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Client Communication Practices in Managing Relationships with Offshore Vendors of Software Testing Services

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Abstract:

Enabled by the globalization and advances in technology, offshore outsourcing of software development to countries such as India, China, and Russia, continues to increase. Much of the extant research has not focused on the communication practices observed in thriving offshore client-vendor relationships. Our research identifies communication practices found in a case study of a large multinational client's multi-vendor relationship in offshore outsourcing of software testing projects. We discuss the empirically grounded communication practices in the light of existing literature to highlight how the client-vendor relationships deliver long-term value. Through this discussion, we delineate and discuss communication techniques. Implications for theory and practice are also discussed.

Keywords: IT offshore outsourcing, communications practices, client-vendor relationships

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I. INTRODUCTION

Enabled by the globalization and advances in information and communication technologies, offshore outsourcing of software development to India, China, and Russia, among others, continues to increase. Several activities that comprise software development, including requirements analysis, design, development, testing, support, and maintenance, are being outsourced more extensively to these offshore destinations. Yet offshore outsourcing is not without its challenges. Companies have found that software developed by offshore vendors did not always meet quality thresholds, work performed by offshore partners was inadequate, projects were not delivered on time, too much client management bandwidth was needed, and anticipated benefits such as cost savings and quality of development efforts were not received [Lacity and Rudramuniyaiah, 2009; Lee, 2006; McCarthy et al., 2004; Waligora and Coon, 1994]. Because of the challenges of developing good working relationships with offshore vendors, this study was undertaken to identify a set of communication practices based on a case study of a large multinational client's relationships with multiple offshore vendors of software testing services. These practices reflect activities performed by client and vendor managers that have led to greater client satisfaction with vendor performance. While communication practices are rather general and could encapsulate everything within outsourcing contracting and management, this study will focus specifically on client communication practices in managing relationships with multiple offshore vendors of software testing services.

We define offshore outsourcing as the specific type of outsourcing where firms contract for services with external firms located in remote destinations other than the country where the hiring firm is located. This can be contrasted with offshoring, where the services are performed in a foreign country by a foreign subsidiary owned by the hiring firm. This article contributes to the existing research on offshore outsourcing by delineating a set of communication techniques based on how a company is managing its relationships with multiple offshore vendors. The findings of this study are grounded in successful business practices of the client. Much of the prior research which has examined offshore outsourcing has assessed communications practices as a tangential focus. For example, research on governance management in offshore outsourcing suggests ways for setting up and implementing procedures to manage internal stakeholders or vendors [Carmel and Tjia, 2005; Guth, 2008; Mani, 2006; Obal, 2009], while research on relationship management offers insights into establishing and implementing procedures to manage issues and their resolution [Barthelemy, 2003; Hindle et al., 2003; Koh et al., 2004; Lee, 2006]. While not the focus of these studies, their findings imply that better communications mechanisms are needed for effective and efficient governance and relationship management between offshore vendors and onshore client managers.

There is evidence that clients and vendors vary in how they participate across cultures, and this is triggered by different attitudes toward hierarchy, a lack of shared expectations, and differences in how conversations take place [Avison and Banks, 2008]. Differences in country contexts between client managers and offshore vendors may inhibit collaboration effectiveness, while differences in organizational contexts can be mediated through work practices that treat vendors as employees. This means successful client managers can reduce the effect of the differences between client and vendor staff by using their position and resources [Levina and Vaast, 2008]. Other studies offer support for people management in making sure the people with sourcing responsibilities have the competencies they need to do their jobs [Asher and Nandy, 2007; Khanna and New, 2005; Obal, 2009; Rao, 2004]; experience in offshoring work is important for client managers [Adya and Nath, 2008], and knowledge management is needed for analyzing and using knowledge gained from sourcing activities [Aman and Nicholson, 2009; Leonardi and Bailey, 2008; Oshri et al., 2007; Willcocks and Kern, 1998]. Thus, differences between clients and vendors can create challenges to developing effective communication practices.

Studies also illustrate that offshore outsourcing of knowledge-intensive work is even more challenging, for example, in engineering projects where much information is implied in the product being built [Leonardi and Bailey, 2008]. In such contexts it becomes important for client managers to transfer business and product knowledge to the offshore vendor. Studies have illustrated that management practices can be used to support knowledge sharing for defining requirements, monitoring progress, fixing returns, routing tasks strategically, and filtering quality [Leonardi and Bailey, 2008]. Research has also found that differences between the client and vendor in their knowledge and experience levels, as well as the requirements and task characteristics (such as complexity, instability, ambiguity, and novelty) of the work involved encourage both client and vendor team members to make sense of their working environment and their relationships [Vlaar et al., 2008]. Making sense of the working environment increases the likelihood that shared understandings occur and encourages smooth collaboration [Vlaar et al., 2008]. However,

these studies do not focus solely on communications practices but acknowledge that fundamental interactions are needed to ensure successful offshore outsourcing activities.

To highlight the challenging nature of managing offshore client–vendor relationships, one study noted the emergence of offshore intermediaries to smooth the flow and transition of work between offshore vendors and onshore client managers [Mahnke et al., 2008]. Mahnke et al's [2008] study found that the intermediaries brought skills and capabilities that helped bridge the differences that arose due to: (1) cultural distance, (2) cognitive distance, (3) pre-contractual preparation and negotiation expectations, and (4) post-contractual operational management inconsistencies. Other studies offer insights into approaches in performing impact and risk analyses of proposed sourcing actions [Lacity and Willcocks, 1998; Marcolin and Ross, 2005; Willcocks and Kern, 1998] and planning the definition and documentation of sourcing service conditions [Lee, 2006; Rottman and Lacity, 2006]. Additional studies examine the evaluation of potential providers using documented criteria and procedures [Carmel and Tjia, 2005; Park and Kim, 2005; Shi et al., 2005], and define the formal service level agreements (SLAs) and performance measures for services [Artunian, 2006; Kaiser and Hawk, 2004] that are critical success factors in offshore outsourcing. Taken together, these studies show that communications in evaluation and performance criteria are deemed important factors. Our study goes one step further by providing a comprehensive framework for the client communication practices needed in managing relationships with multiple offshore vendors of software testing services.

As described above, considerable research exists on examining factors related to selecting and working with offshore vendors [Gonzalez et al., 2006]. Our study contributes to this research stream by examining specifically the communication practices found in our case study, then comparing and discussing these practices in the light of existing literature to highlight how the client–vendor relationships deliver long-term value. Through this comparison, this study explores communication issues and how the client succeeded in solving these issues by adopting techniques that fit the vendor culture.

To frame the communication practices proposed by our research, we draw on Ranganathan and Balaji's [2007] capabilities framework of practices (summarized in Table 1). Their capabilities framework offers a comprehensive set of themes related to offshore outsourcing activities which are well suited and strongly apply to our case study context. Thus, we organize our findings based on their themes to offer additional insights about the practices found in our research.

This article is organized as follows. First, we discuss our research methodology, followed by the discussion of our findings from a case study of a large multinational client's multiple vendor relationships performing offshore outsourcing of software testing projects. Based on our findings, we discuss communications issues and techniques. Finally, implications for theory and practice are discussed.

II. RESEARCH METHODOLOGY

We use a qualitative approach in gathering investigative case study data on offshore outsourcing. We apply qualitative data analysis techniques to identify communication practices in managing offshore vendor relationships. The research methodology follows a qualitative approach in gathering case study data in order to provide descriptive and explanatory insights into the management activities in offshore outsourcing. This approach has been used successfully in prior research [Pettigrew, 1990; Sutton, 1987] and allows us to induce a theoretical account of the activities found in empirical observations and analysis of client and vendor data. This approach is also known to lead to accurate and useful results by including an understanding of the contextual complexities of the environment in the research analysis and outcomes. Finally, this approach encourages an understanding of the holistic systematic view of the issues and circumstances of the situation being addressed, in this case the issues of managing offshore outsourcing from both client and vendor perspectives about their communication practices [Checkland, McDonald, and Harrison, 2007; Yin, 1989].

To identify the practices, we selected a large Fortune 500 organization, called *the Client* hereafter, known to have successful offshore outsourcing practices. The focus of our study is specific to the outsourcing relationship of the Client working with multiple offshore Indian vendors who provide software development services. The Client's employees perform a majority of the development work and contract multiple Indian vendor firms to perform software testing services of that code prior to its release. Much of the Client's software is developed in-house. The Client's internal development teams perform unit testing on their own code, then hand over the code to the Client's testing organization, which works with the offshore vendors to perform integration, system, and regression testing, with another Client development team performing final user acceptance testing. The Client has approximately 5,500 IT employees overall, with three high-level managers, fourteen middle-managers, and 149 full-time employees in the testing organization. The Client's software development team (including the testing organization) has four major

Table 1: Critical Capabilities in Offshore Outsourcing [Ranganathan and Balaji, 2007]

Outsourcing Capabilities	Examples
1. Systemic Thinking on Offshore Sourcing	
Capability to strategize	Involves establishing a direction for a firm's offshore sourcing efforts. Firms look beyond cost advantages and view offshore sourcing as a strategic opportunity.
Offshore readiness	A firm's ability to prepare its internal organization to undertake offshore activities. Effective companies conduct an orderly assessment of their internal IS activities, set realistic goals and gain buy-in from key stakeholders.
2. Global IS Vendor Management	
Vendor selection	Involves having a standard process for selecting offshore vendors using: (1) a systematic elimination of potential client-vendor mismatches, and (2) adequate information upfront about the offshore vendor.
Contract facilitation	Provides a mutually agreed upon platform that specifies a range of accepted behaviors. It is a firm's ability to design contractual agreements that align the expectations of both parties. It involves routines that aid in deciding whether to use a standard form or design a new one, the type of contract to be used, what to include in the contract, and the parties to be involved.
Relationship governance	A firm's ability to manage the relationship with the offshore vendor. To collaborate effectively, firms need to establish joint teams, task forces, and committees; hold periodic reviews and meetings to coordinate between the firms; assign onsite and offshore managers; institute mechanisms for shared decision making; and put in place formal conflict resolution systems that rely on two-way collaborative problem solving.
3. Global IS Resource Management	
Human resource management	A firm's capacity to identify, acquire, develop, and deploy internal and offshore personnel to achieve the sourcing goals. Effective firms create specific processes to identify and assess which offshore staff to use.
Knowledge management	A firm's ability to create, transfer, integrate, and leverage related knowledge across the firm and the offshore vendor. Two types of knowledge are common: technical knowledge about the systems, technologies, and tools; and business knowledge about the business processes, organizational functions, and the industry.
Distributed work management	To offset the lack of collocation and to ameliorate differences in time, space, and cultures among the team members, client firms need to develop routines to manage the distributed work. Successful firms introduced mechanisms focusing on managing distributed work.
4. IS Change Management	
Managing user-related change	Because work patterns of the business users change, many companies instituted practices and processes to alleviate user concerns.
Managing IS organizational change	Firms may downsize staff or re-scale their departments when they send work offshore.

local and global roll-outs of hundreds of new and updated software versions a year and employs three different Indian vendors to handle testing activities, one since 1999 (longest-term), a second since 2002 (medium-term), and a third one since 2007 (shortest-term). By using the case study approach and interview protocols, we were able to capture the composition of the client-vendor relationships, the history and background of players in the relationships, and the nature of practices used to foster successful outcomes from the client-vendor relationships.

We examined client satisfaction survey data to identify and support what constitutes a successful set of client-vendor relationships. These data were independently gathered by the Client's vendor management office, who administered the survey to the client managers responsible for working with the Indian offshore vendors at four time periods during 2007 and 2008. The Client has been working with Indian vendors for over ten years with both sides exhibiting considerable experience and knowledge about the practices needed to engage in offshore

outsourcing relationships. The data illustrates the current opinions of the Client toward three of the vendors included in this study which have been providing services for differing lengths of time. Selected relevant client satisfaction data was examined, as shown in Table 2.

The survey administered by the Client consisted of a set of questions capturing various relationship attributes. Managers completed the survey online and were strongly urged to participate in each survey and report honestly. We provide trend data on the average vendor scores provided by 129 responses over the four measurements spread out over a one-year period. Participants were client managers designated as a *project lead* for at least one project during the time that any of the four surveys were being conducted and were asked to provide ratings for each vendor with whom they were working at that time. A total of sixty different project manager-leads provided ratings during this effort. A majority (75 percent) of the participants had project-lead roles with multiple vendors. The question asked is provided and the scale represents scores that are based on the use of a six-point Likert-type scale ranging from 1 = Strongly Disagree to 6 = Strongly Agree. Therefore, a higher value represents greater client satisfaction.

Table 2: Client Satisfaction with Vendor Performance				
Ratings Topics	Period 1	Period 2	Period 3	Period 4
Vendor performs work activities on schedule.				
Longest-term Vendor	3.91	5.29	5.20	5.33
Medium-term Vendor	6.00	5.88	5.20	5.23
Shortest-term Vendor	3.80	5.08	4.61	5.03
Vendor provides timely knowledge transfer.				
Longest-term Vendor	3.85	4.48	5.40	5.33
Medium-term Vendor	3.00	5.00	4.20	4.45
Shortest-term Vendor	3.00	4.08	3.93	4.34
Vendor provides innovative ideas to improve work activities.				
Longest-term Vendor	3.97	4.38	4.80	5.00
Medium-term Vendor	4.83	5.19	5.30	5.35
Shortest-term Vendor	4.30	3.73	4.39	4.25
Overall Average per Period	4.07	4.79	4.78	4.92
NOTE: Client satisfaction is measured on a scale of 1–6 with 6 reflecting highly satisfied.				

Further review of the average scores for each vendor indicates significant improvement in client satisfaction scores from the first measurement to the final measurement, even though one vendor included in the measurement data had been involved for a short time. The numbers for the shortest-term vendor are expected to be lower since the two parties (client and vendor) have had less time to develop the level of communications that would be expected over a longer term after both sides have had time to adapt and gain a better understanding of each other’s cultures and methodologies. Other observations included: (1) The overall average per period scores were all greater than the 3.5 midpoint; (2) no individual scores were below the 3.5 midpoint after Period 1; (3) the overall average per period scores improved from barely above 4.0 in Period 1 to nearly 5.0 in Period 4; and (4) the large number of different project-lead raters participating in this process provides a high likelihood of representative client satisfaction data. These results confirm the Client’s effectiveness in developing improved communications capabilities in an offshore outsourcing environment and, therefore, a good source of data for this study.

Data Collection

The results reported in the present study are based on interviews with software testing personnel at the Client and their vendors. Our data gathering began with the creation of semi-structured interview protocols which comprised both closed and open-ended questions. To inform our interview question development, we reviewed documentation about the Client’s system development lifecycle, various system development process assets (i.e., standardized milestone forms and templates), and the general format of performance measurements used in the relationship between the Client and the vendors. The data collection methods employed focused on interviewees’ perspectives on offshore outsourcing issues, roles played by various stakeholders involved, and the relationship challenges between the Client and its vendors. Face-to-face interviews of approximately 1.5 hours were conducted with various

client and vendor testing stakeholders. The goal of these interviews was to identify and better understand the issues related to offshore outsourcing of software testing. These stakeholders included contract development managers at the macro-level, testing management at the micro-level, offshore vendor personnel, and other software development managers. In total, we interviewed fourteen stakeholders. Interviews were conducted between December 2006 and June 2007, with additional follow-up clarification Q&A sessions conducted over e-mail. Job descriptions of those interviewed are shown in Table 3.

Table 3: Job Descriptions of Interviewees

Title	Responsibility	Number Interviewed
Client Managed Resource Services Manager	Oversight and coordination of all the managed resource services.	1
Client Principal	Serves as lead liaison in evaluating business requirements against deliverables to ensure continual utilization of current best practices in software development quality assurance practices. Keeps current on industry quality assurance standards and practices. Works effectively in a strong customer service/team oriented environment to understand application flow and associated technical architecture components and dependencies. Mentors less senior staff. Reports directly to an IT officer.	1
Client Test Managing Director	Oversees testing managers.	1
Client Test Manager and IT Manager	Oversees staff consisting of full-time employees and vendors. Responsible for overall test planning, test design, and project management for major corporate projects across multiple workgroups. Team consists of Test Designer/Lead positions in support of large projects that could impact multiple operating companies. The job involves representing testing in teams composed of business and IT representatives; working with various test teams; creating test design deliverables (test plan, test scenarios, test cases, test data, etc.) for the projects and leading the testing efforts during the development lifecycle.	4 and 2
Client Test Lead	Under limited supervision, collaborates with other IT teams, architects, and business partners to help evaluate current best practices in software development quality assurance practices. Successfully influences test development through technical guidance and direction setting. Provides leadership for the testing solutions used in delivering world-class technologies and products. Analyzes and resolves problems of high complexity.	1
Offshore Vendor Delivery Manager	Project manager for the testing engagement of onsite testing resources and deliverables.	1
Offshore Vendor Test Lead	Management of test planning and analysis, test design, test execution, status reporting.	1
Client Development Manager	Oversees staff consisting of full-time employees and vendors. Responsible for overall development management of major corporate projects across multiple workgroups.	2
	Total Interviewed	14

By collecting and triangulating data across a variety of methods and from a variety of stakeholders, we were able to develop robust results because of the multiple perspectives we gained about the offshore outsourcing issues in software testing. This approach provides in-depth information on emerging concepts, and allows cross-checking the information to substantiate the findings [Eisenhardt, 1989; Glaser and Strauss, 1967; Pettigrew, 1990].

III. RESULTS: COMMUNICATION PRACTICES USED AT THE CLIENT

The purpose of this study is to develop a set of communication practices based on a case study of a large multinational client's relationships with multiple offshore vendors of software testing services. To achieve our goal, we categorized practices identified through our data analysis in four main themes drawn from the capabilities framework [Ranganathan and Balaji, 2007] to allow for a comparison of the Client's experiences from our case study

to a current framework provided in the literature. See Table 4 for a summary of these practices. Selected direct quotes for each practice are provided in the Appendix.

Theme 1: Systemic Thinking on Offshore Sourcing

The first theme in the capabilities framework is Systemic Thinking on Offshore Sourcing [Ranganathan and Balaji, 2007]. This capability involves “identifying a desired state, assessing the current state, and then navigating the path between them” [Ranganathan and Balaji, 2007, p. 149]. Organizations that succeed in offshore outsourcing examine the connections between their system development practices and suitable sourcing options, including the employment of offshore vendors. Within this theme, we offer the first practice from our case study.

Practice 1: Creating an Offshoring Strategy with Cost-Benefit Analysis

Though a key factor for moving tasks offshore is the cost savings, other benefits of offshore outsourcing are speed to market, lower costs, well-trained work force, and a willingness of offshore vendor employees to do the level of effort needed to get the job completed. Even though cost-saving is often a major driver of offshoring, the loss of knowledge of how the tasks get executed and the hidden cost of contracting and managing vendors may reduce the cost savings. For example, multiple client managers explained that extra costs occur to support the following activities: restructuring development and testing processes to fit vendor needs, supporting changes in technology and connectivity with the vendor, transferring knowledge about the business context, traveling to the vendor location, allocating overhead for governance activities, and mitigating risks through disaster recovery for vendor activities. A majority of these costs were noted to be a direct result of increased attention to support communications for managing these activities with offshore vendor relationships.

Offshore outsourcing makes it increasingly necessary for employees of the Client to monitor vendors’ efforts. A key communication practice commented on by one client manager is the need to shift from managing the work performed internally to managing vendors, where more effort in monitoring and communications was required. He explained that this involves daily phone calls with vendor teams, and, when topics arise that he doesn’t understand, he asks the teams to put it in an e-mail message because certain topics are better suited for text-based explanation. This also involves daily metric reports on measures that have been created to track progress to software testing goals. The purpose is to create clear communication channels for project goals, knowledge transfer to/from the vendor, and client expectations of work performance, as well as additional communication channels for setting up infrastructure and disaster recovery plans. These communication efforts relate to the systemic thinking in understanding where testing projects are headed and what communication strategies are needed to maintain successful communication channels and reporting activities.

Theme 2: Global Information Systems Vendor Management

The second theme in the capabilities framework [Ranganathan and Balaji, 2007] is Global Information Systems Vendor Management. This capability involves “finding, developing, and managing an offshore vendor” relationship [Ranganathan and Balaji, 2007, p. 151]. Organizations that succeed in offshore outsourcing can skillfully identify partnering opportunities and implement the mechanisms to effectively coordinate the relationships. We discuss two practices that the Client employed to achieve this capability.

Practice 2: Focusing on Contracting with Vendors

This practice involves the need for macro-level contracting with vendors, which includes creating a macro-level governance-type agreement between client and the vendor. One purpose of this agreement is to foster communications of each party’s expectations in the relationship. The client contract manager suggested that while a micro-level statement of work can detail the tasks to be accomplished and set specific service levels for a specific job, the macro-level agreement clearly defines issues such as privacy, ownership, pricing, remedy, risk of loss, and provisions for the statement of work. A separate centralized vendor management office negotiates and manages these macro-level agreements in an effort to make the best use of resources and reduce redundancies related to contract negotiations. The macro-level agreement results in a list of vendors who are pre-authorized and pre-approved for managers throughout the organization to negotiate with for their specific work. Use of a pre-authorized short list of vendors helps in cost negotiations, as selected vendors can expect enough business to be able to reduce their rates. Furthermore, the Client’s centralized vendor management office can perform vendor audits, monitor vendor performance, track contract defaults, compare vendor cost and pricing structures, and ensure that information security requirements are being followed by the vendor.

As part of the contracting process, another method of fostering communications between client and vendor is through a statement of work to clarify the tasks to be accomplished for a particular job. The vendor works with the Client to create the statement of work, with both parties agreeing on the content before it is signed off on and given to each party’s legal department. This document specifies the information flows, the people involved in



communicating about the work efforts, as well as their relationships and reporting structures. The statement of work specifies how the activities are split into meaningful chunks; which chunks are the vendor's responsibilities; how the Client will hold the vendor responsible for meeting development criteria and standards; the ways to measure, track and report progress; and how corrective actions will be implemented.

The offshore vendor delivery manager and a test manager caution that there is a need to match the macro-level agreements and the micro-level statements of work with the actual work environment that is occurring. For example, the contract does not match the environment when there is a fixed-price contract and set statement of work that does not allow for increases in the amount of work being accomplished. The Client may need more tasks to be performed, but the contract is set at a fixed price, with the vendor possibly doing the extra work in order to maintain the relationship with the Client. Without this work explicitly being stated in the contract or in a change order, it goes unrecorded. Communication outside the contract terms becomes critical to ensure the work is completed properly where the vendor team must be flexible and able to adapt to changes in the work demands as they surface.

Practice 3: Establishing Expectations of Vendor Performance

The test managing director, who has many years of experience working with vendors for software testing, acknowledged that the Client sometimes demands a lot from their vendors at a fixed cost. The Client may also ask vendors to find ways to reduce these costs. The Client has had to change expectations and change what gets done in order to meet the goal of reducing the testing cycle time. For example, one test lead stated that the Client may encourage the vendor to find ways to run fewer tests. Clients and vendors need to work together to do better testing at lower cost. Here effective communication is vital to a smooth working process. Client and vendor employees use multiple means of communications such as daily status reports, weekly phone calls, and discussions with onsite vendor staff to enable smooth communications regarding vendor performance expectations. While these communication means were successful, we observed that the use of these means was inconsistent from manager to manager, producing mixed results regarding vendor performance satisfaction. More success will occur when the vendors are treated as partners in this effort and are assured that getting the job completed faster typically results in more contracts for the vendor overall.

Theme 3: Global Information Systems Resource Management

The third theme in the capabilities framework is Global Information Systems Resource Management [Ranganathan and Balaji, 2007]. This capability involves the need to integrate the Client's own information systems "resources with the offshore vendors' resources, and leverage the combination" [Ranganathan and Balaji, 2007, p. 154]. Within this theme, we discuss four practices that we identified from our case study.

Practice 4: Establishing Guidelines for Management of Vendors as Resources

One of the major challenges of working with offshore vendors is for the Client to develop vendor management and interaction roles, which involves many activities to support adequate communications. The Client test manager explained that someone at the Client organization must coordinate the activities with vendors and stay in touch with them. For example, a vendor test lead should report to a Client employee test lead. The Client employee could have two or three onsite vendor representatives with multiple products and multiple releases being worked on. Client managers must ensure that the Client employee has the bandwidth to check all the vendor outputs and deliverables. As the number of vendors and onsite vendor employees working for the Client grows, it becomes more difficult to keep an adequate span of control of the offshore vendor employees. Increasing vendor involvement creates more overhead costs for the Client in monitoring and controlling the job.

The offshore vendor delivery manager explained that another important factor to ensure adequate communication and knowledge transfer is to have a full-time Client employee presence at the vendor location, which brings visibility to the work processes. If a full-time presence is not possible, doing site visits routinely can be informative. One test manager suggested that even if the vendor appears to be delivering quality services, onsite visits are needed to see the morale, conditions, and other issues. Given the complexity of the activities performed in software testing, face-to-face interaction is required at some level. Direct interactions and discussions between client and vendor are factors that are important for successful outsourcing. Also, it is important for the Client managers to share their appreciation for vendor employees' efforts.

The testing managing director stated that a client must trust but verify what the vendor says about the work status. To accomplish this, the Client and vendor use the same testing tools to allow the Client to review the timestamps of the test cases that are executed. If the tests are accessed from offshore but run onsite, the Client can monitor the tasks performed. In other cases, the vendor uses tools offshore and then uploads the results to the Client's system. On such occasions, knowing the tasks were completed is a matter of trust between vendor and client.

Vendors need to understand what to do as well as why the job is being performed. The relationship between vendor and the Client works more smoothly if the Client says what is happening and the reason for any changes in direction. In software testing, if the Client just gives the vendor the test cases and asks to execute them, not much communication is needed. But if the Client wants the vendor to understand the application and perform value-added work, communication needs are higher so that the vendor understands what is documented, what is not known about the application, what interfaces are there, and with whom they should communicate to get these answers.

Another important communication point offered by one Client test manager is to help vendors prioritize the tasks. In software testing the workload varies and the Client must let the vendor know changes in priorities. The Client must daily redirect the order of the tasks being accomplished. The Client must prioritize the activities for vendors so if they hit a roadblock, they do not stop working altogether. Prioritizing the work allows vendors to move on with the next project activity.

Given these complexities in the Client and vendor relationship, the Client development manager explained that starting work with a new vendor poses several challenges. When a new vendor is brought onboard, it is beneficial initially to have a heavy onsite vendor employee presence to resolve communication and knowledge transition issues. Also, vendor training is needed onsite to allow for knowledge transfer. Such knowledge transfer may include understanding of the Client's execution processes, validation methods, measurement systems, and technical tools. Such training is best handled at the Client's site. It typically takes one software release cycle for the vendor employees to really understand what is done at the Client's operations and be fully effective.

Practice 5: Learning from Cultural and Geographical Distance Issues

Offshore outsourcing adds complexity and barriers to getting the work done satisfactorily and several communication challenges need to be addressed. For example, if a vendor employee makes a mistake and does not inform the Client, the Client will eventually discover that a mistake has been made, but at a much later point in time. One Client test manager explained that this is a cultural issue, as people in the U.S. are more open to reporting mistakes, while in Asia the culture does not support admitting mistakes. Another Client test manager explained that another cultural difference between India and the U.S. involves the ability to say "no." People in India tend to say "yes," but they may not mean it, so clients need to be very specific and persistent in setting expectations. To ensure successful communications, clients must routinely follow up with vendors. Other issues that were identified through our interviews involve intermittent work outages because of local issues such as political unrest. Also, offshore vendors take days off on holidays celebrated by both the Client's and vendor's countries.

One test manager suggested that if work is performed at the Client's site, managers can see what is being completed and manage what resources are performing what tasks. If the work is performed offshore, managers are removed from what is being completed and lack the ability to visually monitor and manage the work. With deliverables-based contracting, the focus is on the outcomes of vendor activities and not the vendor's staffing and work processes. Thus the Client must trust the vendor to get the job done.

The Client test managing director suggested that the Indian culture (or the contract) does not reward innovativeness. He suggested that Indian vendors are not naturally innovative because their history and culture does not have a reward structure for this. If something requires creative thinking and/or creative troubleshooting, it can be more difficult for the vendor to solve. This makes it difficult to get improvement ideas from vendors on how to do software testing better.

Another issue in working with offshore vendors is time zone differences. However, one Client IT manager stated that global companies already face similar issues with their own internal offices communicating worldwide. It becomes difficult to reach the people you need to reach when they are dispersed globally. Video conferencing is very difficult because of different time zones. For smooth work transitions, there needs to be strong communication so that the offshore vendor employees adjust their time schedule with the onshore client and vendor employees before handing off the work and vice versa. To properly coordinate these efforts, phone calls are made every day and night.

The Client test managing director explained that Indian vendors have better processes than U.S. vendors. The Client explained that the Indian vendors may not be great at coming up with innovative ideas, but that they are great engineers and can take processes and refine them to maximize their efficiency. The Client explained that Indian vendors can streamline processes and drive out the inefficiencies. To achieve the greatest efficiencies possible, open communication among the Client and vendor employees throughout the work processes is vital.

Practice 6: Acknowledging Management Within the Vendor Company

Clients can contract with one vendor, but if the vendor has a high turnover rate, it introduces problems. For example, a vendor employee who has worked with a vendor company on a specific client contract for a long time learns to

understand the Client's culture for quality, reliability, and productivity. When he/she leaves the vendor organization, they take that knowledge with them. This is not a quality but a stability issue. The offshore vendor test lead pointed out that, due to the considerable number of growth opportunities in India, their (i.e., vendor's) resources move around, leading to high turnover.

There was overwhelming consensus among the interviewees about having a vendor representative at the Client site who can coordinate and manage the onshore-offshore communication efforts to avoid miscommunication. These onsite representatives generally perform the role of either a test lead or a test manager. These onsite vendor representatives ensure that information given to the offshore employees is followed correctly and that the work actually gets completed. The onsite vendor representative creates the documents and checklists for the roles of each offshore project team member. The onsite vendor employee has to know how to communicate with both onsite and offshore team members by using Web conferencing, e-mail, and phone communications. Typically one onsite vendor representative may cover four or five projects that are going on at a client site. He/she handles the nighttime conference calls with the offshore team members and offers a single point of contact for the onsite client employees. The onsite vendor employee expedites the process of communicating with offshore teams to save time. Without such onsite vendor representatives, there are higher chances of communication failures as communication gaps are introduced when the work is sent offshore. The onsite vendor employee must have a strong ability to explain technical matters and must have knowledge about the Client's operations. Another critical reason for a vendor representative to remain at the Client site is that it gives the vendor access to certain systems onshore that are not available offshore.

A vendor test lead spends a lot of time interacting with folks from the business side of the Client's operations, for example, taking time away from coordinating the actual work being performed by the vendor's offshore staff. But coordinating is still a required task, and there are tasks that involve working with other Client people during the day. While some amount of onsite presence is required, the Client test managing director stated that the right number of onsite vendor employees to achieve the balanced communication and coordination efforts is not entirely clear.

Managing inter-vendor relationships was noted as a critical aspect of working with multiple vendors. First Client managers cited the need to encourage visible information flows to induce competition among vendors resulting in better service quality and lower pricing. Furthermore, Client managers attempted to eliminate finger pointing for problem areas among the vendors by holding open table meetings with all parties in attendance. Through open communications, Client managers encouraged a more collaborative and yet competitive work environment which improved the software testing outcomes.

Practice 7: Determining What Work to Send Offshore

One Client test manager stated that intellectual property, including highly critical testing activities that may expose the Client's proprietary knowledge or decisions that could affect the Client, should not be sent to an offshore vendor. Most of the testing leadership should stay in house although the vendor needs to assume some leadership as well. Test execution and validation and regression are easy tasks to send offshore.

One Client test manager interviewed said that testing strategies, frameworks, and methodologies used should remain in house. Requirements determination should not be sent offshore. Requirements analysts must be collocated with their business customers (end users), as well as other aspects of operations, such as operations support, help desk tier 1 (i.e., where they open the problem log and includes the first level of analysis), but not help desk tier 2 (i.e., deeper research to solve the problem). Examples of test tasks that are outsourced include test designs, test cases, test scenarios, test case execution entry, scripting, test validation (pass/fail), validation, and load test, among several others.

Anything of high complexity, which arises primarily from the number of systems as well as the communication and coordination across the different systems, should not be sent offshore. The Client development manager suggested that immature products with substantial feature creep should not be sent offshore. Immature, chaotic, new development, multi-development teams, late requirements, changing requirements—none of these should be sent offshore. If the task requires creative thinking and creative troubleshooting, it is more difficult to send it offshore. This manager further suggested that offshore outsourcing of complex work requires more effort on the Client side to communicate and coordinate the effort, leading to more opportunities for failure, especially in a new relationship.

To determine what to send offshore, certain functions are easy to send—the rule is that anything in operations, things that are repeatable, make excellent candidates for sending to an offshore vendor. For example, work that is stable, mature, and calls for simple efforts can be sent offshore successfully. If it is something that is routine, day-to-day activities that are manageable by offshore or onsite presence, it can be sent offshore. New projects are better to keep onshore initially, then sent offshore when it goes to a new version or release.

Client management believes the vendor can develop test cases or test plans given specific requirements, and all of this should be executed offshore. These tasks tend to be easy to monitor and have definable units of work. Offshore vendors could even unit test if needed. Test design changes need to be done onshore, and new functionality needs to be maintained onshore. Vendor test leads monitor activities, share methods and frameworks with the Client, and participate in business requirements and development meetings. The Client periodically goes through all roles of its own employees and decides if that role is eligible to go to an offshore vendor or stay onsite. Also, outsourced roles get revisited on a regular basis to see if those roles would be better performed in-house.

Practice 8: Solving Technology Infrastructure Issues

The Client's test managers suggested that setting up the working technology infrastructure can perhaps become a critical issue. Infrastructure issues can delay completion of offshored work. Client employees must help the vendor figure out infrastructure issues. Sometimes it is difficult to determine if it is a vendor problem or a Client problem. Even more challenging is that with offshore locations, the Client cannot send their employees over to the vendor site as frequently to help figure out the problems. The Client relies on e-mails, trouble tickets, and phone calls going back and forth, but communication gaps slow down the process. There can be an infinite number of variables causing the infrastructure to malfunction, including software that the vendor installs or the number of hot patches on their operating system. In order to put together the infrastructure, Client employees need to be able to access the vendor's technology environment at times.

The test managers also highlighted information security issues that present major challenges. To work together, the Client needs to transfer information to and from the vendors, they need to send e-mails back and forth, or they need to provide access to the vendors on secure FTP sites. However, there are many information security requirements that govern these information exchanges, making it difficult to work efficiently and effectively. It takes administrative time and immense face-to-face communication to iron out these issues.

Firewall issues and permissions rules also inhibit the ability to set up connectivity between the vendor and Client. Certain technology access is only available at the Client site, sometimes only in certain onsite rooms. For example, certain technology access is granted only in Client technology labs. Additional restrictions to technology apply for the vendor's offsite offices. Each location may have different technology access requirements, further complicating IT infrastructure setup.

Theme 4: Information Systems Change Management

The fourth theme in the capabilities framework is Information Systems Change Management [Ranganathan and Balaji, 2007]. This capability grapples with the fact that offshore outsourcing "disrupts existing work practices, interactions, and communication patterns in client companies" [Ranganathan and Balaji, 2007, p. 156]. Organizations that succeed in offshore outsourcing adopt change management systems to manage the changes introduced by offshore outsourcing. Within this theme, we offer the following practice from our case study.

Practice 9: Managing Daily Work Issues

To gain the benefits of offshore outsourcing, much of the work is performed offshore in remote locations where the client managers cannot oversee the activities and the level of effort involved. However, client managers need the ability to monitor and manage the work efforts. Several managers adopted status reporting and/or implemented electronic monitoring schemes. Regardless of the method used, managers were adamant that vendor contracts should provide for the effective monitoring of work in order for Client managers to have the ability to review progress in a timely fashion and react to issues accordingly.

IV. CONCLUSIONS AND IMPLICATIONS

In this research, we gathered and analyzed interview data from a large Fortune 500 company on its relationship with multiple vendors performing software testing services. This article used the themes of the capabilities framework [Ranganathan and Balaji, 2007] to organize discussion about the various communications practices that emerged from this analysis. The findings offer insights about systemic thinking of offshore outsourcing (Creating an Offshoring Strategy with Cost-Benefit Analysis), global information system vendor management (Focusing on Contracting with Vendors and Establishing Expectations of Vendor Performance), global information systems resource management (Establishing Guidelines for Management of Vendors as Resources, Learning from Cultural and Geographical Distance Issues, Acknowledging Management within the Vendor Company, Determining What Work to Send Offshore, and Solving Technology Infrastructure Issues), and information systems change management (Managing Daily Work Issues).

As a result of the comparison of the main topics/themes from the literature to the findings from our case study, we explored the communication issues and how the Client succeeded in solving these issues by adopting techniques

that fit the vendor culture. Illustrated in Table 3, each practice deployed by the Client involves steps to improve their communications with their vendors. Communications issues as a focus is not widely addressed in the literature and deserves more research attention. An initial list of communication practices that emerged from our study is summarized in Table 4.

Table 4: Communications Framework for Client–Vendor Relationships in Successful Software Testing

Theme 1: Systemic Thinking on Offshore Sourcing

Practice 1: Creating an Offshoring Strategy with Cost-Benefit Analysis

- Attention to interactions is needed to achieve benefits to cost savings, speed to market, lower costs, and well-trained work force, include a willingness to do the level of work needed to get the job finished
- Awareness of cost of losing knowledge of how the work gets completed and the cost of contracting, monitoring, and managing vendors

Theme 2: Global Information Systems Vendor Management

Practice 2: Focusing on Contracting with Vendors

- Macro-level contracting with vendors, e.g., a high-level governance-type agreement
- Work detail of the tasks to be accomplished, e.g., statement of work
- Centralized vendor management office
- Agreements and the statements of work match with the work environment

Practice 3: Establishing Expectations of Vendor Performance

- May demand a lot from the vendors, e.g., asking for more work at a fixed cost and to find ways to reduce these costs further
- Clients and vendors working together to do better work at lower cost

Theme 3: Global Information Systems Resource Management

Practice 4: Establishing Guidelines for Management of Vendors as Resources

- Someone at the client organization coordinating the work with vendors
- Client trusting but verifying what the vendor says about the work status
- Increasing vendor work resulting in more difficulty in control of vendor employees
- Increasing vendor work creating more overhead costs in monitoring and controlling the work
- Knowledge of the work effort residing with the vendor
- Need for client presence at vendor location to ensure communication and knowledge transfer
- Face-to-face interaction required
- Vendors need for understanding of what to do, why the work is being performed, and how to prioritize the work
- Start-up challenges with a new vendor who is expected to initially have a heavy onsite presence to perform communication and knowledge transition

Practice 5: Learning from Cultural and Geographical Distance Issues

- If mistakes occur and not communicated, the client will eventually discover that a mistake has been made, but at a much later point in time
- Cultural issues exist where the Indian culture does not support admitting mistakes
- Cultural issues exist also where in the Indian culture, people tend to say, but not mean “yes”
- With offshore work, managers cannot see the work being performed at the vendor’s site and manage what resources are performing what tasks
- Legal rules for working with vendors include the need for work to be performed offsite, separate work spaces for vendors, and not treating vendors as client employees
- Offshore issues also involve intermittent work outages because of political unrest and taking all holidays celebrated on both sides

- The Indian culture (or the contract) may not reward innovativeness
- Time zone differences may cause communication timing challenges

Practice 6: Acknowledging Management Within the Vendor Company

- Vendor employee turnover problematic because a vendor employee who has worked on a specific client contract for a long time learns to understand the client's culture
- Vendor representative onsite to coordinate the work and mitigate miscommunications
- Managing inter-vendor relationships

Practice 7: Determining What Work to Send Offshore

- Intellectual property including highly critical testing activities should not be sent offshore
- Anything of high complexity, e.g., where there are a large number of systems involved, should not be sent offshore
- Immature, chaotic, new development, multi-development teams, late requirements, changing requirements should not be sent offshore
- Difficult to send tasks requiring creative thinking offshore
- Work strategies, frameworks, and methodologies used should not be sent offshore
- Need to have a periodic evaluation where all employees go through all work roles and decide what is eligible to go offshore and go through outsourced roles to see if they should come back onshore

Practice 8: Solving Technology Infrastructure Issues

- Problems in setting up the working technology infrastructure may delay getting the work completed
- Information security, e.g., firewall issues and permissions rules, may inhibit the ability to set up connectivity between the vendor and client

Theme 4: Information Systems Change Management

Practice 9: Managing Daily Work Issues

- Vendor contracts should allow clients to see tests run (i.e., work performed) onshore as well as offshore to monitor work

Implications for Researchers and Practitioners

The findings of this study offer several important theoretical implications. A major contribution of this study is the identification of nine communication practices which highlight activities to improve client–vendor communications. These practices primarily involve communication issues and how the Client succeeded in solving these issues through adopting certain techniques that fit the culture of the software testing vendors. While prior research has established numerous generally accepted best practices, guidelines, and frameworks, few studies focus on highlighting the importance of establishing adequate communication practices across all critical capabilities in order to mitigate client–vendor problems. Future research is needed to identify where individual communication techniques work best and the complementary activities needed to promote their successful adoption and how these techniques change in offshore outsourcing with services not involving software testing.

For the most part, prior studies in offshore outsourcing have not specified what is being outsourced and whether the nature of the client–vendor relationship and communication practices change based on what is being outsourced. In this research, we found task-specific issues depend on the client–vendor relationship for the management of software testing in a global environment that includes offshore vendors. The practices presented in this article are specific regarding how to manage such offshore outsourcing relationships. Our findings suggest that different activities that comprise the software development lifecycle require varying kinds of involvements (e.g., varying degrees of collaboration, coordination, etc.) from diverse group of stakeholders (e.g., marketing, development, and testing groups), and these activities must be examined jointly. Future research is needed to examine the differences in how the management of offshore outsourcing relationships changes across the activities of the development lifecycle and across different stakeholder groups.

Also few studies make the distinction between onshore, near-shore, and offshore outsourcing. For example, Gopal et al. [2003] identify determinants of contract choice from the vendor perspective in an offshore outsourcing

relationship and implications of the contract choice on project profits. Our findings support the belief that such distinction is necessary. Several communication practices presented in this study are specific to offshore outsourcing and highlight differences in the client–vendor relationship when the vendor is onshore versus offshore. Factors such as physical distance between client and the vendors have tremendous influence on collaboration and coordination practices followed by the involved parties, and hence the outcome. Additional research is needed to examine other aspects of the vendor–client relationship and which communication practices lead to more or less successful working relationships.

Given the complexity of the relationship between the Client and their offshore vendors, these findings suggest both social and technological aspects of offshore outsourcing are important. Consistent with the socio-technical systems (STS) perspective, offshore outsourcing is made of a social subsystem (client and vendor employees) using the technical subsystem (software testing tools, techniques, and knowledge) to develop and release systems valued by the environmental subsystem (business employees and customers). The success of the vendor–client relationship and communication practices depends on the compatibility among its three subsystems [Fox, 1995]. Furthermore, decisions made about one subsystem affect the other subsystems, because decisions that are optimal for one may not be optimal for another, and compromises are often required [Grant et al., 1991]. Future research is needed to explore how the interactions of changes in one subsystem influence changes in the other subsystems in offshore outsourcing.

The findings of this study also offer several important practitioner implications for managers contemplating offshore outsourcing. Guidelines exist for offshore outsourcing [McCarthy et al., 2004], but few offer insights into the daily operations of communicating and maintaining the client–vendor relationship and especially for system testing issues. This study provides best-practice suggestions to inform those considering or currently working with offshore vendors, especially in software testing. Furthermore, a checklist of those ideas listed in the specific software testing practices (Managing Daily Work Issues and Determining What Work to Send Offshore) could be used by vendors to ensure the activities are being performed in the most efficient and effective manner possible.

Limitations

The findings above and implications provided for practice and research must be viewed in light of some limitations of our research. First, consistent with the case study research approach, our findings are based on one large multinational client's relationship with multiple vendors in India performing offshore outsourcing of software testing projects, which limits the generalizability of our findings. The findings of this study may be limited to companies of similar size and industry as the firm studied herein, and may be further limited to offshore outsourcing of software testing activities alone. Moreover, this study is limited to examining relationships between a client and its Indian vendors. Communication issues could be different with offshore vendors in other countries. However, interesting lessons learned from this study contribute to our knowledgebase about client–vendor relationships in offshore outsourcing, namely the importance of using multiple communications practices across various offshore outsourcing themes. Nonetheless, future research needs to sample more heterogeneous sets of companies that depend on outsourcing with vendors from different countries during various software development stages to determine what boundary conditions exist.

Like much of the prior research in the literature, this study focused primarily on the client perspective with limited insights into the vendor perspective. Thus, we have a limited understanding of the mechanisms used by vendors to improve and sustain client–vendor relationship, especially in the software testing services arena. Future research should study successful practices from the vendor perspective as well.

In summary, offshore outsourcing continues to expand. Within the context of software development, this study focused on offshore outsourcing paying special attention to the nature of what is being outsourced and whether it has any impact on client–vendor relationships and communication practices. This study has also paid attention to the challenges brought by offshore outsourcing and found that many of the practices used by clients involved techniques to improve the communications between the Client and its vendors. Although we have understood the importance of communication for many years, this study identified specific examples of implementations of better communication techniques in offshore outsourcing, offering several implications for theory and practice.

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APPENDIX. SELECTED DIRECT QUOTES BY INTERVIEWEES

NOTE: All quotes are from Client Management except where noted.

Theme 1: Systemic Thinking on Offshore Sourcing

Practice 1: Creating an Offshoring Strategy with Cost-Benefit Analysis

“Indian vendors have a pool of people available from which [they] can ramp up and down. If [they] need to hire today, [they] can hire [skilled technical people] in India.”

“We have offshored more and more work because we cannot increase our [in-house employee count]. We have too much work to do and at this point we have to say ‘just do the work’ to the vendor. We do not verify their work enough, and we lose the intellectual knowledge of how this work is done.”

Theme 2: Global Information Systems Vendor Management

Practice 2: Focusing on Contracting with Vendors

Vendor states, “The way the contract is structured should support the environment. That is, if it is a dynamic environment, the contract should reflect it or if it is a static environment, the contract should be rigid in order to get maximum cost value ... [We need to] not try to make a predictable contract for an unpredictable environment. If the [work] identified is unpredictable, the contract should be flexible....”

Practice 3: Establishing Expectations of Vendor Performance

“The vendor representative gets pressure not only from the client but from their own vendor management team. So the vendor representative has got double pressure.... This leads to a situation where the vendor representative does not say no to client requests and may not inform their own management team. For example, they know we will ask for more [work] but ask them to price it so it is work for two standard people, but they have more than that rotate on to get all the work done.”

Theme 3: Global Information Systems Resource Management

Practice 4: Establishing Guidelines for Management of Vendors as Resources

“... I am always used to saying, ‘Okay. I know my people. I know their skill sets. I know that this has to be done by tomorrow, and it is Thursday. So I need these two focused on this. One does this. And we all make our deadlines.’ So I cannot do that with offshoring. I cannot tell them what to do.... It is part of the control thing, I am sure Is there anybody offshore or is there anybody there?”

“With vendors, we must make sure processes are very clear. Vendors must do status reporting, and tracking must be solid. Yet we often times get dilution of their problems and don’t know what is going on until there are fires to put out.”

Practice 5: Learning from Cultural and Distance Issues

“The culture [in India] is such that they do not like to displease. So I will say, and I have to teach [this to] everyone that I work with that ‘please tell me, let me know; if you really cannot do that, please tell me. It is nothing personal. I am not going to get upset. I will get upset Tuesday if you come to me at 4:30 and say I cannot do it.’ ... it is very very hard to get them to tell me that they cannot do anything. Even with the account executives here, he will say, ‘if they [offshore firm] ever say we will try, take that as NO.’”

“They [a vendor in India] won’t escalate. They just refuse. And you can tell them over and over ‘escalate this, escalate this.’ You can tell them over and over ‘enter a defect, enter a defect’ and they just hate to enter a defect because someone is going to get mad. I mean they just know. But you’ve got to escalate. Well, we can do this, but they won’t escalate. They just will not escalate.”

“When visiting the vendor in India, people would constantly come in the door, and the actual testers would introduce themselves and give me ideas and tell me about the problems and the challenges, but they did not want me to share that with their management chain because they had to follow the hierarchy.”

“I do have [vendor] people onsite and I do have people offshore. And there are certain things I can ask my employees to do that I cannot ask the vendor to do. There are certain things I cannot ask them, I need your cell phone number because I might have to call you this weekend. You know I cannot ask for that. They could volunteer that, but I cannot ask that And I know when they get married, I get to see their pictures, you know and we tease them They are employees to me. I don’t view them differently.”

“You are hoping, yes, that the vendor wants to retain this contract, and yes they do..., but this vendor



person, based upon what legal says, can be here only for three years and then the person has got to go somewhere else....”

Practice 6: Acknowledging Management Within the Vendor Company

Vendor states, “It is tough to keep one person in one company. In India, we have an attrition problem.... There are probably 50–60 software companies in India so our people can leave for another company anytime... I make sure my team finds a way to keep good people by giving them challenging work. I identify the best resources (i.e., people) on a project. To keep them, I provide them challenges and every year a nice bonus. I appreciate them through recognizing them, giving them awards, putting them on a star team, etc. I give them performance advice and really monitor against that advice.”

“In India, project management is a weakness, if you do find good ones, stay with them. It is the interface points (hand-offs) which are sticking points... [this person] handles all transitions of work to those working offshore and it may take time for them to get good at doing the work.”

Vendor states, “Before leaving India, test leads get trained about country communications.... When we land in the U.S., we learn through experience what are the U.S. ethics and communication manners; we get special training for U.S. communications.”

Vendor states, “If the contract says to do this, and we still have to deliver and make sure [the client] is happy, or else we miss the next contact. We need to fulfill this contract in such a way that we get the next one. That is where the catch is. If I miss the next contract, I have to go home.... Every time I take a position, I take one not only what [the client] wants but to get the next contract. Same for my guys. Nobody likes to go home from the U.S. because the contract is over.”

“Vendors do have a little more technical expertise than my employee base.”

“Six times I have been to India. They are not great innovators, but they are great engineers, they take processes and refine them completely, they are better than us in this area.”

“Finger outsourcing means just outsourcing the labor to do a piece of work. In the next level, you ask them to write the write test cases which mean you understand the application, you write the test cases, so you determine what are the right test cases to write, then execute them and give me the results. That is the higher level of outsourcing. In software testing, finger outsourcing does not work well. For example, if you supply test cases to a vendor and you say execute these and give it to me by so and so time, it is very tough and [it] does not succeed ... where they don’t do good outsourcing, you find just execution is done by the vendor.”

“If you are selecting a vendor to work with and you have 2 equal vendors, how do you decide? You go with your history with them, base it on past relation with the vendor.”

Practice 7: Determining What Work to Send Offshore

“It is easier to work in that chaos with a local vendor. Immature, chaotic, new development, multi-development teams, later requirements, changing requirements, none of these should be sent offshore. If the task requires creative thinking and creative trouble shooting, it is more difficult to send offshore.”

“I send to India what I [can] easily separate form other work and what is routine functionality In testing we ask for process improvement, we say develop tests given specific requirement, and all of this should be done offshore. It is easy to monitor and has excellent definable units of work. Vendors could even unit test if needed.”

“In the next level, you ask them to write the write test cases which mean you understand the application, you write the test cases, so you determine what are the right test cases to write, then execute them and give me the results. That is the higher level of outsourcing. If you involve them with the next level, you expect them to understand the application and then you expect them to come up with the right sort of test cases. You expect them to take the responsibility of what to test and what not to test. We are at the level where we are capable of taking role as test lead. [The client] testing involves speak as an employee does. Some cases there is oversight because [the client] wants control. Some cases [require] little oversight and we can do it all. I don’t see any reason why the vendor cannot do that work. The vendor has same amount of knowledge, exposure, and experience on products.”

“I know this is too much control, and providing too much intellectual property to the vendor, but because of our limited resources we can’t do it all.... Work has to go to the vendors because [client] employees are overloaded, with 36 applications to support, we can’t go to all the walk-throughs and deliver all the [releases].”



Practice 8: Solving Technology Infrastructure Issues

“The network infrastructure critical. It could delay the project if this is not set up correctly.”

“If the vendor is just down the street, you work through things in a couple of days and move right over to their site, and we help them figure out [that] their network is not punched down. But with my offshore team, it has been three months, and I still cannot get them on the secure FTP site. I cannot figure out if it is their problem or my problem. I cannot just send someone over there to help them figure it out. We are relying on e-mail going back and forth, trouble tickets going back and forth, phone calls and communication challenges. It has been 3 months”

“You have to get software to and from the vendors. We have a slew of information security rules, thanks to SOX and other new processes, so there are a lot of e-mails going back and forth with vendor e-mail addresses being changed. This all causes problems for our information security team.”

“Our offshore partners establish information security procedures to meet our needs. These vendors knew that to do business with us, they would have to do this. Also our information security department does onsite audits which are planned at this point but have not been done yet.”

Theme 4: Information Systems Change Management

Practice 9: Managing Daily Work Issues

“A big factor in offshore outsourcing is what the testing level we want to do is. Instead we say how many days do we have and how to make best use of those days. If we have 5 days, what is the best we can do in 5 days? Because the real problem is I have X days and X dollars, what is the best you can do with these two constraints? ... As testers we now get involved into the planning phase, but we need solid processes of how best testing can support each phase of software development. We don't have a strong test policy for all stages of system development lifecycle.”

“If I looked at it closely, really the vendor's operating model was flawed. They would automate but sit and watch the automation run, which did not free them up to do other value-added tasks. We at [the client] had architects who work with Mercury tools, etc., and they understand the best ways to automate. Our folks developed standards and guidelines for the vendor to follow. We had to invest in the vendor. We had to help them reinvent themselves. We had to teach them standards, which is easier than teaching them our domain knowledge. Because we keep up with trends and best practices in testing, we had to bring them along and improve how they operate.”

“What is the vendor's incentive to do work before there is software to test, i.e., before the contracted work begins. Very little. Today, we have demanded that offshore work shifts run automation. So they run the automation whether it works or not.”

ABOUT THE AUTHORS

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