outsourcing. India has emerged as the principal vendor for IT services, claiming about 80% of the world's business. On the other hand, while China has been immensely successful in offshore manufacturing, its software export revenues are less than one-tenth of India. Nevertheless, China is an emerging force in the software market and is rapidly trying to improve capabilities.

Ilie and Parikh (2004) conducted an extensive literature survey of outsourcing based on 118 articles from 1991 to 2003 published in 19 IS journals including *Management Information Systems Quarterly*, *Journal of MIS*, and *Information Systems Research*. They organized their results according to phases of the outsourcing process, that is, decision to initiate outsourcing, vendor selection, outsourcing contract and service level agreements (SLAs), implementation, ongoing operations and relationship, and evaluation to continue with the current vendor. As one of the limitations of past research, they found that most studies have focused on the client perspective alone.

Dibbern, Goles, Hirschheim, and Jayatilaka (2004) conducted a comprehensive survey of IS outsourcing in North American IS journals as well as English-language European journals. They examined five questions: why to outsource, what to outsource, which decision process to take, how to implement the sourcing decision, and what is the outcome. These questions and the supporting literature are mostly reflective of client concerns.

We were able to identify three studies that attempted to build theory from the vendor's perspective. The study by Levina and Ross (2003) was based on a single explanatory/revelatory case study. They started without an initial theory or hypothesis, and attempted to build theory in a grounded and inductive fashion. Their conclusion was that the vendor's efficiency was based on the economic benefits derived from the ability to develop a complementary set of core competencies. Subramani (2004) showed that investments in IT capabilities led to operational benefits, strategic benefits, and competitive performance for the supplier. Swinarski, Kishore, and Rao (2006) established links between IS development and project-management capabilities, and internal and external performance of the service provider.

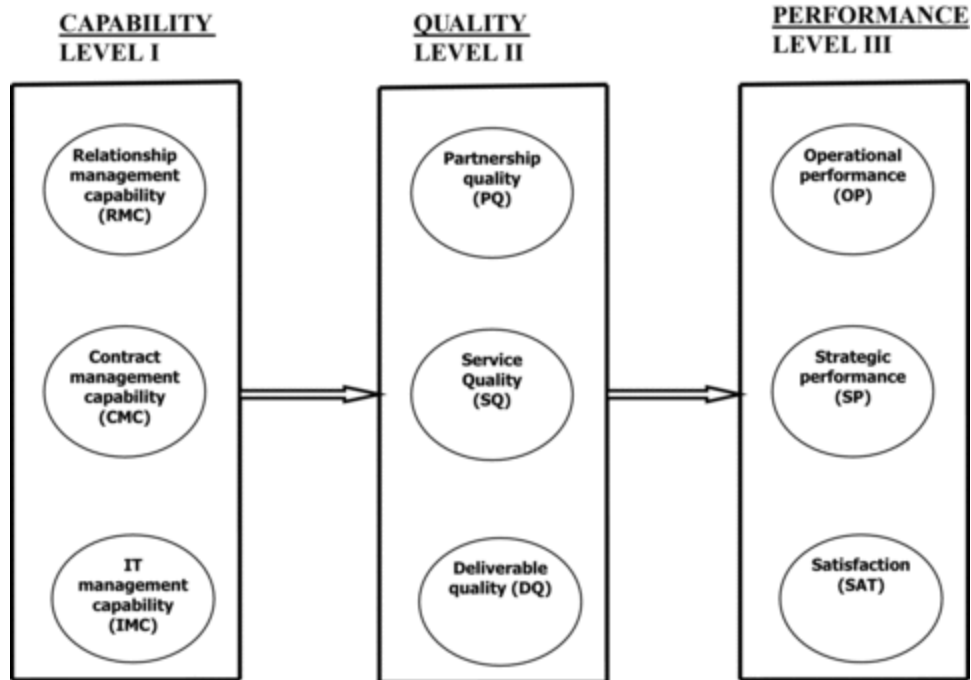
In addition to attempts to build theory, there are a select number of vendor-based descriptive studies. Jennex and Adalakun (2003) conducted a study of the critical success factors (CSFs) for small- to medium-size vendor companies for U.S.-based clients. The CSFs they found were workers' skills, client knowledge, trust in the client-outsourcer relationship, telecommunications, and intellectual property protection. In an earlier work, Hicks (1996) identified costs and benefits as important for the vendor in an outsourcing relationship. Among the recommendations were the need to partner with multiple clients and attention to strategic forms of the relationship. In a subsequent article, Hicks (1999) identified five strategic positions for vendors based on the type of software business and the market served. Milgrom and Roberts (1990) suggested that IT vendors bring together complementary assets in order to provide lacking competencies to the clients. Oza and Hall (2005) presented an empirical investigation of difficulties in offshore outsourcing relationships based on a case research investigation of 18 high-maturity vendors in India. The main difficulties perceived by vendors included cultural differences, expectation mismatch, language differences, loss of control, job loss, and transition.

The above review suggests that attempts to build theory from the vendor's perspective have been limited. In the next section, we develop a theoretical model to examine vendor performance and its antecedents. The model is based on the prior work described herein, applicable theories, and the state of knowledge in information systems research.

THEORETICAL DEVELOPMENT

In order to conduct a systematic investigation of vendor performance and outcomes, the process perspective provides a useful framework. In a process model, output or outcome variables are not directly related to input or independent variables, but there are mediating process variables that signify a developmental progression (McGrath, 1964). Process thinking suggests related sets of sequential variables leading to final outcomes (Markus & Robey, 1988), thus providing a deeper understanding of the underlying phenomena. Consistent with the process view, we examine three aspects of offshore IS vendors: inputs, process, and outputs. These three aspects can be broadly classified as: management capability (input), process quality (process), and performance (output). A three-level CQP theoretical model is proposed for examining vendor outcomes and their antecedents. The first level of the model represents three vendor capabilities: relationship management, contract management, and IT management. The second level has three mediating variables representing process quality: partnership, service, and deliverable quality. A deliverable from the vendor to the client may be an information system, a software product, hardware, or IS services such as consulting or end-user support. On the other hand, “service” in this study refers to the intangible and process activities in providing the deliverable. We chose to use “deliverable” instead of “product” because the IS vendor is likely to provide more than a physical product. The third level has three dependent variables representing vendor outcomes: operational performance, strategic performance, and satisfaction. These variables/constructs, the related literature, and their measures are summarized in the Appendix.

The relationships among the three levels and their constituent variables are complex and dynamic. We examine each level below. The complete research model is shown later in Figure 1.



Level I Variables: The Antecedents—Vendor Capabilities

The resource-based view (RBV) of the firm (Wernerfelt, 1984; Barney, 1991) postulates that competitive advantage is derived from having resources that create value in the marketplace and that are unique (Medcof, 2001). The RBV links the performance of organizations to resources and capabilities that are firm specific, rare, and difficult to imitate or substitute. Capabilities reflect a firm's ability to combine resources in unique ways to promote and sustain superior performance. Capabilities are firm specific and developed over time.

Among the primary reasons for the client to engage in outsourcing are the resources and capabilities provided by the vendor. It is therefore worthwhile to examine the vendor capabilities of relevance in an outsourcing relationship with the client. As per Swinarski et al. (2006), vendor physical assets include hardware, software, or infrastructure; intangible assets include vendor–client relationship; and IS capabilities include managerial knowledge, IS development process, and vendor management. According to Ethiraj, Kale, Krishnan, and Singh (2005), there are two broad sets of capabilities that are critical in the software industry: client-specific capabilities and software development/project management capabilities. Bharadwaj, Sambamurthy, and Zmud (2002) describe six dimensions of IT capability: strategic vision of IT, business process integration, internal IT partnership, external IT partnership, IT management, and IT infrastructure. Earlier, Bharadwaj (2000) classified IT-based resources as IT infrastructure, human IT resources, and intangibles that include customer orientation, knowledge assets, and synergy. Levina and Ross' (2003) grounded theory analysis revealed that besides core technical competencies, the client–vendor relationship is an important contributor to success. Another

source for identifying capabilities is CSFs. Jennex and Adalakun (2003) classified vendor CSFs into five categories: people factors, technical infrastructure, client interface, business infrastructure, and regulatory interface.

In attempting to understand the above capabilities, we group them broadly into three vendor capabilities described below: IT-management capabilities, contract-management capabilities, and relationships-management capabilities. These capabilities are specified in the model as the primary antecedents to vendor performance.

IT-management capability

The IT-management capability of the vendor includes such aspects as hardware, software, infrastructure, knowledge, IS development process, and project-management (Bharadwaj et al., 2002; Ethiraj et al., 2005; Swinarski et al., 2006). Lee (2001) has discussed the role of both implicit and explicit knowledge in outsourcing success. Levina and Ross (2003) have identified methodology development and dissemination among the core competencies of the vendor. Subramani (2004) describes two types of specific investments made by the supplier; one of them, domain knowledge is akin to IT-management capability while the business-process investment is targeted to general management capabilities. Based on the literature, we define IT-management capabilities in terms of the vendor's ability in areas related to computing facilities, software development, quality management, and knowledge integration.

Contract-management capability

The contract and its management have been repeatedly cited as important factors in a successful outsourcing engagement (Richmond & Seidmann, 1993; Kumar & Palvia, 2002). Kern and Willcocks (2000) use social exchange theory to emphasize the importance of the contract between parties involved in a relationship. Without an awareness of the future as specified in the contract, the relationship between the two parties and performance can easily become ambiguous and prone to friction. Several authors have underscored the importance of a contract structure and its various elements (Richmond & Seidmann, 1993; Poppo & Lacity, 2006). In the offshoring context, the specification of detailed long-term exchange relations and their execution is complex and dynamic. Poor contract management is at the heart of outsourcing dissatisfaction (FSN, 2007). Both client and vendor are responsible for managing their portions of the contract. In the current investigation, we examine the vendor's capability to prepare and execute the contract and its relation with performance.

Relationship-management capability

Developing and nurturing a relationship with the client is an important success factor from the vendor's perspective. Many authors have emphasized the importance of relationship attributes such as interorganizational coordination and collaborative communication (Kumar & Palvia, 2002; Goles & Chin, 2005; Holmström, Fitzgerald, Ågerfalk, & Conchúir, 2006); client-specific capabilities (Ethiraj et al., 2005), customer orientation (Bharadwaj, 2000; Levina & Ross, 2003), external IT partnership (Bharadwaj et al., 2002), and client interface and people factors (Jennex & Adelakun, 2003). In fact, the emphasis on the relationship has led to the use of the term “customer relationship management” in management, marketing, and e-business literature (e.g., Winer, 2001; Wilson, Daniel, & McDonald, 2002). In this article, we define vendor relationship-management capability in terms of its ability to communicate and coordinate with the client.

Level III Variables: The Outcomes—Vendor Performance

The outsourcing literature lists several performance measures as dependent variables worthy of examination. King and Malhotra (2000) discuss sourcing impacts along three time horizons: short term, mid term, and long term. Short-term impacts are operational such as efficiencies, cost savings, and productivity. Long-term impacts are strategic and include building of core competencies and learning competencies. Mid-term impacts are tactical, including performance, control, and risk sharing. Subramani (2004) posits that suppliers gain both operational and strategic benefits by the use of its IT capability. Grover, Cheon, and Teng (1996) categorize benefits as strategic, technological, and economic; the last two being more operational and short-term oriented.

While strategic benefits and operational benefits are clearly discernible, tactical benefits overlap with both strategic and operational benefits. Therefore, in this article, we use strategic performance and operational performance to capture vendor outcomes. Based on the literature and field observations, we added a third performance measure: satisfaction.

Strategic performance

Strategic performance of the vendor includes such factors as market growth, market dominance, business value, and customer referrals. These aspects of strategic performance are recognized in the literature (Richmond & Seidmann, 1993; Grover et al., 1996; Lee & Kim, 1999; King & Malhotra, 2000; Subramani, 2004; Swinarski et al., 2006).

Operational performance

Items typical of vendor operational performance include efficiencies and improvement in the utilization of IT resources, development of core capabilities, and improved management of various resources (Grover et al., 1996; Lee & Kim, 1999). Note that a few of these were labeled as tactical performance by some authors (King & Malhotra, 2000; Subramani, 2004). Given that operational performance and tactical performance are often indistinguishable, our operational performance measure includes some elements of tactical objectives.

Satisfaction

Due to the difficulties in capturing direct measures of success, IS research has a long tradition of using “satisfaction” as a surrogate measure. For example, Doll and Torkzadeh (1988) developed an end-user computing satisfaction instrument that is widely used to represent system success. In the same vein, both client satisfaction and vendor satisfaction have been used in outsourcing studies to measure performance (Grover et al., 1996; Lacity & Willcocks, 1998; Levina & Ross, 2003). Klepper (1994) emphasizes the level of satisfaction with the exchange relationship that involves both the client and the vendor. Similarly our study addresses both components of satisfaction.

Level II Variables: The Mediators—Process Quality

In order to develop a deeper understanding of the effect of the capabilities on performance, mediating process variables are introduced. Many researchers believe that the impact of IT investments and capabilities is attained through improvements in intermediate processes that ultimately have a bearing on the final outcomes (Melville, Kraemer, & Gurbaxani, 2004). Essentially, the introduction of process variables establishes a causal chain linking capabilities to outcomes. As Ray, Barney, and Muhanna (2004) have argued, examining the effectiveness of the process may be a more appropriate way to test the RBV than to link capabilities or resources directly to firm performance. In essence, a set of mediating variables between capabilities and performance seems more plausible in examining the effect of the RBV. Based on the literature and field observations, we define three mediating variables that reflect vendor process quality: partnership quality, service quality, and deliverable quality.

Partnership quality

Partnership behavior between the vendor and the client is characterized by integrative interactions and cooperation by Grover et al. (1996). In their study, partnership was composed of

such dimensions as communication, trust, and cooperation. Lee and Kim (1999) in their comprehensive analysis examined the components of partnership quality, its antecedents, and its impact on outsourcing success. As reflective measures of partnership, they included trust, business understanding, benefit and risk sharing, conflict, and commitment. Several authors have emphasized the importance of shared goals and relationship quality for a successful outsourcing engagement (Lee, 2001; Levina & Ross, 2003). Given the strategic and long-term relationship between the vendor and the client, the analogy “outsourcing is similar to marriage” has been used by many to describe outsourcing relationships (e.g., Goles & Chin, 2005). Kumar and Palvia (2002) discussed several management strategies that build effective partnership; these include control, coordination, communication, and conflict management. In this article, we define partnership quality in terms of the vendor's perceptions about the client's trustworthiness and commitments.

Service quality

Besides the provision of software products and service deliverables, IT outsourcing has a large service aspect due to the long-term nature of the relationship. Factors relevant to service quality in the present context are related to intangible and process activities involving the client, are interpersonal, and include reliability (ability to perform the promised service dependably and accurately), responsiveness (willingness to help customers and provide prompt service), assurance (knowledge and ability to convey trust and confidence), and empathy (providing care and individualized attention to its customers) (Parasuraman, Zeithamm, & Berry, 1988). Several studies have been conducted to examine the role of vendor service quality in improving client outcomes (Grover et al., 1996; Kim, Cheon, & Aiken, 2005; Lin, 2007). However, the results have been mixed and have relied on the perceptions of the clients alone. In this article, we define vendor service quality related to responsiveness, assurance, reliability, and empathy.

Deliverable quality

The marketing literature provides several examples of how the product quality influences performance and satisfaction. For example, Anderson and Sullivan (1993) have examined how product-quality expectations influence customer satisfaction. In the popular press, there are numerous examples of outsourced contracts brought back in-house because of poor software quality, nonconformance with requirements, over-budget and late projects, and provider's poor performance against SLAs (e.g., Goolsby & Whitlow, 2004). On a positive note, Goo, Kishore, Nam, Rao, and Song (2007) hypothesize that the “output” quality will have a long-term impact in extending the relationship duration. Several factors affect software quality, for example, its size, complexity, team size, schedule pressure (Kumar & Palvia, 2002; Holmström et al., 2006; Agrawal & Chari, 2007). Many vendors have adopted the capability maturity model

methodology (Paulk, Curtis, Chrissis, & Weber, 1993; Harter, Krishnan, & Slaughter, 2000) with the goal of producing high-quality software. Note that in the present context, a “deliverable” may take any number of forms, for example, an information system, a software product, or IS services such as consulting or end-user support. Furthermore, the deliverable quality refers to such characteristics as accuracy, timeliness (Lee & Kim, 1999), and budget compliance. Based on the above literature, we define deliverable quality as the extent to which the vendor delivers the tangible and intangible products within schedule, within budget, and within the predefined error/quality level.

Given the process perspective and the three levels of variables, we propose the CQP model for evaluating vendor outcomes in an outsourcing relationship (Figure 1). The relationships and the hypotheses are developed in the next section.

HYPOTHESES

The Capability–Quality Linkage

It is worth pointing out that there are several studies that examine the impact of capabilities on performance variables directly without considering the mediating process variables (e.g., Richmond & Seidmann, 1993; Ethiraj et al., 2005). In such studies, it is difficult to decipher the impact of capabilities on the process variables, although it can be implied. However, there are several more studies that show a link between organizational capabilities and quality. As posited by the RBV of the firm, vendor organizations may use their resources and capabilities to provide superior services to the clients. Specifically, in the outsourcing context, Lee (2001), and Lee and Kim (1999) have investigated these links and have found empirical support. While support for the “capability to quality” link can be traced in the literature, researchers have not delineated the specific components of capability and quality; thus clear links between the components of capability and quality are neither well established nor disputed in the literature. Therefore, we explore all links from capability to quality.

Effects of relationship-management capability

Relationship-management capability has the potential to impact all components of quality. Lee and Kim (1999), Lee (2001), and Grover et al. (1996) propose several determinants of partnership quality (although in the “client” context). These include participation, joint action, communication, coordination, information sharing, and end-user support. All of these can be

viewed as the relationship capability of the vendor. The social exchange theory (Homans, 1961) also supports the relationship–partnership quality linkage. According to this theory, a relationship is a dynamic process between participants leading to mutual trustworthiness. Lin (2007) postulated a relationship between interpersonal-based encounters (i.e., relationship management) and service quality. According to Parasuraman et al. (1988), responsiveness, courtesy, understanding, credibility, and empathy are key components of service quality. These are generally regarded as behavioral issues and are often the outcomes of ongoing relationships between the vendor and the client. Although a direct relationship was not postulated between relationship management and deliverable quality by Ethiraj et al. (2005), it was implied when they linked relationship capability to operational performance. Thus, we propose the following hypothesis and its three subhypotheses:

H1: The IS vendor's relationship-management capability is positively related to its process quality, more specifically

H1a: The IS vendor's relationship-management capability is positively related to its partnership quality.

H1b: The IS vendor's relationship-management capability is positively related to its service quality.

H1c: The IS vendor's relationship-management capability is positively related to its deliverable quality.

Effects of contract-management capability

Among other things, the outsourcing contract assures that the client receives adequate service by the provision of SLAs (Lee, 1996). In fact, Xerox designed its outsourcing contract to ensure continuing high-quality and cost-effective service levels for existing IS processes and resources while making it possible to eventually replace them (DiRomualdo & Gurbaxani, 1998). Poorly managed contracts often result in the breakdown of services and create misunderstandings, resulting in poor service quality. Agrawal and Chari (2007) examine the factors affecting software quality and include among them several that are related to the contract. The outsourcing contract addresses many issues related to the deliverables to be provided by the vendor, for example, performance parameters (Kumar & Palvia, 2002); transfer of assets, staffing, pricing and payment, warranty and liability, intellectual property matters, and information security (Lee, 1996); and the specification of all exchanges, legal and economic issues, and behavioral dimensions (Kern & Willcocks, 2000). In fact, the outsourcing contract is the vital document for product specifications and requirements, as agreed upon by the two parties. Thus contract

execution and management are absolutely essential to delivering a quality product. We did not find direct references from contract management to partnership quality, but several were implied from the works of Ethiraj et al. (2005) and Richmond and Seidmann (1993), where they evaluated the effects of the contract components on performance. Thus, we propose the following hypothesis and its three subhypotheses:

H2: The IS vendor's contract-management capability is positively related to its process quality, more specifically

H2a: The IS vendor's contract-management capability is positively related to its partnership quality.

H2b: The IS vendor's contract-management capability is positively related to its service quality.

H2c: The IS vendor's contract-management capability is positively related to its deliverable quality.

Effects of IT-management capability

In IT outsourcing, the deliverable is an information system, a software product, hardware, or IS services such as consulting or end-user support. The IT-management capability of the vendor provides direct inputs into the development of the deliverable and therefore has a direct bearing on the deliverable quality. The IT-management capability of the vendor includes such features as hardware, software, infrastructure, knowledge, IS development process, and project management. Lin (2007) makes the argument that technology-based encounters have a bearing on service quality. For example, a proper application of technology can improve responsiveness to customer requests. An argument can also be made that IT facilitates partnership quality by providing effective tools for communication and coordination. Thus, we propose the following hypotheses and its three subhypotheses:

H3: The IS vendor's IT-management capability is positively related to its process quality, more specifically

H3a: The IS vendor's IT-management capability is positively related to its partnership quality.

H3b: The IS vendor's IT-management capability is positively related to its service quality.

H3c: The IS vendor's IT-management capability is positively related to its deliverable quality.

The Quality–Performance Linkage

In general, there is much support in the literature for the “quality to performance” link; however some variables have been investigated more than others. Furthermore, the performance variables have been generally grouped together. Given that the links to the specific variables are not clearly established in the literature, we explore all links from quality to performance.

Effects of partnership quality

Partnership quality has been examined for its impact on client performance by several investigators (Grover et al., 1996; Lee & Kim, 1999; Lee, 2001). Performance variables considered in these studies include both strategic and operational impacts. A theoretical perspective can be traced back to the transaction cost economics theory (TCE) developed principally by Williamson (1975, 1985, 1989). Transaction costs are incurred in searching, creating, negotiating, monitoring, and enforcing a contract between buyers and suppliers. These costs are higher when the buyer and seller are in different countries. According to TCE, there are two types of transaction costs: ex ante costs and ex post costs. The ex ante costs include search costs and contracting costs. The ex post costs include monitoring/enforcement costs, adaptation costs, bonding costs, and dissolution costs. Much of the IS outsourcing research has focused on ex ante costs and its effects on outsourcing and governance mechanisms (e.g., Ang & Straub, 1998).

The ex post transaction costs are important for evaluating the effectiveness of the ongoing relationship between vendors and clients. In an existing relationship, both the client and the vendor can develop processes and capabilities to reduce or contain these costs. Specifically, with a superior partnership characterized by a high level of trust, there is little need to incur ex post costs, which, in turn, would lead to improved operational performance. Goo et al. (2007) have argued that transaction costs can be minimized only through an effective long-term relationship. Moreover, such a partnership could also lead to market growth and strategic performance due to client referrals and client assistance in identifying areas of improvement.

Many researchers have utilized “satisfaction” as a surrogate to evaluate organizational performance in the general IS domain as well as in the outsourcing context. Social theories help us understand the relationship between partnership and satisfaction. The social exchange theory (Homans, 1961; Blau, 1964) investigates the dyadic relations involving voluntary transactions for transfer of resources between two or more actors for mutual benefits. An important finding from the social exchange perspective is that the vendor–client relationship is based on the

satisfaction of the relationship. Furthermore, partnership quality and satisfaction represent behavioral dimensions suggesting a natural link. This linkage was also supported in the case study by Levina and Ross (2003). Thus we propose:

H4: The IS vendor's partnership quality is positively related to its performance, more specifically

H4a: The IS vendor's partnership quality is positively related to its operational performance.

H4b: The IS vendor's partnership quality is positively related to its strategic performance.

H4c: The IS vendor's partnership quality is positively related to satisfaction.

Effects of service quality

In their research model, Kim et al. (2005) considered several aspects of service quality and their relationships to outsourcing effects. Among the outsourcing effects, they included strategic, economic, and technological factors. Many of their economic and technological items mirror operational performance as defined in our study. They found that certain aspects of service quality were related to performance.

The marketing literature provides significant evidence of the relationship between service quality and satisfaction. For example, Taylor and Baker (1994) found empirical support for the relationship between service quality and consumer satisfaction in the formation of consumers' purchase intentions across four unique service industries. Service quality also represents a behavioral dimension; thus suggesting a logical link with satisfaction. The service quality depends on the vendor's operations and how its people treat and support the client; it should therefore have a direct bearing on the satisfaction levels of the parties involved. Thus we propose:

H5: The IS vendor's service quality is positively related to its performance, more specifically

H5a: The IS vendor's service quality is positively related to its operational performance.

H5b: The IS vendor's service quality is positively related to its strategic performance.

H5c: The IS vendor's service quality is positively related to satisfaction.

Effects of deliverable quality

The marketing literature also provides support for the linkage between product/delivery quality and performance. For example, in a study examining the strategic role of product quality, Jacobson and Aaker (1987) found empirical support for a quality–profitability relationship from both a focus and a market-share perspective. Chakravarthy (1986) found that a firm's transformations are important discriminators of strategic performance. Gatignon and Xuereb (1997) found that the strategic orientation of a firm impacts the performance of a new product. Phillips, Chang, and Buzzell (1983) investigated the effects of product quality on direct costs and returns on investment and found several relationships. On a more intuitive level, the “deliverable” is the vendor's final product and its primary reason for existence. It is what it has to sell to the customer. Thus, the quality of the deliverable would affect all aspects of business performance (operational performance, strategic performance, and satisfaction). Thus, we propose the following hypotheses:

H6: The IS vendor's deliverable quality is positively related to its performance, more specifically

H6a: The IS vendor's deliverable quality is positively related to its operational performance.

H6b: The IS vendor's deliverable quality is positively related to its strategic performance.

H6c: The IS vendor's deliverable quality is positively related to satisfaction.

METHODOLOGY

Measures

Survey data from outsourcing vendors in Indian and China were used to test the research model and hypotheses. The entire instrument is composed of reflective measures. In developing the measures, whenever possible, we adapted from existing instruments in the literature. When existing instruments were not available, relevant studies provided useful information to develop new items. The Appendix shows the relevant literature and the specific items for the nine constructs. All items were assessed using a seven-point Likert-type scale.

Survey Method

To test the research model and the hypotheses, IS vendors in China and India were surveyed. IS vendors for our study were defined as companies located in China and India that develop, maintain, and/or support IS functions and/or services to overseas clients. Questionnaires were pretested with colleagues and graduate students. They were further pilot tested with select vendors from India before the full administration of the survey. Only minor changes were required as a result of these tests.

Members of vendors' senior management were targeted for the study. In China, in order to accommodate the language differences, both Chinese and English versions of the questionnaires were distributed to the vendors. An English version of the questionnaire was translated into Chinese. In order to ensure that the translated questionnaire was identical to the original version, it was translated back into English and streamlined with the original English version. For the Chinese IS vendors, one of the authors traveled to five cities: Taipei, Shenzhen, Xi'an, Shanghai, and Suzhou to locate various sources or organizations to help reach IT vendors. The author also delivered several presentations sponsored by local IS associations in order to have the opportunity to directly meet with IT vendors. Some indirect contacts were also established in Beijing to distribute questionnaires to IT vendors. In total, 360 questionnaires were sent to vendor organizations in China and 68 usable responses were collected, representing an 18.9% response rate.

Several options were considered for the data-collection effort in India. Given the logistic difficulties and poor response rates typical of India, an innovative approach of offshoring the data collection to an Indian vendor was utilized. A reliable vendor known to one of the authors was selected. Careful instructions and guidelines were developed by the researchers to assure quality as well as completeness of the responses. The vendor assigned a project manager in India who was in constant communication with the authors and provided periodic updates. Total resources used in this project were three full-time research associates and one part-time resource, supervised by an experienced team leader and a project manager. Of the 710 questionnaires distributed to Indian vendors, valid responses were received from 120 companies, resulting in a 16.9% response rate.

Sample

Table 1 provides useful information about the size of companies in the sample based on income, sales, assets, and number of employees. Median values are reported as they are more representative; the means were higher as some very large companies were included both in India and China. Table 2 reports the profiles of the respondents, who were project managers or above

in the vendor organization and who had comprehensive knowledge of the offshoring engagements. The three most frequently provided services in the total sample are IT application/systems development, consulting/training, and IT application/systems maintenance (Table 3). The majority of the clients are in the United States (70.7%), followed by the United Kingdom (8.0%), Japan (4.3%), and Germany (3.7%), as shown in Table 4.

Table 1. Income, sales, assets, number of employees.

	Income	Sales	Assets	Number of Employees	Number of IT Employees
Medians for India	\$2,963,222	\$5,000,000	\$1,500,000	250	125
Medians for China	\$3,900,000	\$12,000,000	\$3,850,000	330	160
Overall Medians	\$3,863,222	\$5,000,000	\$2,475,000	287	150

Table 2. Respondent profile.

Job Title	India		China	
	Frequency	Percent	Frequency	Percent
Chief Executive Officer/President/Managing Director	7	10%	5	11%
Vice President/Director	21	29%	7	15%
Manager (IT, Functional)	32	42%	12	25%
Project Manager	14	19%	23	49%
Total Reported	74	100%	47	100%
Not Reported	46		21	
Total	120		68	

Table 3. Type of vendor services.*

Vendor Service	Frequency	Percent**
Application/system development	172	91.5
Consulting/training	136	72.3
Application/systems maintenance	105	55.9
Package software implementation	81	43.1
Technical staffing	80	42.6
End-user support (e.g., help desks)	66	35.1
Systems operations	42	22.3
Application/systems integration	47	25.0
Customer service (call) center	38	20.2
Others	14	7.4

*A vendor may provide multiple types of services.

**The percent is based on the total of 188 companies.

Table 4. Client country.

Client Country	Frequency	Percent	Client Country	Frequency	Percent
United States	133	70.7	Turkey	1	0.5
United Kingdom	15	8.0	Dubai	1	0.5
Japan	8	4.3	Taiwan	1	0.5
Germany	7	3.7	New Zealand	1	0.5
Australia	3	1.6	UAE	1	0.5
Singapore	3	1.6	Malaysia	1	0.5
France	2	1.1	Pakistan	1	0.5
Netherland	2	1.1	South Korea	1	0.5
Switzerland	2	1.1	Other	4	2.1
Saudi Arabia	1	0.5	Total reporting	188	100

Measurement Validation

Confirmatory factor analysis (CFA) was conducted for all of the latent constructs (Table 5). All item loadings were greater than .60 as recommended by Hair, Anderson, Tatham, and Black (1998). Thus the items are representative of their respective constructs. Also assessed were reliability, convergent validity, and discriminant validity of the measurement models. While Cronbach's alpha with its assumption of parallel measures represents a lower bound estimate of internal consistency, a better estimate is obtained by using the composite reliability formula as suggested by Werts, Linn, and Jorkesog (1974). The measurement is considered reliable if the reliability index of each construct is above .70 (Nunnally, 1978). As shown in Table 5, the composite reliabilities were all above .70; thus all measures have adequate level of reliability.

Table 5. Confirmatory factor analysis of the measurements.

Item	Factor Loading	Weight	Composite Reliability	Average Variance Extracted (AVE)	Square Root of AVE
Relationship management capability			.87	.6950	.8337
RMC1	.7638	.3414			
RMC2	.8504	.3807			
RMC3	.8823	.4709			
Contract management capability			.89	.8076	.8987
CMC1	.8827	.5145			
CMC2	.9143	.5970			
IT management capability			.84	.6408	.8005
IMC1	.8406	.4375			
IMC2	.8034	.4123			
IMC3	.7554	.3985			
Partnership quality			.86	.6125	.7826
PQ1	.6923	.1839			
PQ2	.8301	.3375			
PQ3	.8094	.3798			
PQ4	.7914	.3602			
Service quality			.90	.6092	.7805
SQ1	.7643	.2043			
SQ2	.7988	.2427			
SQ3	.8373	.2315			
SQ4	.7467	.1934			

Item	Factor Loading	Weight	Composite Reliability	Average Variance Extracted (AVE)	Square Root of AVE
SQ5	.7711	.2080			
SQ6	.7612	.2115			
Deliverable quality			.84	.6331	.7957
DQ1	.8101	.4176			
DQ2	.7234	.3395			
DQ3	.8484	.4947			
Operational performance			.89	.6327	.7954
OP1	.6961	.2168			
OP2	.8752	.2432			
OP3	.8632	.1837			
OP4	.8533	.2078			
OP5	.8248	.2023			
OP6	.7220	.1896			
Strategic performance			.83	.6542	.8088
SP1	.6222	.3494			
SP2	.8261	.3820			
SP3	.8843	.5282			
Satisfaction			.83	.6174	.7857
SAT1	.6453	.3813			
SAT2	.8582	.4862			
SAT3	.8363	.4027			

Convergent validity of the measures is established by examining whether the factor loadings are above .50 and whether each construct has an average variance extracted (AVE) of at least .50 (Fornell & Larcker, 1981). As shown in Table 5, all factor loadings were greater than .50 and the AVE of every latent variable in the research model was greater than .50.

Discriminant validity of the measures is acceptable if the AVE of each construct is greater than the variance among all constructs (Chin, 1998). This is normally demonstrated by showing that the square root of an AVE (SAVE) is greater than the correlations among the construct and all other constructs in the model. The correlation matrix among all constructs is presented in Table 6. The SAVES of the constructs are illustrated on the diagonal cells of the correlation matrix. The SAVE of each construct is greater than the correlations between the construct and all other constructs. Thus, the measurements demonstrate satisfactory levels of discriminant validity.

Table 6. Correlations among variables.*

	RMC	CMC	IMC	PQ	SQ	DQ	SAT	OP	SP
RMC	.8337								
CMC	.550	.8987							
IMC	.482	.534	.8005						
PQ	.451	.438	.442	.7826					
SQ	.565	.585	.579	.498	.7805				
DQ	.644	.648	.531	.515	.658	.7957			
SAT	.539	.485	.519	.363	.559	.547	.7954		
OP	.122	.133	.049	.207	.185	.136	.407	.8088	
SP	.268	.206	.202	.136	.226	.322	.447	.395	.7857

RMC = relationship management capability; CMC = contract management capability; IMC = IT management capability; PQ = partnership quality; SQ = service quality; DQ = deliverable quality; SAT = satisfaction; OP = operational performance; SP = strategic performance.

*Numbers on the diagonal are the square root of the average variance extracted for the corresponding variable.

Assessment of Potential Response Bias and Common Method Bias

To ensure that the responses in the sample are free from nonresponse bias and common method bias, the following analyses were conducted. The sample was split into two halves based on the time when each response was completed. The earlier responses were compared with the later responses on demographic variables and company characteristics such as vendor income, number of employees, vendors' years of relationships with clients, and vendors' years of outsourcing. As shown in Table 7, for both China and India, no significant differences between the two groups were found, indicating that nonresponse bias was not a significant issue that could confound our results.

Table 7. Comparison of early versus late response groups.

	Group	China			India		
		Mean	T-value	Sig (2-tailed)	Mean	T-value	Sig (2-tailed)
Vendor income	Early	41,999,286	1.392	0.172	666,322,667	-0.900	0.377
	Late	43,248,333			3,709,454,083		
Vendor employees	Early	4,009	0.095	0.924	8,952	0.444	0.659
	Late	3,769			5,954		
Vendor relationship_years	Early	5.1	-0.064	0.949	5.1	-0.533	0.595
	Late	5.1			5.4		
Vendor outsourcing_years	Early	5.6	-0.026	0.980	8.1	0.102	0.919
	Late	5.6			8.0		

Because the survey questionnaire was completed by a single respondent, it was necessary to assess the potential bias caused by a common method. The Harman's single factor test (for a method factor) was conducted to examine whether the common-method bias is a significant concern. Specifically, based on recommendations made by Podsakoff, MacKenzie, Lee, and Podsakoff (2003), an exploratory factor analysis was conducted across all variables. The results yielded nine factors with eigenvalues around 1 and no single factor dominating. In the Harman's test (single-factor test), without specifying number of factors, the factor analysis revealed seven factors from maximum-likelihood extraction with varimax rotation. There were two additional factors that have their eigenvalues of .965 and .900, which were very close to 1.0. When specifying nine factors, the items loaded into factors that largely corresponded to the nine factors as we proposed in the CFA. Therefore, it was reasonable to accept the nine-factor structure and there was no single dominating factor. These results correspond to the CFA and indicate that there is no significant common-method bias in the data.

Hypothesis-Testing Procedure

A structural equation model, which included all of the hypothesized relationships presented earlier, was constructed and partial least squares analysis software (PLS) was used to test the hypotheses. The hypotheses were supported if the following conditions were met. First, the measurement model should demonstrate satisfactory levels of reliability, convergent validity, and discriminant validity, which we have already demonstrated and discussed in the above section. Second, the parameter estimate of the hypothesized structural path should be statistically significant with the hypothesized direction of the effect. A path is considered to be statistically significant if its p value is less than the .05 significance level.

RESULTS

Model Testing Without Control Variables

Estimates of the path coefficients of the structural model, which are significant at the .05 level, are presented in Table 8. The entire structural model with the significant paths is shown in Figure 2.

Table 8. Estimates of structural path coefficients.

Predictors	Partnership Quality	Service Quality	Deliverable Quality	Operational Performance	Strategic Performance	Satisfaction
Relationship-management capability	.239	.267	.370			
Contract-management capability	.184	.278	.358			
IT-management capability	.228	.302	.162			
Partnership quality				.220		
Service quality						.364
Deliverable quality					.330	.332
Adjusted R^2	.289	.488	.556	.049	.109	.391

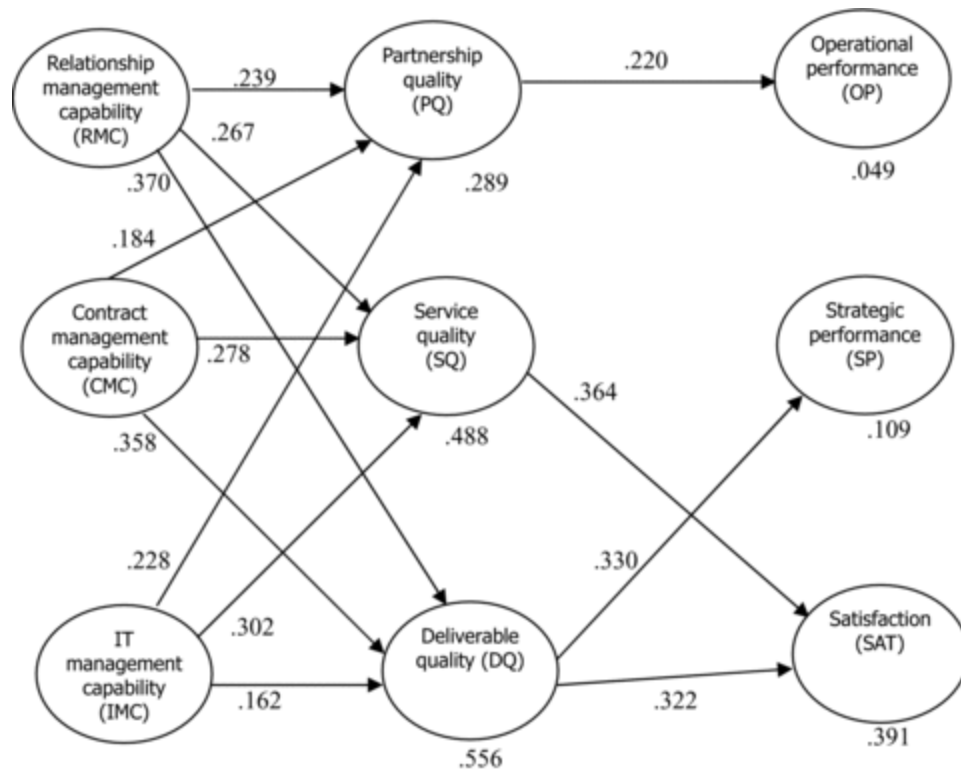


Figure 2. Path coefficient estimates of the structural model.

Note: Only paths significant at $p < .05$ are shown.

Hypotheses 1–3 relating capabilities to quality are fully supported. This is because all of the subhypotheses for H1 (H1a, H1b, H1c), H2 (H2a, H2b, H2c), and H3 (H3a, H3b, H3c) are significant at the .05 level. Thus relationship-management capability influences all three aspects of quality (i.e., partnership quality, service quality, and deliverable quality). The same is true of contract-management capability and IT-management capability. It is, however, worth noting that the lowest, but yet significant, effects are from contract-management capability to partnership quality and IT-management capability to deliverable quality. The strongest influences appear to be between relationship-management capability to deliverable quality, contract-management capability to deliverable quality, and IT-management capability to service quality. The explained variance (R²) values for partnership quality, service quality, and deliverable quality are .289, .488, and .556, respectively.

Hypotheses 4–6 relating quality to performance are all partially supported. In Hypothesis 4, only H4a is supported. Partnership quality has a positive association with operational performance, but is not associated with strategic performance or satisfaction. In Hypothesis 5, only H5c is supported. Service quality is positively associated with satisfaction, but not with operational performance or strategic performance. In Hypothesis 6, H6b and H6c are supported, but not H6a.

Deliverable quality is positively associated with strategic performance and satisfaction, but not with operational performance.

Model Testing with Control Variables

To test whether the relationships that were revealed were robust, two control variables that might have influence on the dependent variables were added to the model. The first variable is the size of the vendor measured by the number of employees. The second variable is the number of years the vendor had been in outsourcing practice. The results of the structural model with the two control variables are shown in Figure 3. The new estimated parameters of the path coefficients are nearly the same as in the previous section, indicating that the hypothesis-testing results are robust even when additional control variables are included in the model.

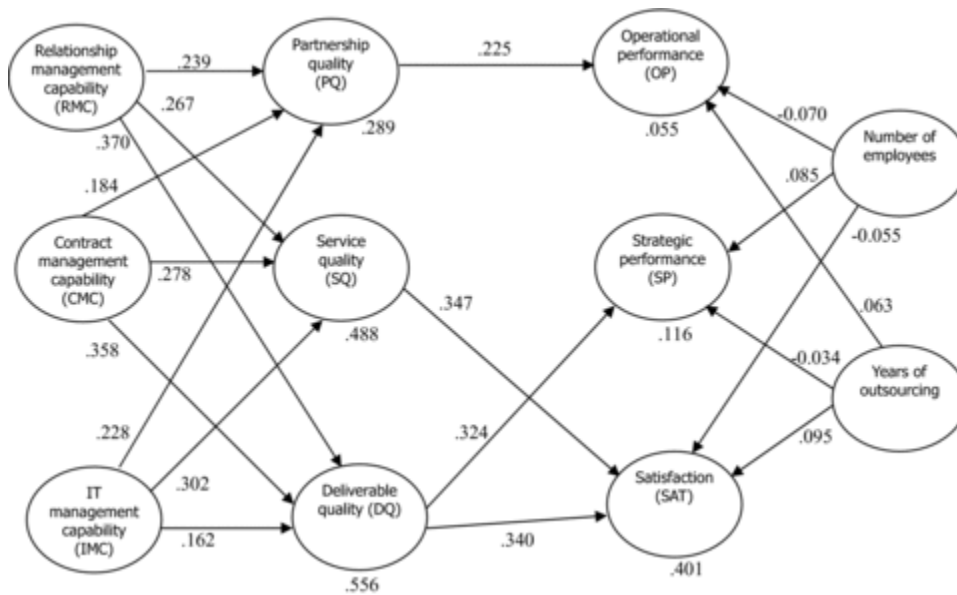


Figure 3. Path coefficient estimates of the structural model with control variables.

Overall, all of the 13 paths that were significant without the control variables are also significant after the inclusion of the two control variables. Moreover, no new significant paths were added. Furthermore, the control variables did not exert a significant influence on any of the three performance variables. The results provide strong evidence to support the arguments proposed by the CQP model. The extent of vendor capabilities influences the process quality that it provides to the clients, which in turn affects the vendor's performance results.

DISCUSSION

The growing phenomenon of offshoring IS services and functions to vendors across the globe has propelled outsourcing issues to the front stage. While client success has been examined by many, it is equally important to develop a deep understanding of the factors that affect the vendor's performance. This study represents a step toward that goal. As one of the first theory-based empirical studies dealing with vendor issues in an offshoring relationship, this study makes unique contributions and offers significant and holistic insights by (i) analyzing the dynamic relationship between IS vendor's capabilities and performance for the benefit of both theory development and vendor firm decision-making perspectives; (ii) developing the CQP model, grounded in literature and theory, that provides a parsimonious yet powerful lens for examining the relationships between vendor capabilities, quality, and performance; and (iii) empirically verifying the model at the firm level in China and India, providing further support for the CQP model. Level I variables of the model are based on the RBV of the firm and include relationship-management capability, contract-management capability, and IT-management capability. Level II variables are about process-quality aspects of the firm and include partnership quality, service quality, and deliverable quality. Level III variables are related to vendor performance and outcomes, and include operational performance, strategic performance, and satisfaction.

The RBV links the performance of organizations to resources and capabilities that are firm specific, rare, and difficult to imitate or substitute (Barney, 1986, 1991). Applying this view to IT vendors in an offshoring relationship, three specific capabilities were identified and extracted from the literature: relationship management, contract management, and IT management. Carr (2003) in his provocative article claimed that IT infrastructural components per se may not offer competitive advantage to the vendor because of their increasingly commodified nature. However, their deployment and management are critical aspects of the vendor's success and its relationship with the client. As hypothesized, we explored all nine linkages from the three capabilities to the three quality measures and found support for all. Thus all three capabilities play a critical role in improving the process-quality measures, and all deserve constant attention. Included in relationship-management capability are communication and coordination with the client; contract-management capability includes contract preparation and execution; and IT-management capability includes IS development, software processes, and infrastructure. Vendors need to establish these capabilities by mobilizing both their IT-based resources and management strengths (Bharadwaj, 2000). From a vendor's perspective, it is important to note that while IT-based competencies are a prerequisite to obtaining a contract, it is ultimately the management capabilities that set them apart from their competitors and lead to both short-term and long-term success (Ray et al., 2004). Several authors have emphasized the need to develop such capabilities. For example, project management and client management were underscored by Ethiraj et al. (2005) and Balaji and Brown (2005); which are akin to relationship and contract-management capabilities in our model. It is noteworthy that vendor-management capabilities are

similar to many of the vendor core competencies identified in Levina and Ross' (2003) case study.

The role of mediating variables in the research model is an important one. The three level II variables are measures of process quality and their inclusion makes two distinct contributions. First, it opens up the “black box” in the relationship between the input (vendor capabilities) variables and the output (vendor performance) variables; therefore shedding light on how the input variables of level I influence the performance variables of level III. Second, it is the process variables that ultimately determine performance. Thus by concentrating on the quality of partnership, service, and deliverables, the vendor can expect to improve performance. This result is in accordance with previous studies by Lee and Kim (1999) and Grover et al. (1996) that have found linkages between service quality and partnership quality with outsourcing success, albeit in the client context. We have established similar linkages for vendor performance and added an additional variable of process quality (i.e., deliverable quality).

We also hypothesized relationships from each quality variable to the three performance measures, but only selected paths were found to be significant. Partnership quality had a positive association with operational performance. As argued earlier, with superior partnership between the vendor and the client, based on a higher level of trust, there is less need to incur ex post costs, which in turn would result in improved operational performance. The ex post costs in transaction cost theory include monitoring/enforcement costs, adaptation costs, bonding costs, and dissolution costs (Williamson, 1985). There is another plausible explanation. With a close partnership with the vendor, the client is willing and able to identify weaknesses and strengths in the vendor's processes, and make recommendations for improvement. A similar association between partnership quality and outsourcing success was reported by Grover et al. (1996) and Lee and Kim (1999), however, in the context of the client.

We posited that a quality partnership would lead to market growth and strategic performance due to client referrals and associated synergistic benefits. However, this hypothesis was not supported. Thus it appears that partnership quality only supports the operational and tactical objectives of the vendor firm and not strategic goals. A plausible explanation for this result is that for market growth and achievement of strategic goals, the vendor firm cannot rely merely on its existing clients and partnership quality with them. Rather it has to constantly seek innovation and proactively seek new customers. Previous empirical studies do not provide much guidance in this regard as they did not explicitly consider strategic performance as a dependent variable. Both Grover et al. (1996) and Lee and Kim (1999) included only measures of largely operational

and tactical success. We included two more antecedents to strategic performance: deliverable quality and service quality. Only the association between deliverable quality and strategic performance was statistically significant. This finding is consistent with the marketing literature, which provides much support for the linkage between product quality and strategic performance (Chakravarthy, 1986; Jacobson & Aaker, 1987; Gatignon & Xuereb, 1997). Thus the lack of support for H4b and H5b and support for H4a, H5c, and H6b combined convey an important message: attention to behavioral and people issues can only improve operational performance and satisfaction; for long-term and strategic performance, the vendor firm has to be able to deliver quality products on a competitive and continuing basis.

As expected, the significant relationships of both service quality and deliverable quality with satisfaction were supported. Satisfaction has been used in prior studies as a surrogate measure of outsourcing success (Lacity & Willcocks, 1998; Levina & Ross, 2003; Lin, 2007). Thus the surrogate role of satisfaction as a success measure is validated. Satisfaction deals with the behavioral aspects of the client–vendor relationship; thus its association with service quality is justified. Satisfaction is also dependent on postconsumption expectation (Bhattacharjee, 2001), which is a concept related to deliverable quality. However, we were surprised that partnership quality was not associated with satisfaction; this is an issue that needs detailed exploration in the future.

Another important contribution of this research is the categorization of vendor performance into distinct variables. Past studies tend to group them all together into one overall success measure (Grover et al., 1996; Lee & Kim, 1999; Levina & Ross, 2003; Mani, Barua, & Whinston, 2005), which provides an overly simplistic view of performance and does not allow the firm to distinguish between different measures of success. By delineating performance into operational and strategic categories and satisfaction, we provide the vendor firm the ability to evaluate performance in different areas and focus on particular measures based on its needs and objectives. For example, one vendor may wish to focus on operational performance while another may be interested in strategic growth after having achieved satisfactory short-term results. In each case, the immediate antecedents are different and may require different types of leveraging and intervention. The combined immediate antecedents of the performance variables are partnership quality, service quality, and deliverable quality. Clearly, improving any of the quality variables would require different sets of organizational changes, methods, and initiatives. By the same token, improving different vendor capabilities would require different types of resources and programs on the part of vendor management.

There are numerous opportunities for further research based on the CQP model, as described in the next section. As an example, one may examine intralevel relationships. Of particular interest are the relationships among the performance variables themselves. We demonstrate these relationships with an ad-hoc analysis, as shown in Figure 4. Plausible hypotheses include: operational performance positively affects both satisfaction and strategic performance, and satisfaction positively affects strategic performance. All of these three relationships were found significant without substantially affecting any of the results reported earlier. Thus while we did not find direct links from partnership quality to strategic performance and satisfaction, there are indirect links. There is also an indirect link from service quality to strategic performance.

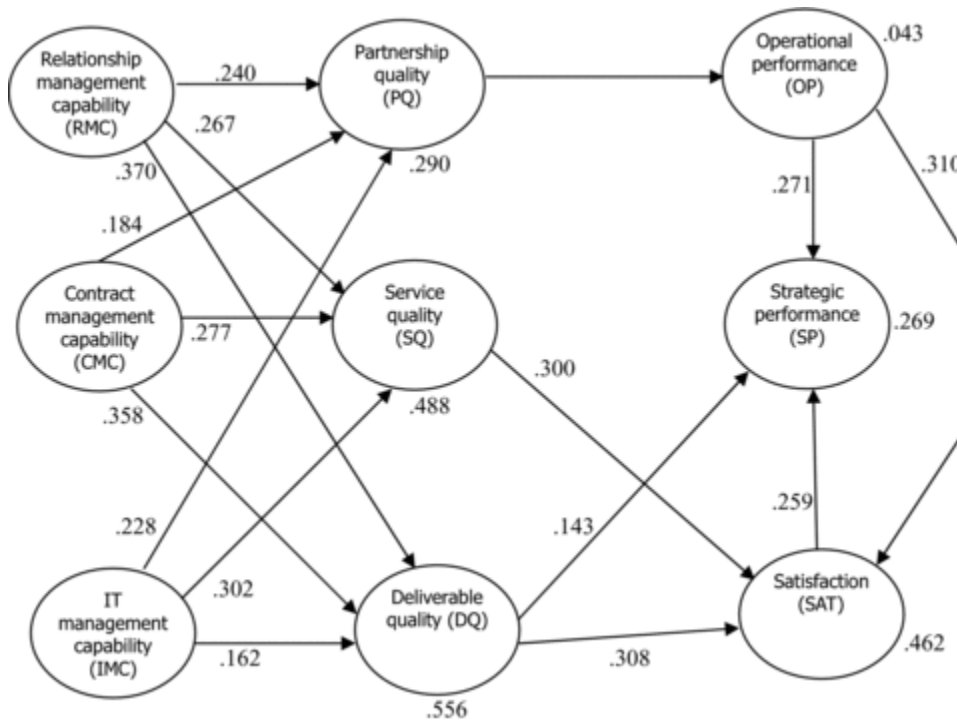


Figure 4. Ad hoc analysis with additional relationships.

Note: Only paths significant at $p < .05$ are shown.

Our purpose in conducting the ad hoc analysis is not to make any definitive conclusions, but simply to make the point that greater understanding can be obtained by examining additional complex relationships once the fundamental model has been validated. The ad hoc analysis not only reveals complex relationships among the three performance variables but also helps explain some of the unsupported relationships between vendor process quality variables and performance variables by uncovering the indirect effects from vendor process quality variables to performance variables.

As for limitations of the study, the issues common to the survey methodology apply (e.g., sample size and representativeness). Although the sample could not be randomized because of the obvious difficulties in doing so, we achieved representation from different types of vendors (by location, size, expertise, and client base). While most of the scale items were adapted from the literature, some had to be created as none existed in the literature. These were tested and validated, but can benefit from further validation and corroboration.

Implications for Research

Prior outsourcing research has demonstrated that vendor selection is one of the most important activities for clients (Saunders, Gebelt, & Hu, 1997; Casale, 2001). This study offers empirical support for the notion that an IS vendor's strong management capabilities can lead to substantial and positive impacts on the vendor's processes and their quality as well as operational and strategic outcomes. While the CQP model of this study is parsimonious and lays a strong theoretical foundation, there are several avenues for further investigation. The general structure of the model is sound. Within this structure, several refinements are worthy of consideration. First, the construct measures used in this study can be validated and improved in future studies to establish a more robust instrument. Second, more process quality measures at level II and capability measures at level I can be added. While the addition of new variables and relationships is certain to enhance the explanatory power of the model, we caution against their indiscriminate addition because of the desire for parsimony. The overall model has adequate explanatory power and R^2 values are significant for all quality and performance variables. However, the R^2 values are somewhat low for operational performance and strategic performance. These two variables may benefit from a re-examination of their antecedents. Third, the surrogate role of satisfaction may be further examined, as it is easier to capture than more direct measures. Is it related to operational performance or strategic performance, or both? Fourth, we operationalized satisfaction as a combination of vendor and client satisfaction. Future work may explicitly examine the relationship between client satisfaction and vendor satisfaction. Fifth, the role of moderating variables on the proposed relationships may be evaluated. For example, is the relationship between partnership quality and operational performance moderated by other variables, such as the type of service provided by the vendor? Sixth, in order for the results to be more useful to the vendors, can we formulate specific actions that would improve vendor capabilities and process quality? Seventh, more studies may attempt to replicate these results in other types of client–vendor dyads (Currie & Willcocks, 1998) in order to enhance the generalizability of our approach. The opportunities in the nascent area of IS vendor management are numerous, and many more questions can be investigated under the umbrella of our theoretical framework.

Implications for Practice

This study clearly demonstrates the importance of vendor-management capabilities. The findings from this research have implications for companies that are searching for potential IS vendors as well as for companies that are searching for ways to strengthen their outsourcing capabilities to win over more clients and more contracts. The client management can apply these findings to select IS vendors who can demonstrate the desired capabilities and competencies. They can also require and sometimes assist the vendor in developing or strengthening these capabilities if they are already involved in an outsourcing relationship. Our findings have special significance for IS vendors in developing countries that have the technical know-how and are eager to offer their low-cost IT services and technical expertise. In order to be successful, these IS vendors should be actively searching for ways to develop, improve, and showcase their management capabilities, such as contract and project management, communication and collaboration with the client, IT-based competencies, and superior budget and on-time performance. Vendors also need to pay particular attention to the performance measures that are most relevant to them. Whether their focus is on operational or strategic performance, or somewhere in-between, the antecedents and their emphases are different requiring different sets of organizational responses and resource commitment.

CONCLUSION

This study fills an important gap in IS outsourcing research by empirically examining IT vendors in distant countries that provide, maintain, or support IS functions or services to companies operated in the advanced countries. A three-level CQP model was formulated based on existing theory and literature that associates vendor capabilities to their process quality and ultimately to their performance. Three constructs were introduced at each level resulting in a total of nine constructs. The theoretical model was evaluated empirically using data collected from IS vendors in India and China. The RBV is upheld in the IS vendor context, meaning that vendor-management capabilities are essential for their success. These capabilities fall under three categories: relationship management, contract management, and IT management. Furthermore, partnership quality, service quality, and deliverable quality mediate the relationship from capability to vendor performance. Vendor performance was measured by three separate dependent variables reflecting operational performance, strategic performance, and satisfaction. While all mediating variables were influenced by the three capability variables, the antecedents of each performance variable are different. The clear delineation of the outcome variables allows the vendors to focus their energies in their own areas of need and expertise. The findings have implications for both client companies that are searching for potential IT vendors and vendor companies that are searching for ways to strengthen their outsourcing capabilities to win over

more clients and more contracts. While the vendor management can benefit directly from our findings, the client management can also apply these findings to select vendors who can demonstrate the desired capabilities and process quality.

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Appendix

Constructs, Literature, and Measures

Construct	Explanation	Related Literature	Measures	Adapted from
IT management capability (IMC)	Includes hardware, software, infrastructure, knowledge, and IS development process	Components of IT capability (Bharadwaj, 2000; Bharadwaj et al., 2002; Subramani, 2004; Swinarski et al., 2006), competencies (Levina & Ross, 2003), knowledge sharing (Lee, 2001)	<p>IMC1—Our company promotes quality at all levels of IS development</p> <p>IMC2—Our software processes and IT activities are fully streamlined</p> <p>IMC3—Our company has modern information technology (computing) facilities</p>	Bharadwaj (2000), Swinarski et al. (2006), Subramani (2004)
Contract management capability (CMC)	Vendor's capability to prepare and execute the contract effectively	Contract specificity and flexibility (Richmond & Seidmann, 1993; Kumar & Palvia, 2002), contract structure (Richmond & Seidmann, 1993; Poppo & Lacity 2006), social exchange (Kern & Willcocks, 2000)	<p>CMC1—Our company has excellent capabilities for contract preparation with the client</p> <p>CMC2—Our company has excellent capabilities for the execution of the contract with the client</p>	Richmond and Seidmann (1993), Poppo and Lacity (2006)
Relationship management capability	Developing and nurturing a relationship with the client. Emphasis is on communication and	Coordination and collaborative communication (Kumar & Palvia, 2002; Goles & Chin, 2005; Holmström et al., 2006), relationship theories (Dibbern et	RMC1—Our communication with the client is timely	Lee and Kim (1999), Holmström et al. (2006), Kumar and Palvia (2002)

Construct	Explanation	Related Literature	Measures	Adapted from
(RMC)	coordination.	al., 2004), client-specific capabilities (Ethiraj et al., 2005), customer orientation (Bharadwaj, 2000; Levina & Ross, 2003)	RMC2—Our communication with the client is accurate RMC3—Our company is effective in coordinating work with the client	
Strategic performance (SP)	Includes market growth, market dominance, business value, and customer referrals.	Long term and competitive performance (King & Malhotra, 2000; Subramani, 2004; Swinarski et al., 2006), strategic impact (Grover et al., 1996; Lee & Kim, 1999), business value (Richmond & Seidmann, 1993)	SP1—Most of our new clients are referred to us by current clients SP2—Our company has expanded its market share SP3—Our company has increased its market dominance	Grover et al. (1996), Lee and Kim (1999)
Operational performance (OP)	Includes efficiencies, utilization of IT resources, development of capabilities, and management of resources	Technology and economic perspectives (Grover et al., 1996; Lee & Kim, 1999), operational and tactical impacts (King & Malhotra, 2000; Subramani, 2004)	OP1—Our company has strengthened its core business due to outsourcing OP2—Our company has enhanced its IT competence due to outsourcing	Grover et al. (1996), Lee and Kim (1999)

Construct	Explanation	Related Literature	Measures	Adapted from
Satisfaction (SAT)	Satisfaction with the exchange relationship between the client and the vendor	Client satisfaction (Grover et al., 1996; Lacity & Willcocks, 1998; Levina & Ross, 2003), mutual satisfaction (Klepper, 1994)	OP3—Our company has improved the utilization of its IT talent due to outsourcing	Grover et al. (1996), Lee and Kim (1999), Levina and Ross (2003)
			OP4—Our company has improved the utilization of our technology resources due to outsourcing	
			OP5—Our company has improved its project management skills due to outsourcing	
			OP6—Our company has improved its contract management skills due to outsourcing	
Partnership quality (PQ)	Integrative and cooperative behavior between the vendor and client. Includes such factors as trust, understanding and commitment.	Components of partnership (Grover et al., 1996; Lee & Kim, 1999), relationship quality (Levina & Ross, 2003), shared goals (Lee, 2001), strategies for partnership (Kumar & Palvia, 2002)	SAT2—Our client is satisfied with the quality of our work	Lee and Kim (1999), Grover et al. (1996), Lee (2001)
			SAT3—Our company is satisfied with the overall benefits from outsourcing	

Construct	Explanation	Related Literature	Measures	Adapted from
Service quality (SQ)	Intangible and process activities involving the client. Include interpersonal factors such as reliability, responsiveness, assurance, and empathy	Components of service quality (Parasuraman et al., 1988), vendor service quality (Grover et al., 1996; Kim et al., 2005; Lin, 2007)	PQ2—Our client keeps its promises	Parasuraman et al. (1988), Grover et al. (1996)
			PQ3—Our client faithfully provides us support that is specified in the contract	
			PQ4—Our client is willing to provide assistance to us at all times	
			SQ1—When our employees promise to the client to do something by a certain time, they do so	
			SQ2—When the client has problems, our company shows a sincere interest in solving them	
			SQ3—Our employees give the client prompt service	
SQ4—Our employees tell the client when services will be performed	SQ5—Our client's transactions are safe with our company	SQ6—Our employees give personalized attention to the client		
Deliverable	Includes attributes of the	Role of product quality (Anderson &	DQ1—Our company completes client	Lee and Kim (1999), Paulk et al.

Construct	Explanation	Related Literature	Measures	Adapted from
quality (DQ)	software/deliverable that meets requirements, is free from deficiencies and is delivered on time	Sullivan, 1993), attributes of software quality (Lee & Kim, 1999), factors affecting quality (Kumar & Palvia, 2002;Holmström et al., 2006; Agrawal & Chari, 2007), role of CMM and capability maturity (Paulk et al., 1993;Harter et al., 2000)	<p>projects within the scheduled time</p> <p>DQ2—Our company completes client projects within budget</p> <p>DQ3—Our company provides error-free service to the client</p>	(1993),Kumar and Palvia (2002),Holmström et al. (2006)

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