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**OFFSHORING EFFECTIVENESS:
MEASUREMENT AND IMPROVEMENT WITH OPTIMIZATION APPROACH**

A Thesis

Presented to

The Faculty of the College of Engineering

San José State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Engineering

by

Dip Biswas

December 2009

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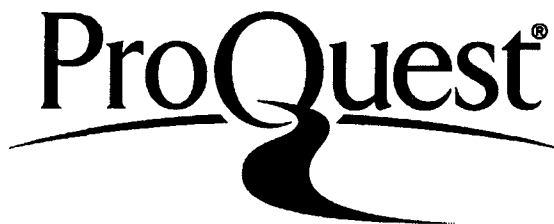
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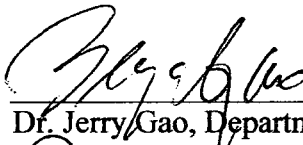
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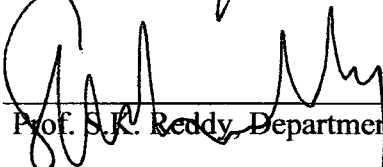
MEASUREMENT AND IMPROVEMENT WITH OPTIMIZATION APPROACH

By
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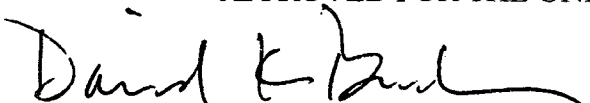
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ABSTRACT

OFFSHORING EFFECTIVENESS: MEASUREMENT AND IMPROVEMENT WITH OPTIMIZATION APPROACH

By Dip Biswas

This study takes a refreshing look at IT outsourcing from a vendor's perspective and discusses best practices required to effectively manage offshore business needs and offshoring effectiveness. We have conducted a detailed investigation to learn why outsourcing ventures fail, how to effectively measure up to service provider capability, and how to deliver strategic value to the end customer. Extant literature does not talk about the vendor's issues and problems in outsourcing, and our investigation emphasized the vendor's perspective on offshoring strategy and offshore resource effectiveness as the two important differentiators in a make-or-buy decision. Measurement metrics for each of the two items were devised to estimate their effect on offshoring effectiveness. We spoke to some of the top 10 IT vendors in India, collected offshoring data from both clients and vendors, and used the data to validate our decision framework. The framework helps us to investigate current industry practices in IT outsourcing, identify issues and problems beyond the obvious advantages of outsourcing, and propose measures to assess offshoring effectiveness. The investigation gave us an opportunity to record the best IT practices as well as suggest possible improvements in the service or product delivery cycle to enhance customer experience.

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CHAPTER 1: The Problem Scenario

1.1 Introduction

With the year 2000 dot-com boom behind us and another boom not likely to happen, Silicon Valley and the rest of the country are increasingly relying on emerging offshore information technology (IT) markets for software solutions and services. Today outsourcing is driven by decreasing communication costs combined with increasing research and development capabilities in low and medium cost countries. Outsourcing has helped companies speed up product development in order to decrease time-to-market, free up their resources to focus on core business or work on strategic development activities, and effectively manage capacity by smoothing out cyclical variations in demand with the help of offshore service providers (Willcocks & Lacity, 2006). It is a known fact that many companies have poured billions of dollars in outsourcing their IT operations and are reaping rich rewards. It is worth noting that the obvious advantages in outsourcing have made it an attractive value proposition, and although there are certain trade-offs, majority stakeholders have not singled out offshoring as unprofitable or pressured U.S. companies to start hiring or retraining displaced workers when jobs are lost. On the other hand, jobs have steadily moved offshore in the last decade benefiting the developing nations that have a large pool of technology workers, but causing many a heartbreak for U.S. job-seekers (Yourdon, 2004). It is apparent that the trend in outsourcing is not reversible and will continue to grow, creating jobs in developing countries.

Outsourcing in IT is not a recent phenomenon. In his book Outsource – Competing in the Global Productivity Race, Yourdon (2004) talks about outsourcing and globalization as mainstream phenomena, with 45% of U.S. companies having outsourced IT functions to offshore-based companies between 2000 and 2004. In the 1960s and 1970s, key-punching and data-entry activities were outsourced. However, these were menial tasks not requiring a high degree of skill. IT outsourcing in its present form began to take shape in the early 2000s when the U.S. was hit hard by a hi-tech recession. Between 2000 and 2004, U.S.-based employers shifted tens of thousands of IT jobs to countries such as India, China, Russia, and the Philippines. The globalization phenomenon, which in part was encouraged by economic liberalization and deregulation in countries such as India and China, has had significant consequences. U.S. workers have lost jobs while competing with hard-working, low-cost, high-quality knowledge workers around the world. Consumers have more choices, and cheaper products are on the market. It is worth noting that offshoring is usually not part of the product lifecycle but is often applied as an afterthought and a by-product of the acquisition process. Dysfunctional back-offices often occur when large companies grow through mergers and acquisitions, dragging along and neglecting back-office stepchildren. Increased workload and technical expertise is usually supported by onsite service providers or partners, who offer an incremental improvement approach to resolve issues and add mobility to the existing business functions. This results in over-staffed, duplicate, and incompatible back-offices and the back-office function eventually becomes a candidate for offshoring (Willcocks & Lacity, 2006). Outsourcing the back-offices makes for a better value-

proposition for the acquirer firm, and consequently the focus shifts to building relationships with transformational service providers located in cost-effective destinations who are better equipped to trim the excess fat, restore sanity, and improve the company's bottom-line.

IT companies are expected to have a defined acquisition strategy and vision before entering into an agreement with an outsourcing service provider (Willcocks, Reynolds, & Feeny, 2007). The outsourcer (acquirer) wants to acquire a product or a service from a vendor to satisfy the following core needs:

1. Gain access to high-demand technology skills.
2. Pool together internal technology resources and use as needed.
3. Focus on a set of core business capabilities.
4. Respond more rapidly to business changes.
5. Reduce capital investments.
6. Achieve flexibility to grow or shrink as the business demands.
7. Improve return on investment (ROI) and the company bottom-line.

The acquirer may also determine that setting up offshore captive centers might be a better acquisition strategy to support core-business needs and improve the profitability of the company. The offshore captive center and outsource service providers may be profitably used to access new technologies and special technology skills, gain a competitive edge, or fulfill a desire to gain economies of scale and reduce overall costs (Boehe, 2008). At the same time, acquirers look to improve the quality of services that are outsourced, maximize their return on investments, and protect the interest of the stakeholders.

1.2 Problem statement

Offshoring is beset with problems caused by communication delays, lack of knowledge transition, inadequate requirement analyses, and inadequate quality measures. Offshore resource effectiveness and offshore business strategy are important criteria for the client in selecting the vendor that provides best value for their money. The primary purpose of this study is to conduct analytical research of current acquirer-supplier models and to estimate offshoring effectiveness for a service provider located in a cost-effective offshore destination.

1.3 Sub-problems

Additional aims for this study are to conduct an investigation into the issues and problems that occur in the acquisition process, to understand risk management and disaster preparedness of the service provider, and to identify cultural issues local to the client and offshore destination.

1.4 Definitions

Client (Acquirer) - Client is the recipient of outsourcing services.

Outsourcing - Outsourcing is subcontracting a process, such as product design or manufacturing; or subcontracting a request for designing, supporting, and maintaining supply of services, to an external service provider company.

Offshoring - Offshoring describes the relocation by a company of a business process from one country to another - typically an operational process, such as manufacturing, or supporting processes, such as accounting (“Offshoring,” 2009).

Transaction Cost Economics (TCE) - In economics and related disciplines, a transaction cost is a cost incurred in making an economic exchange. The main objective of TCE is to identify the conditions under which market governance (e.g., outsourcing) is more cost efficient than governance within the boundaries of a firm (Dibbern, Winkler, & Heinzl, 2008).

Vendor (Service Provider) – Vendor is the entity or organization supplying outsourced services.

1.5 Research objective

Extant literature on outsourcing does not elaborate on the problems, issues, and shortcomings from a vendor perspective. The researcher decided to address this gap by focusing on the major issues that dominate outsourcing of services. An analytical study was conducted to understand the client's motivation for outsourcing and if offshoring was inclusive of his or her product life-cycle (Schniederjans et al., 2007). It was observed that only a few clients consider outsourcing as part of their product life-cycle. These clients eventually end up outsourcing their back-office processes when they become unwieldy, expensive, and out-of-control. It is thus necessary for the service provider to devise an effective strategy to address the client's unanticipated needs and to grow and shrink as per the client's demand. At the same time, the vendor is expected to have capacity and capability to meet any client need and to have maximum capacity utilization to stay competitive and win repeat business.

It is also necessary to understand how difficult it is to move away from a manufacturing mindset to one that is service-based and to understand the challenges that

IT service providers are facing while making these changes (Gião, Júnior, & Vasconcellos, 2008). The researcher will study ways and means to reduce offshoring risks, transaction costs, and the total costs of outsourcing from a service provider perspective, and will evaluate what it takes to make an offshore resource productive for both the client and the vendor. Thus, the research objectives will be (1) to focus on the offshoring strategy, (2) to analyze offshore resource effectiveness, and (3) to understand how these key factors play an important role in defining the outsourcing relationship between a client and a vendor.

1.6 Thesis justification

It has been observed that some companies have adopted outsourcing just because their competitors are doing business in another country and have been successful with it. Most companies believe outsourcing is the only option to survive and thrive in a global economy. What is not apparent is whether the outsourcers have established an economic rationale behind their drive to outsource and have executed their business strategy in line with their goals of achieving improved productivity, gaining a new competency, and seeking potential improvement opportunities in their organization (Weeks & Feeny, 2008; Willcocks, Reynolds, & Feeny, 2007). On the other side of the coin, it is not obvious if the outsourced service provider attaches any importance to governance, or is able to foresee and mitigate any risks at different stages of the product lifecycle. It is apparent from the literature survey that there is no one solution to tackle offshoring issues and that there are suppliers of varying capability and maturity (Wadhwa & Ravindran,

2006). It is important to investigate how they manage cost overruns, schedule breaches, depleted resource capability, and labor arbitrage.

In the quest to evaluate and improve outsourced processes, the researcher did not find hard evidence on the effectiveness of the acquirer – service provider relationship and the cost drivers responsible for the success or failure of the partnership. The researcher also did not find conclusive evidence on a business model that supports the idea of establishing a captive center to work on core and non-core processes, rather than having a vendor perform all of the outsourcing functions for the client. The researcher felt it was necessary to investigate the alternate scenarios and analyze managerial decision-making choices in outsourcing. The underlying economic rationale behind the investigation is to document the best practices of offshoring engineering programs to cost effective destinations and propose measures to evaluate and improve the existing processes by using an optimization approach.

1.6.1 Offshore resource effectiveness.

The single most important driver behind judging offshoring effectiveness is employee performance. It is a known fact that there is a glut of hard-working, low-cost, high-quality knowledge workers in cost-effective destinations like India or China (King, 2006). However, if it is not possible to achieve performance and productivity of one offshore person equivalent to one onsite person, we do not stand to benefit from such a relationship. It is important in this context to evaluate the effectiveness of the offshore hires in terms of their level of training and preparedness, and understand why they do not meet the onsite client expectations (Manning, Massini, & Lewin, 2008). It is often found

that the outsourced workforce has a difficult time while working with onsite clients. Communication delays and failure to communicate, lack of sufficiency in requirement analysis, and irresponsible or careless workers who never bothered about maintaining or documenting their code are some of the major headaches. Sometimes the onsite workers, who have been asked to train the offshore workers, fear losing their jobs and consequently do not bother to make their best effort to support effective knowledge transition. At other times, there is a lack of product knowledge and business knowledge that stand in the way of obtaining timely results (Dibbern et al., 2008). It is important to keep in mind these situations to evaluate resource effectiveness while the vendor is engaged with the client. It is not advisable to do offshoring for labor arbitrage if cost savings vanish for productivity losses due to communication delays.

It is also important to investigate what it takes to retain more experienced technical staff at the top who can walk the talk with client technology and business owners to reduce communication delays and ensure a smooth transition of knowledge to offshore. In this context, the researcher plans to investigate if the vendors are more interested in making their margins by hiring people at the bottom of their experience and qualifications, or are genuinely concerned with the quality of work they produce for the client. At the outset, it appears that building and staffing a captive center for offshoring projects would be a better value proposition to the client rather than outsourcing its IT support organization (Nakatsu & Iacovou, 2009).

1.6.2 Offshoring strategy.

A successful business strategy encompasses a mechanism that effectively generates demand for offshore business, delivers value to the end users, and at the same time preserves the interests of the stakeholders. It is important to understand the roadmap of the client, keep up with the technology trends, and help the marketing function generate demand for new business development to meet existing capability (Cha, Pingry, & Thatcher, 2008). The service provider can thus sync up with the acquirer strategy and build an effective execution plan with adequate training and hiring plans, and acquire necessary infrastructure for client needs at their location. A captive center need not worry about generating business demand since much of their work is directed from the onsite parent company. It is all the more challenging for the offshore-based organization to compete globally, keep costs down, and at the same time sustain and grow the business. In tough economic times, when the U.S. government seeks to allay recession fears on the one hand, while on the other hand companies are drastically cutting jobs and slashing budgets, it is all the more important that the offshore service provider has established an economic rationale to sustain the product development from offshore, provide online support, and add value to improve business outcomes (Tadelis, 2007; Weeks & Feeny, 2008). In an uncertain economic future, the big corporations want to add to the company bottom-line and move their support and non-core businesses offshore, but at the same time it is important to consider the associated risks of running an outsourced operation while keeping the domestic customers satisfied. It might seem that establishing captive centers is a better long term solution in terms of investment

horizon, but it also calls for staffing with the right skill-sets or relocating U.S.-based technology workers to cost-effective countries on a permanent basis. It is very important to justify the economic choices made by the client management, whether to seek an offshore partner or establish a captive center to support development for their core and non-core businesses.

Most IT companies do not consider vendor development as a top priority in an outsourcing relationship. In tough economic times, it is even harder to justify time and effort invested on the outsourced organization, since the single most important thing to the client is cutting costs and weathering the storm. However, knowledge integration is an important driver for improving vendor productive capability (Dibbern et al., 2008). Vendors are also seeking opportunity to learn from the clients, set up a new line of business, and add to their resume while courting prospective future clients and are willing to market at a discounted price. In Japan, the most prevalent form of outsourcing is to direct subsidiaries or captive centers, followed by an increasingly popular model where the client has a direct financial stake in the vendor (Tiwana, Bush, Tsuji, Yoshida, & Sakurai, 2008). Traditionally, Japanese companies are intellectually property-driven and quality-driven, and consequently have a strong disinclination to rely on formal contracts. At the same time, the drivers behind outsourcing initiatives in Japan do not always match the cost-optimization philosophy of the service provider or do not help the vendor gain a new skill or competency from the client.

As part of offshore business strategy, it is also important to understand the vendor pricing structure, how vendors make their margins, and their strategies to deal with lost

opportunity costs, communication delay costs, item rework costs, and alternative scenarios that can be used to improve the existing processes. It is important to keep in mind that offshore outsourcing partners may conceal the full potential of cost savings in order to increase their own margin, and that trade-off between effectiveness and costs is most important in decisions concerning offshoring, since lower technological experience may offset low cost gains (Boehe, 2008).

CHAPTER 2: Review of the Literature

2.1 Introduction

The literature review was undertaken in an effort to learn about the current industry practices in IT outsourcing and to better understand the problems and shortcomings that are behind outsourcing failures. In the literature survey, topics that are important from the vendor's perspective and a comparative evaluation of the case studies are presented. The researcher intends to use this information to measure offshoring effectiveness and to propose measures for improvement to the outsourcing function.

Outsourcing by definition involves transferring ownership of an organization's business activities to an outside provider. The provider could be an offshore captive center situated in a cost-effective location or an external service provider situated in the same country or in one of the major outsourcing destinations. The scope of the literature research was limited to analyzing the trends in offshoring strategy and offshore resource effectiveness, and the goal was to determine industry best practices for IT outsourcing. As part of that exercise, the researcher decided to examine the following key categories: service capability assessment; cross-cultural issues in IT outsourcing; trust, control, costs and IT outsourcing; and offshore risk mitigation.

2.2 Service capability assessment

A significant amount of time and effort is spent in determining the right service provider for the client's outsourcing need. More often than not, firms weigh their options of setting up offshoring centers against working with external service providers. This

approach has its inherent advantages for clients, who believe they can have their say in handpicking their technical resources, thereby ensuring success of offshoring operations. However, it is not always advisable to set up captive centers for all clients since it does not let client firms reap benefits from economies of scale. At the same time, it has been observed that offshoring is not a part of the client's product lifecycle and that the client has resorted to offshoring only when their back-offices are too difficult to manage, or are unresponsive to change. When clients acquire businesses, they go through a phase of department mergers, layoffs, and end up with business units or back-office processes that have a potential to be better managed offshore (Willcocks & Lacity, 2006).

As part of the outsourcing exercise, clients need to take a look at their businesses and identify the core, critical, key, and support functions (Duening & Click, 2005). If it is core and strategic to the client's business, clients would want to keep the business function with them since it is a competitive advantage for the client. They would also consider sending business to their offshore captive center where they would not risk losing that competitive edge. The next step would be to identify the critical, key, and support functions and determine if they are tightly coupled to the core function and their degree of importance in the overall pursuit of excellence in the core business. When the outsourcing candidates are identified, clients would start evaluating multiple vendors and assess their capabilities.

It is widely known that there is no dearth of low-cost, highly skilled talent in the well-known outsourcing destinations. However, the immediate need for the client is to identify resources and capabilities that are valuable, low-cost, difficult to imitate, and

difficult to substitute for its unique business need. It is often found that many clients make a major mistake when assessing suppliers: they tend to assess suppliers' resources such as physical facilities, technology, and workforce composition, rather than supplier capabilities required to effectively manage and deploy these resources for the client's benefit. Capability has been defined as a distinctive set of human-based skills, orientations, attitudes, motivations, and behaviors that transform resources into specific business activities (Willcocks & Lacity, 2006). Collections of capabilities, in turn, create high-level strategic competencies that positively influence business performance. A better way to assess the suppliers is by considering the 12 supplier capabilities (Willcocks & Lacity, 2006). These are leadership, planning and contracting, organizational design, governance, customer development, process improvement, technology exploitation, program management, sourcing, behavior management, domain expertise, and business management. Clients should also evaluate the three types of competency that the supplier might bring to the table:

- Relationship competency - the extent to which the supplier is willing and able to align with client needs and goals over time.
- Delivery competency - the extent to which the supplier can respond to client's day-to-day operational requirements.
- Transformation competency - the extent to which the supplier can deliver client's need for service improvements.

Each supplier has its unique level of competency which may or may not be in the client's best interest. The task for the client is then finding the best match with its unique need to

ensure a successful outcome in its outsourcing decision. The right vendor is one who will meet and complement the organization's needs, including aspects from its corporate culture to long-term future needs (Wadhwa & Ravindran, 2006).

There are many challenges to be overcome while integrating an external service provider with the firm. Willcocks et al. (2007) discuss the successes and failures, client expectations, project management issues, and complexity of problems the client had to solve while implementing major IT outsourcing arrangements at Dupont from 1997 to 2004. Their research suggests that a successful IT function has four overall tasks: eliciting and delivering on business requirements; ensuring technical capability; managing external supply; and governance, coordination, and leadership. They also talk about the importance of maturity in the business units' capability to manage IT strategically and the role of the IT function (Willcocks et al., 2007). However, their research does not provide conclusive evidence on how well the supplier's capacity was utilized in terms of infrastructure and resources. It also does not talk about the measurement metrics that can be used to evaluate information systems (IS) outsourcing capabilities and how they would be measured.

Innovation or improved business outcome may have a positive effect on outsourcing (Weeks & Feeny, 2008). From the authors' investigation, it appears that the primary driver behind outsourcing is always cost, and that the management focus is always on solving problems that create roadblocks. These include realigning the contract to client business objectives, renegotiating contract terms, rationalization of technology infrastructure, reducing IT cost levels beyond the contract terms to cope with market

downturns, organizational restructuring to align with business strategy, focusing on the core strengths, and passing on the burden of improving the quality and integrity of a fragmented asset base, partly inherited through a merger activity, to an external firm. However, it appears that the client's expectation of an innovative value-added solution from the supplier takes the backseat with the above-mentioned items grabbing the spotlight most of the time. It also appears that the clients were not able to decide unanimously on what actually qualified as innovation – a new technology capability, a business process change, or the introduction of new services.

The services industry is a significant driver for worldwide economic growth. Guidance on developing and improving mature service practices is a key contributor to the performance, customer satisfaction, and profitability of the economic community. The Capability Maturity Model (CMM) for Services (CMMI-SVC), a worldwide certification developed by the Software Engineering Institute of Carnegie Mellon University, is designed to begin meeting that need (Software Engineering Institute, 2008). All CMMI-SVC model practices focus on the activities of the service provider. The seven process areas that focus on practices specific to services address capacity availability and management, service continuity, service delivery, incident resolution and prevention, service transition, service system development, and strategic service management. The supplier is expected to achieve competency levels in the above service deliverables to meet client's service needs successfully. The competency levels can be measured in terms of continuous and staged representations of capability levels in service performance. The continuous representation is measured by capability levels and the

staged representation by maturity levels. It serves as a useful guideline for clients to evaluate their capability in a process area that is relevant to their service needs.

However, it should be noted that it is difficult to measure services that are intangible, inseparable, and customizable. The acquirer and the service provider may each evaluate and certify the performance and quality of such services, but there might be different yardsticks to measure service performance on both sides. Kotabe, Murray, and Chandra (as cited in Schniederjans et al., 2007) conducted research in 14 service industries and found that higher the inseparability of the service activity, the lower the propensity to use outsourcing among clients, while in other situations the outsourcers restructured their relationships with the service providers to counteract the difficulty of monitoring performance of the outsourced service activity. Their research also underscores the effectiveness of an offshore captive center working in harmony with external service providers to reap the real benefits of outsourcing.

2.3 Cross-cultural issues in IT outsourcing

Outsourcing has been welcomed by most developing countries that see it as a mechanism for inflow of much-needed foreign investments and job-creation. However, in some countries the technology transfer process is still mired with red tape and sadly the infrastructure is not yet ready. The political climate and the readiness of the people to embrace a foreign work culture can quickly outweigh the initial euphoria and cost advantages that outsourcing promises to bring. At the outset, it may appear that these countries have the same level of skills and cost-advantages but each geographic region

has its unique features and cultural nuances that the outsourcer needs to be aware of to fully exploit the benefits of outsourcing.

Cultural differences, geographic distance, and language barriers can directly affect the quality and ease of interaction between client and vendor. The most obvious challenges are language barriers (Rao, 2004). If the client and the vendor speak different languages, communication becomes difficult. This hampers knowledge transfer between client and vendor and increases the likelihood of false specification due to misunderstandings (Apte, 1990). This can lead to deterioration of trust, and an increase in control and coordination costs. Knowledge absorptive capacity of an external service provider can be affected by geographical distance if knowledge about unique business processes needs to be transferred by the client. Since this type of knowledge is best acquired through a process of socialization (Nonaka, 1994) via face-to-face meetings (Nonaka & Konno, 1998), both the client and the external service provider need to socialize, avoid double-speak, and exhibit generally accepted patterns of behavior. Case studies on offshoring from Anglo-American countries to India indicate that opposing attitudes toward authority, hierarchy, and power may cause differences in criticism and feedback behavior between client and vendor personnel (Heeks, Krishna, Nicholson, & Sahay, 2001; Krishna, Sahay, & Walsham, 2004).

Client expectations from outsourcing relationships can also differ from one customer to another. Indian software companies have found they need to approach communication with U.S. and Japanese clients in very different ways. U.S. client companies normally work with extensive written agreements and explicit documentation,

reinforced with frequent and informal telephone and email contact. In contrast, Japanese clients tend to prefer verbal communication, more tacit and continuously negotiated agreements, and less frequent but more formal use of electronic media (Krishna et al., 2004). At the same time, many Indian software suppliers have acquired knowledge in the telecommunications and e-business domains through projects carried out for North American and European companies. This has reportedly raised the interest level with some Japanese outsourcers, who are keen to learn from the Indian software suppliers about leading-edge business systems in these domains. Tiwana et al. (2008) confirms that Japanese companies are traditionally intellectually property-driven and quality-driven, and consequently have a strong disinclination to rely on formal contracts. At the same time, the drivers behind outsourcing initiatives in Japan do not always match the cost-optimization or value-add motivation for the service provider based out of India. It has also been reported that British managers in an outsourcing relationship with a particular Indian software supplier found that Indian programmers, in deference to authority, would not question or voice criticism in face-to-face meetings but would sometimes send their opinions in emails after the meetings had disbanded. The British managers, who are used to intense interaction and the development of ideas through meetings, felt frustrated at this behavior (Krishna et al., 2004). This reflected negatively on the knowledge absorptive capacity, and highlighted problems related to communication skills and language barriers, as well as a failure in displaying accepted patterns of behavior.

A client-side point person who can effectively bridge cultures is usually employed by clients to facilitate the knowledge flows between onsite and external service providers. However, it is difficult to hire and retain such people in some countries. In Japan, money is not the deciding factor for prospective employees; rather many Japanese are very concerned about the status of the employing company rather than merely the salary. This is one of the problems that Indian companies, for example, have in recruiting employees in Japan. Similarly, German companies often find it difficult to locate managers with the appropriate personality profile for directing their development centers in Asia. Apart from the effort required to hire such a technically competent person, it is expected that recruitment and retention packages have to match realities of these issues in specific contexts and labor markets (Krishna et al., 2004). Many outsourcing service providers offer cultural and etiquette training before assigning their staff to projects. Cultural training is often perceived as necessary only in one direction, namely for the staff from the service provider to learn about the culture of the countries of their client organizations. However, these language and cultural practices training programs merely serve to facilitate the offshoring relationship but do not guarantee the success of the outsourcing relationship.

2.4 Trust, control, costs and IT outsourcing

The most critical factors affecting the vendor selection process are vendor's reliability, technical competence, financial stability, and manufacturing capability. A good way to evaluate whether the service provider is capable of delivering on its promise of service is by checking client references. However, this evaluation process is not

foolproof since it could be biased by the client's perception and, at the same time, service providers may want to put forward only their best references to their prospective clients. Extant literature suggests that trust, control, and costs are important perspectives in influencing the duration of outsourcing relationships. In this section, an investigation was undertaken to understand the importance and cost implications of the role of trust and control in acquirer–supplier relationships.

2.4.1 Client's perspective on trust.

Vendor selection is a reflection of the client's trust in the vendor's capabilities and credentials. However, there are instances when the vendors have to take up cost risks while offering a competitive value proposition at the start of their relationship with the client. Wadhwa and Ravindran (2006) have investigated this scenario with multi-objective vendor selection and vendor selection models with quantity discounts as a case in point. This practice is quite common, but it is important to keep the consequences in mind. Called the winner's curse, Willcocks and Lacity (2006) describe the curse as protracted hostilities that are borne out of a bidding war when the chosen vendor seeks to restore profitability to an initially disastrous business model. Also, vendors can go to any lengths by offering price discounts in order to clinch the deal, but eventually the vendor may fail to live up to trust expectations of the client. On the other hand, clients may choose their business partners based exclusively on trust. Tiwana et al. (2008) report that Japanese outsourcing businesses are driven by knowledge rather than cost or value drivers, and they prefer to do business with inner circles of trust which they develop over

time. Japanese companies are motivated by access to unique technical expertise rather than by cost-cutting considerations.

2.4.2 Vendor's perspective on trust.

It is equally important for the client to instill a sense of trust in the service provider. Trust results from frequent and relevant information exchange; inter-group exchange generates trust, and eventually facilitates more effective interaction and a better relationship. It appears that a high level of trust in a client is associated with higher quality standards and level of effort, which can increase cost, although it is expected that lower transaction costs accrue from increased trust (Mao, Lee, & Deng, 2008).

2.4.3 Client's perspective on control.

Cross-cultural issues in outsourcing can lead to lack of control. Clients can decide to manage their outsourcing relationship by negotiating a work-culture with service providers. Approaches to achieving control may include the use of bridgehead teams that spend significant periods in client premises, exchange of staff on a long-term basis between cross-cultural partners, and jointly managing staffing and training issues (Krishna et al., 2004). Tiwana et al. (2008) contend that the services of a client Bridge Software Engineer (BSE) are essential in bridging the communication gap and controlling the knowledge flow between the client and the service provider. Japanese companies exercise control over the vendor by completely controlling the front-end design, rather than using the widely followed western strategy of attempting to control the development process or methodology used by the vendor. Controlling the design and core technology allows Japanese companies to effectively accomplish this without

compromising the user interface or functionality of the outsourced project. The BSE is responsible for maintaining the separation of the company's proprietary business domain knowledge from the vendor's technical knowledge while ensuring that the two are effectively integrated into the offshore development process. The BSE also ensures that stakeholders in the client organization are in agreement about the progress and direction of the work, consistent with the strong emphasis on group consensus in Japanese companies, instead of relying on independent contributors. A BSE also serves as a hedge against project risk (Dibbern et al., 2008). This mode of working style can severely restrict the service provider who has established service and capability maturity levels, as well as processes to manage product life-cycle. Service providers might feel highly inconvenienced in this arrangement, because they are still required to adhere to the client's processes and deliver on their promise of service.

2.4.4 Vendor's perspective on control.

In offshore IS outsourcing, the success of IS projects depends heavily on the quality of the requirements; they are difficult to define clearly and completely at the outset, and sometimes must evolve. The clarity of goal setting will exert a strong influence on the vendor. The need for control is likely to be stronger for outsourcing arrangements than traditional ones for two reasons: (1) the vendors are removed from those who set the requirements because of physical and psychological distance and (2) for Japanese outsourcers, Chinese service-providers usually possess a lower maturity level of project and process management and are not as experienced as their clients (Qu & Brocklehurst, 2003). Mao et al. (2008) contend that client control over the vendor has

a significant impact on cost control by helping the vendor prevent cost overruns, but a limited impact on quality of project deliverables.

2.4.5 Trust, control and costs.

Literature investigation on trust and control in outsourcing appears to confirm the fact they are essential elements required to reduce the total costs of outsourcing and improve quality of service. From a vendor perspective, trust and control have different roles in improving outsourcing performance and operate as complements. Trust has a significant impact on project quality while control is significantly associated with cost management (Mao et al., 2008). From a client's perspective, it is important to reduce cultural and control costs by investing in relationship management with the service provider. An offshore-onshore bridgehead goes a long way towards improving communication problems and reduces cultural distance. This arrangement optimizes cost savings offshore while maintaining closeness to the customer. The individuals assigned to work onshore are typically the more experienced and culturally assimilated. They act to understand the customer's requirements and translate them to the offshore programmers. Working within time-zone bands facilitates effective synchronous communication. U.S.-based companies have also started building offshoring arrangements with Canada, Mexico, and the Caribbean nations in an effort to minimize temporal distance, reduce slack time, and improve productivity. For Europe, this means intra-EU collaboration or collaboration with South Africa or low-cost nations, such as Romania, Hungary, Russia, and Ukraine (Carmel & Agarwal, 2001).

Transaction Cost Analysis (TCA) suggests that the need to control stems from the need to minimize the likelihood of suffering from a partner's opportunistic behavior (Williamson, 1985). If requirements or software specifications are not clear, the vendor can take advantage of the client. Successful collaboration requires that the partners be able to communicate, establish and maintain an inter-organizational interface, and make internal adjustments in response to a partner's action or changes in the environment of the alliance. Explaining differences in time and effort for a client manager to undertake the same task with different partners requires an explicit recognition of the social distance, or differences in organizational fit, with these alternative partners. Overcoming or accommodating such differences requires adjustment by the partners in order to achieve the objectives of the alliance, causing one or both partners to incur related costs in terms of time and effort. In some cases, the cost of contacting, contracting, and controlling may be considerable, and may force the buyer to internalize the business process instead of outsourcing it. Transaction costs can be sources of economic inefficiency because they increase the need for a firm to monitor and control a partner to reduce the partner's ability to act opportunistically (White & Lui, 2005).

However, Transaction Cost Analysis does not always identify the reasons for extra costs that may occur with outsourcing. Hidden costs associated with the vendor relationship are primarily centered on the impact of transitioning formerly internal processes to external control (Duening & Click, 2005). In services outsourcing, for service activities which are intangible, customizable, and inseparable, it is difficult to preempt the hidden costs that are associated with service delivery. Standardization of

services reduces asset specificity, meaning a transaction is less expensive if the asset is less specific to one of the transaction parties (Willcocks & Lacity, 2006). Unexpected transaction and management costs, costly contractual engagements, disputes and litigation can make Transaction Cost Analysis prohibitive for the service provider and the client (Schniederjans et al., 2007). As previously mentioned, in some instances, suppliers underbid to win the contract, resulting in the phenomenon known as winner's curse. The winner's curse occurs when a supplier makes unrealistic bidding promises to ensure it wins the contract, but already knows, or subsequently discovers, that it cannot earn a profit on the engagement. This could be the result of separation of the supplier's IT outsourcing bid teams from the subsequent service delivery teams, but it eventually causes a breach of trust with the client. This could also force the external account manager to make service quality trade-offs to compensate for the losses, which in turn could lead to additional costs to the client to account for the service quality (Willcocks & Lacity, 2006). Hidden costs can arise from lack of adequate interpersonal skills in developing and maintaining the buyer-vendor relationship. A rotating lead person representing the client or the service provider can mean loss of organizational learning and has the potential to create problems of trust in both parties.

2.5 Offshore risk mitigation

It is widely accepted that a big motivation for adopting outsourcing is to keep costs down, enjoy the benefits of labor arbitrage, and concentrate on the core businesses. However, this decision choice is not without risks. Extant literature and case-studies suggest that many outsourcers had to call-off their outsourcing engagements after pouring

millions of dollars in analysis and development, when they realized that they were not entirely satisfied with the outcome and would be better off by moving the work in-house. Nakatsu and Iacovou (2009) contend that the top 10 offshore risk factors are lack of top management commitment, failure to communicate requirements, language barriers in project communications, inadequate user involvement, client's lack of offshore project management know-how, failure to manage user expectations, poor change controls, offshore team's lack of business and technical know-how, and failure to consider all costs. All of the above risks stem from the failure to recognize the importance of the vendor's service capability assessment, trust and control reciprocated by vendor and client, and cultural issues in outsourcing.

Human capital risks show up when an offshore worker is not as productive as an internal worker and subsequently labor arbitrage loses its luster in the value-proposition offered by the service provider. Onshore outsourcing usually has minimal human capital risks because it is strongly in the domestic vendor's interest to understand and comply with all local employment laws and regulations (Duening & Click, 2005). However, when work moves offshore, productivity can be seriously affected by the service provider's interpretation of laws and regulations. It is also important to build and maintain trust among business partners. As globalization rushes forward, the history of relationships among different people just does not disappear. Memories of war, sectarian struggles, and religious animosities can still run deep. A history of mistrust can interfere with activities such as communicating and delegating responsibilities (Kliem, 2004). It is

also important to build bridgeheads with the client to ensure controlled knowledge flow with offshore resources (Tiwana et al., 2008).

Although U.S. clients can benefit from an absence of many of the employment liabilities present in the United States, many foreign countries do not have labor laws governing matters such as workplace discrimination, sexual harassment, or privacy. At will employment, which allows U.S. employers to easily terminate or lay off employees, does not exist in countries like India (Duening & Click, 2005). This can limit the flexibility that the client might seek in the offshore service-provider, if they plan to control resource effectiveness. The ability to restructure the organization in an offshore captive center, which is taken for granted in the United States, can be more difficult and riskier in many foreign countries.

Project risks are defined as those that have the potential to prevent the offshore business unit from providing the cost savings, strategic advantages, or productivity improvements that are anticipated. Unexpected incompatibilities between software infrastructures could lead to delays, cost overruns, and lost business and goodwill. It is important to manage expectations internally, as well as with the outsourcer, before the project gets out of hand (Duening & Click, 2005). Some risks that occur during different phases of the project life cycle can be more difficult to manage during the early, rather than later, life-cycle phase. During the feasibility phase, wherein a determination is made whether a project is preferable to the status quo, the risks tend to be broad in scope and difficult to manage. During the formulation phase, wherein defining requirements and comparing alternatives occur, the risks tend to be narrower in scope and easier to

implement. During the implementation and installation phases, wherein the former involves building the product and the latter putting it into operation, the risks become even more narrow and easier to manage (Kliem, 2004).

Most businesses have a significant amount of sensitive information, including trade secrets, business plans, and proprietary business knowledge. Business functions which are core to the business are usually not chosen as candidates for outsourcing, since the client stands to risk its competitiveness while trying to save on costs. To manage the information security risk, vendor organizations should adopt and be able to prove compliance with global best practices and standards. Many firms turn to managed-security providers (MSPs) to assist them in managing the risk (Duening & Click, 2005). It is also important to recognize the Human Resources (HR) function, which is responsible for retaining employees, resolving disputes with disgruntled employees, and ensuring core business knowledge retention within the boundaries of the firm.

The risks associated with the vendor's organization are perhaps the most difficult to accept because they are not easy to control. These risks can range from business practices to authenticity of certification and reference claims (Duening & Click, 2005). It is also possible that service providers may only want to put forward their best references to their client and try to mask past failures. Vendor business practices can also widely vary from country to country and may not be acceptable in the client's home country. It is imperative that service providers are upfront and honest about their business practices and set clear expectations with the client. Competency of the supplier is also a matter of conjecture unless the client is responsible for due diligence.

Whether the rationale is cost-savings or business transformation, an outsourcing project is undertaken to create value for the buyer (Duening & Click, 2005). While the service provider gains a new competency and thus has an added motivation to enter into an outsourcing agreement, it is also expected to add value to the project or service, look after the interest of the stakeholders, and ensure a successful outcome. However, client expectations of the vendor may fall short of delivering strategic value or leveraging a competency, and hence value risk is perceived to be a challenge in outsourcing.

In light of the above discussion on outsourcing risks that could affect the business strategy as well as the resource effectiveness for the service provider, it is important to apply appropriate controls to manage risks. Legorreta and Goyal (as cited in Schniederjans et al., 2007) examined the potential risk factors and their implications, and contended that the best way to manage risks is through firm-vendor partnerships and through psychological contracts. They proposed ten best practices to mitigate known risk factors.

1. Negotiate short term contracts or renew contracts periodically to improve flexibility.
2. Include a provision to terminate the contract with smooth transition.
3. Use a pilot project to test supplier's capabilities.
4. Build experience by incremental outsourcing.
5. Retain key capabilities in-house while outsourcing technology tasks.
6. Develop pricing strategy that encourages innovation.
7. Hire an intermediary consulting firm.

8. Manage performance through well constructed metrics.
9. Hire a legal expert to mitigate legal risks.
10. Create a centralized program management office to consolidate vendor management.

2.6 Learning points and conclusion

Based on our literature survey, it can be inferred that clients who are successful in their outsourcing initiatives carefully select the activities to outsource, rigorously evaluate vendors, tailor the terms of contract, and carefully manage the vendor. The researcher's goal is to secure more favorable outcomes in outsourcing engagements by focusing on measurement and improvement of offshoring effectiveness with an optimization approach. Below is a brief summary of the highlights of this discussion.

1. To be successful in outsourcing, it is important for a client as well as a vendor to formulate an IT strategy. The IT strategy must be in alignment with the client roadmap and offshoring strategy.
2. The service provider must identify its information systems capabilities and evaluate if they are oriented towards delivering value along with the product or service to the end user. The client firm is responsible for due diligence and assessment of the vendor's capabilities before entering an outsourcing relationship.
3. An improved business outcome is a result of carefully evaluating the client's business functions and developing innovative measures that make the service provider look more competitive in its value proposition.

4. Optimization through cost savings is a primitive benefit. Clients seek to gain a new competency, improve productivity, and seek potential improvement opportunities in their organization by way of outsourcing. If clients cannot save much on the costs, they stand to gain in productivity and quality from such a partnership.
5. It is important to identify the hidden costs involved in an outsourcing relationship to ensure a successful business outcome.
6. Trust and social interaction are important tools to bridge communication gaps and cultural barriers, and to reduce offshore transaction costs.
7. Offshoring risks can be classified under these broad categories - human capital risks, legal issues and limitations, project risks, security risks, vendor's organization risks, and value risks.

CHAPTER 3: Method of Investigation

3.1 Overview

The researcher conducted an investigation primarily from a vendor's standpoint to learn how service providers view outsourcing issues and hidden costs. The initial investigation was based on the IS capabilities framework and the 12 supplier capabilities that a service provider must evaluate in order to be successful in supporting business transformation or improving business outcomes for stakeholders (Willcocks & Lacity, 2006). This was followed by more rigorous research on the items that were considered as crucial, to determine the problems that IT outsourcing arrangements suffer in the face of competition posed by global resource providers. The scope of the current research was limited to an investigation of offshoring strategy and offshore resource effectiveness, which we felt were the primary drivers behind outsourcing relationships. Offshoring effectiveness was evaluated from an acquirer as well as a service provider perspective, performance metrics were devised to evaluate offshore based project activities, and measures were proposed to improve business functions. These items were generated based on previous IS outsourcing research and a feedback questionnaire, and case studies were researched to explore the relevance of the outsourcing issues in the context of acquirer supplier relationships. Each of these metrics and their evaluation categories are described below:

- Offshore resource effectiveness
 - Resource (people and infrastructure) utilization

- Average age of IT worker and effect on productivity
- Cost of attrition
- Service capability and maturity levels
- Leadership selection in a captive center and cultural issues
- Offshore business strategy
 - Core competencies (capabilities and resources) of the outsourcer
 - Cost motivation
 - Co-operation and control
 - Risk mitigation

3.2 Review of the literature

An extensive literature review was undertaken with the help of literary and business resources, books, and technical journals on IT outsourcing to determine the drivers behind the organizational need for achieving high-performing back offices (Willcocks & Lacity, 2006) and the motivation for outsourcing, and to learn about the benefits and pitfalls of existing offshoring scenario experienced by service providers as well as outsourcing companies. Outsourcing has become a global phenomenon, with many East European and Latin American nations joining India, China, and the Philippines in the race to deliver services at a competitive price. The supplier base is equally diverse. There are onshore service providers with specialized skills who work from the client site or the same geographic region. They are usually complemented by offshore providers who base their appeal on their ability to provide well-qualified staff at low unit labor costs, and who are willing to work with obsolete technologies and legacy

software. Then there are transformational outsourcers who apply a combination of sophisticated management techniques and technology investment to achieve new levels of service performance. The current offshoring trend is to move away from a manufacturing-based outsourcing model to a services-outsourcing one, and the literature case studies point to the fact that not many countries were successful in making that transition. As part of the literature investigation, the researcher explored the CMMI® for Services (CMMI-SVC) framework to better understand the capability and maturity-level expectations of a service provider. It is important to recognize the fact that the service provider could be located geographically in any corner of the world, and it is important to look at the front-office mindset of the service provider who is offering back-office transformational solutions to the client. A number of these outsourcing issues have been discussed in Chapter 2, starting with the conceptual and review papers followed by papers on vendor perspectives on IT outsourcing, outsourcing risks, hidden costs of offshore outsourcing, cross-cultural issues, trade-offs between efficiency and learning, and finally supplier evaluation and selection.

3.3 Survey questionnaire

Field research was conducted with a survey questionnaire to verify the content domain and refine the measurement items. There were three primary goals of the survey. The first was to learn about the best practices of IT outsourcing in the context of resource effectiveness and offshoring strategy. The second goal was to gather sample data for statistical analysis to validate our decision framework. Extant literature on IT outsourcing was used to validate the experimental findings in an effort to better

understand the motivation for outsourcing. A third goal of the survey was to conduct a gap analysis of external service providers and compare client expectations with quality of existing service levels. The results of the survey helped us understand the client's motivation to outsource along with the vendor's level of preparedness.

CHAPTER 4: Research Methodology, Results, and Discussion

4.1 Research overview

Extant literature on outsourcing highlights issues and problems faced by clients, but it does not conclusively describe issues and problems from the vendor perspective.

Based on our literature research, we have constituted several hypotheses that can be used as measurable metrics to evaluate offshoring strategy and resource effectiveness from a vendor perspective.

A feedback questionnaire was put together to obtain data to verify and validate the hypotheses. A pre-test was also administrated to further enhance the quality of the survey questionnaire with the help of IT managers who were responsible for managing and growing accounts in Fortune 100-500 companies. The questionnaire was then sent to IT managers responsible for managing accounts and project delivery for IT service providers and clients. The researcher took care to recruit individuals who were responsible for outsourcing engagements. Three indicators were used to assess their experience:

- The total number and size of accounts that had been managed by the respondent over his or her career,
- The number of outsourced projects that he or she had managed, and
- The number of years in Project Management experience.

These IT Managers were directly and indirectly responsible for outsourcing decisions and served their organizations in the capacity of Account Manager, Business

Development Manager, Engagement Manager, Sales Manager, or Client Sales

Enablement Manager. These people worked closely with the outsourcing functions, were responsible for business transformation and sales volume, and were able to share their life-experiences with the researcher. All of these companies had significant global presence, and the vendors were among the top 10 outsourced service providers in India.

1. Vendor A - A global leader in the next generation of IT and consulting with revenues of over US\$4 billion
2. Vendor B - A world leader in providing offshore BPO services with over half a billion dollars in revenue from R&D
3. Vendor C - A \$5 billion leading global IT services company with focus on transformational outsourcing
4. Client A - A \$3.3 billion Fortune 1000 company specializing in innovative storage and data management solutions for IT services
5. Client B – A \$1.6 billion Fortune 500 company specializing in IT services

The feedback data provided by the respondents forms the basis of the decision framework. The design of experiment is under the control of the researcher and consequently, the decision-makers' responses are a function of the controllable and uncontrollable factors that have been tested to validate the hypotheses.

4.1.1 Service capability assessment.

Service capability assessment refers to the extent to which suppliers can successfully meet the demand requirement of the clients who have an identified need for a business function that has a potential to be better managed offshore. Willcocks and

Lacity (2006) have identified the three critical provider competency areas as delivery competency, transformation competency, and relationship competency. The client-vendor relationship is inherently built on the trustworthiness of the vendor's credentials and their resource competency levels. However, it is imperative that the client assesses the functional competency of the vendor rather than relying on the vendor's resources to improve the chances of a successful outsourcing relationship (Ethiraj, Kale, Krishnan, & Singh, 2005). At the same time, it is important for the service providers, who are making the move from manufacturing to services outsourcing, to gain a true understanding of their capability (Gião et al., 2008). As for services, it is important to consider manageability, maintainability, extensibility, and supportability characteristics of the service to estimate the scope of support and technical competency required to design, develop, and support the enhancements to the business function from offshore. It is also worthwhile to understand the limitations and problems posed by hosting services in another geographic location while trying to assess the service capability of the service provider (Heeks et al., 2001). The client can also reasonably expect the service provider to meet safety engineering standards and to have processes in place to mitigate the risks while managing the transition from a legacy system to a newer and mature technology driven system. Although it is important to prioritize capability assessment over resource assessment, one cannot entirely ignore the fact that the vendor's resources have an important role to play in the success of the offshore project. However, it has been observed that it is common practice for service providers to compromise on the quality of offshore resources by assigning less experienced people to the outsourcing relationship

(Mao et al., 2008). Knowledge absorptive capacity of an offshore resource is a function of age and experience and, consequently, new hires can contribute as programmers or bug-fixers but cannot really make an effective contribution to the outsourced project. Service providers are also expected to interface with internal clients of the outsourcer, understand their businesses, and address the client needs in providing services. However, relatively inexperienced vendor workers cannot interface effectively with the client and have to rely on a few key internal workers who are better equipped to handle the situation. Following this line of reasoning, we hypothesized the following:

H1. *Service capability assessment is required of a vendor in order to establish a successful and enduring outsourcing relationship.*

4.1.2 Cross-cultural issues in IT outsourcing.

For a reassuring atmosphere, people prefer to work with those who come from the same culture. It is a transaction-cost barrier for others. It is easier to communicate, understand, and monitor staff who have a similar cultural orientation, which in turn helps to reduce contractual costs in outsourcing (Krishna et al., 2004). Some European countries prefer to do business with their business counterparts since it is easier for them to relate to the cultural demands of their host nations. It has been observed that it is an accepted practice for service providers to train their staff on cultural nuances before they work on outsourced projects. At the same time, foreigners and cultural issues can create barriers for trust and control at offshore (Rao, 2004). It is important to keep in mind that leadership selection can be a contentious issue for foreigners when they are assigned to oversee the outsourcing operations in the offshore captive center. They might need to

learn a new language, understand and meet their leadership expectations at offshore, and adapt to the accepted rules of socializing without unsettling their co-workers. On the other hand, we find that clients can use the services of a bridgehead software engineer to co-ordinate knowledge flows between client and the external service provider, and to overcome the communication and control problems posed by cultural interaction (Dibbern et al., 2008). It is widely known that Asian software engineers, particularly those from India and China, avoid asking questions to the client, which in turn leads to false expectations and communication delays that can lead to loss of productivity. It is important for the offshore leadership to assign responsibility to an offshore program manager who can lead, motivate, and manage staff with a front-office mindset, build a sense of ownership for their service deliverables, and set the right expectations with the client. Based on this, we hypothesized the following:

H2. *Cultural insensitivity and ineffective leadership can cause barriers in partner interaction and interchange of knowledge between the client and the vendor.*

4.1.3 Trust, control, costs, and IT outsourcing.

Trust and control are purportedly the two major decision factors that add up to the hidden costs in offshore outsourcing. A client bases its supplier selection criteria on the supplier credentials and in good faith, but the decision may be biased in favor of the bidder who manages to keep costs low in an effort to win the contract. The service provider can afford to account for the losses in the short-run by risking the quality of service. This in turn can lead to a breach of trust with the acquirer who ends up spending more money to account for the quality costs. Outsourcing also poses a major security

risk when the service provider is privy to core business knowledge of the client and the client is at a risk of exposing its strategic advantage to competitors. A client bridge software engineer can potentially reduce these risks by controlling the knowledge flow and make sure that the service provider gets access only to the knowledge required to work on the outsourced service (Dibbern et al., 2008). This can also lead to a fall-out of trust with the service provider who is at the mercy of the client interface and has the potential for incurring costs due to communication delays. This could also potentially drive out service providers who are interested in outsourcing to gain access to unique technical expertise.

Trust results from frequent and relevant information exchange. Inter-group exchange generates trust, and eventually facilitates more effective interaction and a better relationship (Mao et al., 2008). Almost all outsourcing contracts involve a proportion of the suppliers working at the client's base. However, it is a known fact that Indian on-site workers are not paid the same wages as green-card holders or U.S. citizens. They are likely to be paid less which usually varies according to the types of work permit held (H-1B or B1). This could put these workers at a psychological disadvantage. It could also create a problem when workers are required to network with their U.S. counterparts and display socially accepted forms of behavior. However, the propensity of outsourcers to keep a large population of on-site workers to exercise better control over the outsourced project can actually increase the total costs of outsourcing. In offshore IT outsourcing, the success of IT projects depends heavily on the quality of the requirements; they are difficult to define clearly and completely at the outset, and sometimes must evolve. A

large on-site presence may not necessarily help in achieving clarity of approach but the physical and psychological distance between offshore and onsite can be bridged by employing a large fleet of low-cost skilled workers. If the buyer and seller trust each other, the size of an onsite presence can be controlled more efficiently and transaction costs of preventing opportunism will be reduced significantly (White & Lui, 2005).

Based on this, we hypothesized the following:

H3. *A client's control over the vendor and a vendor's trust in the client will have a positive impact on the quality of the offshored project.*

4.1.4 Offshoring strategy.

As part of the outsourcing exercise, clients need to identify the core, critical, and support functions for their business. If it is core and strategic to the client's business, clients might want to establish offshore captive centers at cost-effective locations. If it is a back-office function such as human resources, information technology, indirect procurement, finance, or accounting, they can decide to outsource it to an offshore service provider to radically reduce costs, improve service, and to increase revenues (Willcocks & Lacity, 2006). An offshore client business unit can also work with local service providers to address variable demand and grow or shrink a contract workforce as needed. In Japan, the most prevalent form of outsourcing is to direct subsidiaries, followed by an increasingly popular model where the client has a direct financial stake in the vendor. Japanese companies are also historically motivated by access to unique technical expertise rather than by cost-cutting considerations (Tiwana et al., 2008). Given the diverse client base that service providers have to deal with, it is important for

the client to know whether the provider has a one-size-fits-all approach to clients, or whether they have a tailored approach for individual clients. A global strategy should be in place to address the needs of stakeholders and the user community (Heeks et al., 2001; Krishna et al., 2004; Manning et al., 2008; Rao, 2004; Willcocks & Lacity, 2006). There is a potential for huge upfront investment to grow and sustain such offshoring relationships, given the fact that the business volume of these service providers will be driven by external clients and could be directly affected by the economic downturn and subsequent recovery. An external service provider or business partner might combine a client firm's operations with those of other corporations to gain economies of scale and reduce the total cost of outsourcing, but at the same time the vendor is expected to be upfront with the client on what it expects to gain from the relationship. The service provider should establish and agree on an exit strategy with the client if the outsourcing arrangement fails to work. As for the client, economies of scale, scope, experience, and learning can be sourced from large firms better than small firms and these clients might have to weigh the advantages of labor arbitrage and lower costs with the value for investment in the long run. However, it is important to note that the quality of service expectations and measurements are set by the client and even the best outsourcing relationships can fail. It is necessary to single out the hidden costs for offshoring and identify the limitations in the service function that can be supported from offshore.

Following this line of reasoning, we hypothesized the following:

H4. *Offshoring is not a part of the client's product lifecycle and the major drivers behind outsourcing are cost-optimization and business transformation.*

4.1.5 Risk mitigation.

Outsourcing can be a risky proposition even after pouring millions of dollars into analysis and development. Communication delays, failure to communicate, and requirement uncertainty can create problems in effort estimation for IT projects (Kliem, 2004; Nakatsu & Iacovou, 2009). It is important to note that the service provider is expected to interface with internal clients of the outsourcer to understand their businesses and their interfaces while addressing the client's service needs. However, it is imperative that the client sets the right expectations and that the vendor has qualified and dedicated personnel who can identify current service limitations and mitigate any risks that might crop up during the service delivery process. Uncertainty can lead to vendor opportunism, driving costs up in the process. Post-contractual opportunism can result when vendors re-negotiate service contracts in an ongoing outsourcing relationship. In this context, it is fair to expect that the service provider will expose all the hidden costs of offshoring up front and set the right expectations on metrics of performance with the client, assuming that the vendor has taken care to hire and train the best offshore resources, and that offshore risks are not a function of resource effectiveness. Based on this, we hypothesized the following:

H5. *Offshored business functions that are inherently characterized by intangibility, technological uncertainty, service complexity, and communication delays can lead to vendor opportunism and risky outsourcing propositions.*

4.2 Sample and data collection

Our population sample consisted of survey participants who provided their responses by answering the survey questionnaire. The experiment was designed so that data was collected from both clients and vendors, and their responses were used to validate the hypotheses in our decision framework. The following factors were tested to measure offshoring strategy and offshore resource effectiveness:

4.2.1 Offshoring strategy.

- Offshoring strategy
 1. Outsourcers like to keep business functions that have a strategic value either in-house or in captive offshore centers.
 2. A service provider is expected to have a clear vision of the scope of work, should know what they expect to gain from the relationship, and should establish and agree on an exit strategy with the client.
 3. An external service provider/ business partner must combine a client firm's operations with those of other corporations to gain economies of scale and reduce total cost of outsourcing.
 4. Clients do not really stand to gain from an outsourcing relationship when they are looking for cost-optimization and thought leadership from service providers, if the providers' sole motivation is enhancing their skills and domain expertise.

5. Economies of scale, scope, experience, and learning are leveraged from large firms better than small firms and are necessary to reduce transaction costs in an outsourcing relationship.
 6. It is fair to expect that external service providers can only do so much to maintain stakeholder interest and customer service expectations.
 7. Outsourcers prefer to work with offshore captive centers to address variable demand, and grow or shrink a contract workforce offshore, as needed.
- Trust, control, costs, and IT outsourcing
 1. The service provider's performance is a function of trust in its client and collaborative effort and control exercised by its client.
 2. The need for definitive client controls is more important in the success of outsourcing relationship than possessing a high degree of domain competence or process maturity.
 3. Trust and networking are important tools to bridge communication gaps and/or delays, cultural barriers, and reduce offshore transaction costs.
 4. A service provider is more interested in the opportunity for a partnership and product or service ownership is not really important.
 - Offshore risk mitigation
 1. The service provider is expected to interface with internal clients of the outsourcer, understand their businesses, and address the client needs in providing services/products.

2. It is important to estimate effort correctly to have a successful outcome in an outsourcing relationship and reap gains from labor arbitrage.
3. The service provider should expose all the hidden costs of offshoring upfront and set the right expectations on metrics of performance.

4.2.2 Offshore resource effectiveness.

- Service capability assessment
 1. The service provider is expected to support a value-proposition justifying selection of its resources instead of the client using internal service providers.
 2. It is a common practice for service providers to compromise on the quality of offshore resources by assigning less experienced people to the outsourcing relationship.
 3. New hires can contribute as programmers or bug-fixers but cannot really make an effective contribution to the outsourced project.
 4. It is necessary to have processes in place to manage the transition from a legacy system to a newer and mature technology driven system, and meet the safety standards of the client.
 5. It is important to consider manageability, maintainability, extensibility, and supportability levels of service delivery.
- Cross-cultural Issues in IT outsourcing
 1. Foreigners and cultural issues can create barriers for trust and control at offshore.

2. A client bridge software engineer is essential to co-ordinate knowledge flows between client and the external or offshore service provider.
3. Offshore program managers are responsible for leading, motivating, and managing staff with a front-office mindset.

A randomized complete block design (RCBD) was used for the design of the experiments, where treatment means were compared to each other with a design technique known as blocking, which is used to systematically eliminate the error effect on the statistical comparisons among treatments. Randomization is the design technique used to guard against a nuisance factor, which may cause variability in the response variable. A nuisance factor can be unknown and uncontrolled, and randomization inside a block is an effective way to guard against the effects of such a nuisance factor. In this case the nuisance factor could be due to the individual perception of service capability levels from a vendor or a geographical perspective. It could also be dependent on the process maturity levels in the firm and associated production or quality costs for the outsourced service. By adopting this design technique, it was possible to reduce the experimental error and thus remove the variability between different levels of treatments. The output from the experiment was used to determine the validity of each hypothesis.

In this design technique, we consider a treatments that are compared and b blocks. The treatments represent the client and vendor responses, and the blocks represent a test run for each factor under consideration. There is one observation per treatment in each block, and the order in which the treatments are run within each block is determined randomly. The blocks represent a restriction on randomization, and the only

randomization is inside the block. We also assume that there is no interaction between treatments and blocks.

Treatment (level)	Blocks				Totals	Averages
	Observations					
1	y_{11}	y_{12}	\dots	y_{1b}	$y_{1.}$	$\bar{y}_{1.}$
2	y_{21}	y_{22}	\dots	y_{2b}	$y_{2.}$	$\bar{y}_{2.}$
\vdots	\vdots	\vdots	\dots	\vdots	\vdots	\vdots
a	y_{a1}	y_{a2}	\dots	y_{ab}	$y_{a.}$	$\bar{y}_{a.}$
					$y_{..}$	$\bar{y}_{..}$

Figure 4.1: The randomized complete block design

The statistical model for the RCBD can be written in several ways. The traditional model is an effects model:

$$y_{ij} = \mu + \tau_i + \beta_j + \varepsilon_{ij} \begin{cases} i = 1, 2, \dots, a \\ j = 1, 2, \dots, b \end{cases}$$

In an experiment involving the RCBD, we test the equality of the treatment means. Thus the hypotheses of interest are

$$H_0 : \mu_1 = \mu_2 = \dots = \mu_a \text{ where } \mu_i = \frac{1}{b} \sum_{j=1}^b (\mu + \tau_i + \beta_j) = \mu + \tau_i$$

$$H_1 : \text{at least one } \mu_i \neq \mu_j$$

Expressed mathematically, the total corrected sum of squares is expressed as

$$SS_T = SS_{Treatments} + SS_{Blocks} + SS_E$$

Because there are N observations, SS_T has $N - 1$ degrees of freedom. There are a treatments and b blocks, so $SS_{Treatments}$ and SS_{Blocks} have $a-1$ and $b-1$ degrees of freedom. To test the equality of treatment means, we use a F-Statistic computed as the ratio of mean square of treatments to error mean square

$$F_o = MS_{Treatments} / MS_E$$

which is distributed as $F_{a-1, (a-1)(b-1)}$ if the null hypothesis is true. The critical region is the upper tail of the F distribution, and we reject H_o if $F_o > F_{\alpha, (a-1), (a-1)(b-1)}$

The data collected was represented below in a scale of 1 - 9 (1 - Strongly Disagree, 2 - Disagree, 3 - Slightly Disagree, 4 - Completely Unsure, 5 - Unsure, 6 - Somewhat Unsure, 7 - Slightly Agree, 8 - Agree, 9 - Strongly Agree). The feedback rating scale was developed to categorize the responses. If the response was “Yes,” we chose an answer with a rating between 7 and 9. If it was “No,” we chose an answer with a rating between 1 and 3; otherwise we chose a rating between 4 and 6. The tabulated data was then tested for equivalency of treatment means to validate hypotheses H1 – H5.

Table 4.1: Hypothesis Test for Service Capability Assessment

		Service Capability Assessment					
		Factors of Interest					Feedback rating scale :
Treatment levels		Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	
	Vendor A	9	2	8	7	7	1- Strongly Disagree
	Vendor B	9	2	3	9	7	2- Disagree
	Client A	1	2	6	6	6	3- Slightly Disagree
	Client B	7	2	7	6	6	4- Completely Unsure
							5- Unsure
							6- Somewhat Unsure
							7- Slightly Agree
							8- Agree
							9- Strongly Agree

Table 4.2: Hypothesis Test for Cross-Cultural Issues

		Cross - Cultural Issues			
		Factors of Interest			Feedback rating scale :
Treatment levels		Factor 1	Factor 2	Factor 3	
	Vendor A	8	7	7	1- Strongly Disagree
	Vendor B	9	6	9	2- Disagree
	Client A	6	7	7	3- Slightly Disagree
	Client B	7	5	9	4- Completely Unsure
					5- Unsure
					6- Somewhat Unsure
					7- Slightly Agree
					8- Agree
					9- Strongly Agree

Table 4.3: Hypothesis Test for Trust, Control and Costs

		Trust, Control & Costs Factors of Interest				Feedback rating scale :
Treatment levels		Factor 1	Factor 2	Factor 3	Factor 4	
	Vendor A	7	8	9	6	1- Strongly Disagree
	Vendor B	9	2	9	1	2- Disagree
	Client A	5	6	5	8	3- Slightly Disagree
	Client B	6	7	9	8	4- Completely Unsure
					5- Unsure	
					6- Somewhat Unsure	
					7- Slightly Agree	
					8- Agree	
					9- Strongly Agree	

Table 4.4: Hypothesis Test for Offshoring Strategy

		Offshoring Strategy Factors of Interest							Feedback rating scale :
Treatment levels		Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	
	Vendor A	7	9	2	8	4	8	4	1- Strongly Disagree
	Vendor B	9	7	9	7	9	2	9	2- Disagree
	Client A	9	8	6	4	7	2	7	3- Slightly Disagree
	Client B	7	7	7	6	7	2	9	4- Completely Unsure
								5- Unsure	
								6- Somewhat Unsure	
								7- Slightly Agree	
								8- Agree	
								9- Strongly Agree	

Table 4.5: Hypothesis Test for Offshore Risk Mitigation

		Offshore Risk Mitigation Factors of Interest			Feedback rating scale :
Treatment levels		Factor 1	Factor 2	Factor 3	
	Vendor A		7	7	6
Vendor B		7	9	8	2- Disagree
Client A		9	9	9	3- Slightly Disagree
Client B		9	9	9	4- Completely Unsure
					5- Unsure
					6- Somewhat Unsure
					7- Slightly Agree
					8- Agree
					9- Strongly Agree

4.3 Results

Using data from Table 4.1, we tested for H1 and these are the computed results below:

$$SS_T = 130.8, SS_{Blocks} = 66.8, SS_{Treatments} = 15.6, SS_E = 48.4 \text{ and } F_o = 1.289$$

$$\text{At } \alpha = 0.05, F_{0.05, 3, 12} = 3.49$$

Since $F_o < F_{0.05, 3, 12}$, we fail to reject hypothesis H1.

Using data from Table 4.2, we tested for H2 and these are the computed results below:

$$SS_T = 18.25, SS_{Blocks} = 6.5, SS_{Treatments} = 2.9167, SS_E = 8.833 \text{ and } F_o = 0.66$$

$$\text{At } \alpha = 0.05, F_{0.05, 3, 6} = 4.76$$

Since $F_o < F_{0.05, 3, 6}$, we fail to reject hypothesis H2.

Using data from Table 4.3, we tested for H3 and these are the computed results below:

$$SS_T = 87.94, SS_{Blocks} = 13.69, SS_{Treatments} = 15.19, SS_E = 59.06 \text{ and } F_o = 0.77$$

$$\text{At } \alpha = 0.05, F_{0.05, 3, 9} = 1.01$$

Since $F_o < F_{0.05, 3, 9}$, we fail to reject hypothesis H3.

Using data from Table 4.4, we tested for H4 and these are the computed results below:

$$SS_T = 153, SS_{Blocks} = 55, SS_{Treatments} = 8.71, SS_E = 89.29 \text{ and } F_o = 0.585$$

$$\text{At } \alpha = 0.05, F_{0.05, 3, 18} = 3.16$$

Since $F_o < F_{0.05, 3, 18}$, we fail to reject hypothesis H4.

Using data from Table 4.5, we tested for H5 and these are the computed results below:

$$SS_T = 13.667, SS_{Blocks} = 0.667, SS_{Treatments} = 11, SS_E = 2 \text{ and } F_o = 11.001$$

$$\text{At } \alpha = 0.05, F_{0.05, 3, 6} = 4.76$$

Since $F_o > F_{0.05, 3, 6}$, we reject hypothesis H5.

4.4 Discussion

H1: *Service capability assessment is required of a vendor in order to establish a successful and enduring outsourcing relationship.*

There was a general consensus among respondents that service capability assessment is extremely important for a successful and enduring outsourcing relationship. Capability assessment should be prioritized over resource assessment, and it is important to evaluate the service capability levels in terms of relationship competency, delivery competency, and transformation competency. It was assumed that the resource hiring process, work environment, access to knowledge resources, training and development, testing on acquired knowledge, and technological skill capability were under management control, and these factors could not have an interaction effect on service capability assessment. The clients were also confident of their assessment that the vendors have always deployed their best resources to handle their offshoring engagements. The vendors, on the other hand, expressed a view that they have established processes in place that let them use less experienced people and new college graduates to implement low-level programs and specifications, which in no way cause a problem with the outsourcing relationship. It was felt that even the best of resources would fail to be effective if service competency centers are not established and processes are not in place to manage transition and service delivery. The results confirm that this hypothesis is true and that it had a significant effect on determining resource effectiveness.

H2: *Cultural insensitivity and ineffective leadership can cause barriers in partner interaction and interchange of knowledge between the client and the vendor.*

There was a general consensus among respondents that cultural barriers and communication issues could create a problem in an outsourcing relationship. However, the client respondents did not think that foreigners or expatriates cannot be effective leaders or were not able to comprehend why they could have a problematic working relationship with offshore staff. The vendors, on the other hand, felt that they could be a source of problem at offshore because of the inherent cultural differences and different perceptions in accepted mode of social behavior. All respondents agreed that there always exists a client point person who helps in bridging cultural gaps and managing the transition of knowledge by acting as gate-keepers. The role of the program manager was emphasized as critical in controlling and coordinating the engagement as well as in resolving differences between the outsourcer and the service provider. It was felt by the client that it is often a challenge to make the offshore program manager lead, motivate, and manage the staff with a front-office mindset. The results confirm that this hypothesis is true and that it had a significant effect on determining resource effectiveness.

H3: *A client's control over the vendor and a vendor's trust in the client will have a positive impact on the quality of the offshored project.*

It was established by the respondents that the service provider's performance is a function of trust in their client and collaborative effort and control exercised by their client. It required both client and service provider to apply controls by way of ensuring continuous flow of communication between both parties, ensuring client reference

checks, and monitoring vendor opportunism and inter-firm adaptation. The general consensus was that client's control would have a significant effect in improving the quality but would not help to keep costs down. Vendors felt that it would be in the client's best interest to let them maximize control over the engagement as vendors will always have a vested interest to maintain business continuity. The vendors felt the service provider had the domain competence to deliver their projects and the clients should engage in frequent and relevant information exchange with them to build a trust relationship. If the trust is missing, the service provider would prefer to exit from a relationship if the relationship does not transcend to a partnership mode and remains as a commodity servicing affair. However, it is required to set clear expectations at the initial stages of the engagement by assessing the client's needs and what is required to ensure a successful business outcome. At the same time, it is expected that the client has appropriate controls in place to measure productivity and monitor vendor opportunism. Clients and vendors felt that large vendors have existing processes and frameworks to navigate through the unknowns and can leverage on their knowledge management processes to improve performance, quality of deliverables, and reduce outsourcing costs. Vendors also felt that lesser experienced developers do most of the heavy lifting in the learning processes of the engagements and should be working offshore under the project leadership, and at the same time the client should trust the offshore project leadership to deliver on their assessed levels of capability. The vendors firmly believe that offshore project risks attributed to resource inexperience would be better taken care of by offshore project management. Inherent problems created by lack of trust due to inexperience were

not recognized by either client or vendor. Vendors felt that communication with the project sponsor or business owner should be initiated by the delivery manager and the program manager and that technical resources do not need to interface with the client because they may create a breach of trust with the client. The results confirm that this hypothesis is true and that it had a significant effect on determining offshoring strategy.

H4: *Offshoring is not a part of the client's product lifecycle and the major drivers behind outsourcing are cost-optimization and business transformation.*

There was a general consensus among clients and vendors that offshoring has not traditionally been a part of the product's lifecycle. Client's motivation for offshoring is driven by the need to focus on core businesses, keep costs down, add a new competency, and gain improved quality of service. The service provider is required to do a detailed assessment of the client's service needs, understand what is missing, and determine what needs to be delivered to the client. The service provider is expected to have a clear vision in the scope of work and what they expect to gain from the relationship. Since the onus is on cost-optimization and business transformation, the service provider is expected to have established service delivery competency levels and a competitive price-offering that heavily relies on effective use of knowledge management that is gained by combining a client firm's operations with those of other corporations to gain economies of scale. Vendors felt that they have adequate processes supported by their human resources function that help prevent attrition of middle and top-level managers, and competency centers that allow them to retain domain-specific knowledge processes within the boundaries of the firm. At the same time, vendors felt that they are better equipped to

support business transformation and support functions for offshore captive centers, as they have been able to leverage knowledge competencies from their centers of excellence at offshore and onsite locations. The results confirm that this hypothesis is true and that it had a significant effect on determining offshoring strategy.

H5: *Offshored business functions that are inherently characterized by intangibility, technological uncertainty, service complexity and communication delays can lead to vendor opportunism and risky outsourcing propositions.*

Respondents felt vendor opportunism is not relevant in this context and that there are other factors that contribute to risk perception. Thus, they have rejected this hypothesis. Risk management is an important issue from both a client and vendor perspective, and both parties are keen on managing the risk. However, there has been a wide variance in their observations of perceived risks and ways to mitigate those risks. Risks can stem from the uncertainty or inadequacy of client requirements and communication issues. Sometimes, vendors decide to take on risks while reacting to unfavorable or unknown marketing conditions. From a vendor's perspective, it is important to take a risk while bidding for a new project and at the onset of a new relationship with a client. Risk costs are usually built into the premium and competitive prices are offered by the vendor after a rigorous requirement review by the business owners and the technical managers. It is also important that the service provider should be extremely transparent about their capabilities. However, we cannot discount the human capital risks and the uncontrollable factors in a relationship and even the best of vendors can fall short of meeting or exceeding the client's service expectations. A

managed service provider who owns the service from end-to-end is likely to have fewer problems and fewer risk probabilities than a provider who is contracted to work on a small piece of the service infrastructure. Inadequate knowledge management by the client can be a major risk for failure of an outsourcing relationship. The author has experienced several situations where ineffective knowledge controls have resulted in poor technical documentation. Reverse engineering of source code has failed to yield knowledge about the business processes and the business interfaces that are required to support service delivery. This has resulted in wasteful expenditures incurred by client and vendor, whose resources had to invest time and energy in understanding the business domain and the interaction between the interfaces of components that make up the service architecture. At the same time, knowledge owners are limited to some client and vendor resources, who have not documented the existing knowledge processes and the firm is at a continuous risk of losing product-specific domain learning. It is important to note that any investments in data warehousing and data mining systems, employee training applications, e-learning applications, and knowledge management systems are bound to fail, since the client has not addressed the root cause of the problem. It is also improbable to expect that a service provider can be truly effective unless they are able to consolidate the business knowledge with that of other firms to gain economies of scale and reduce total costs of outsourcing. From an application perspective, it is important to recognize the inherent issues in reusing the service components for multiple client scenarios. Vendors recognized the importance of domain knowledge management processes, but were not specific about the reusability and customizability of component

services and it was not possible to estimate the hidden costs behind the service delivery. Also, vendors stressed the importance of managed service providers whereby they could manage the service from end-to-end, and exercise better controls on application design, reusability, testability, and documented processes. The research suggests that there are several issues in service delivery that border on uncertainty, which could create problems for small as well as large vendors, and inability to substantiate reasons for outsourcing failure has been falsely interpreted as vendor opportunism. The results confirm that this hypothesis is false and that it does not have a significant effect on determining offshoring strategy.

CHAPTER 5: Summary, Conclusions, and Recommendation

5.1 Summary

In this paper we discussed issues current to the outsourcing community, focused on the limitations and psychological drawbacks, and attempted to interpret the controllable and the unknown factors that make outsourcing a risky business proposition. Literature on outsourcing does not focus on the issues from an external service provider perspective, and the goal of this paper was to present our findings from this perspective. We conducted a detailed investigation on the outsourcing phenomenon and the merits and demerits of outsourcing, and we looked for answers as to why some outsourcing ventures succeed and why others do not. We followed with analytical research on the measurement and improvement of offshoring effectiveness of an IT development or maintenance project. An experiment was devised to collect data using a survey questionnaire and to understand the implications of resource effectiveness and offshoring strategy in offshoring success stories. The next step was to validate and verify the collected data using statistical analysis, where we tried to eliminate the noise and the interaction effects between the treatments. Our findings from the experiment were presented in Section 4.4, where we discussed the importance and significance of each measurement metric on offshoring effectiveness. Finally, we discussed the cost motivation behind outsourcing and the opportunities for cost optimization and we proposed measures to improve offshoring effectiveness.

5.2 Conclusions

The current research has given us insight into the state of the multi-billion dollar outsourcing industry. It has provided an opportunity to understand what works for outsourcing and also an opportunity to learn from past mistakes. The research has provided us with a vendor's perspective, which includes the firm's decision to work with external service providers, to set up wholly-owned subsidiary units in cost-effective global locations, and to measure inherent factors that affect offshoring effectiveness in terms of labor arbitrage, productivity, and capacity utilization. The success of an outsourcing relationship is heavily biased on the client's decision to choose the right vendor. The selection of a good vendor from a pool of global vendors is an objective decision based on the vendor's credentials and proven ability to deliver the benefits that the internal IT organization has failed to achieve. Each firm may have different vendor selection criteria, and it is reasonable to expect that the vendors may meet some selection criteria and fail in some other criteria. To mitigate the risks of failure, clients may use selective outsourcing when they work with different vendors located in separate geographic regions. The most common benefits sought are financial but not at the cost of compromising value and long-term benefits.

It is, however, important to note that the experience level of a global vendor may have a positive impact in an outsourcing relationship. Economies of scale, scope, experience, and learning can be leveraged from large firms better than small firms and are necessary to reduce transaction costs in outsourcing. Service providers from large firms are better equipped to provide leadership guidance and niche expertise to the client

firm. They can also offer improved services because of their matured processes at both ends of the outsourcing relationship.

The researchers took care to evaluate both large and small vendors and found that clients never failed to stress the importance of transparency, honesty, and trust in an outsourcing relationship. Vendors are expected to be upfront with their capability levels, and the expectation is that the offshore program manager will be responsible for leading, motivating, and managing staff with a front-office mindset. The vendor's front office should set proper expectations with the client on metrics of performance and expose all the hidden costs of offshoring upfront. The researchers also felt that decisions, such as which IT functions needed to be outsourced and which needed to be kept in house, had long-term impact. It is also important to bear in mind that service providers, who had been successful in building competency centers by leveraging on the knowledge processes gathered through projects carried out for U.S. and European clients, are in a unique position to support technology functions in a wide variety of business functions. Client firms, who do not want to risk losing their proprietary core expertise, should re-evaluate their decision choices, since these service providers might be in a better position to leverage their acquired knowledge processes and help them survive in a competitive market. The researchers learned that not all client firms were aware of effective client controls or measurement metrics, and many vendors expressed their concern with client controls and their effectiveness. A desired way to enforce client control and reduce risk probability is an increased interaction with vendors by way of weekly review meetings and technology discussions. However, this will only add up to the total outsourcing costs

and reduce the value-proposition or the competitiveness of the vendor. On the other hand, the vendors felt increased client interactions were unnecessary and they were better equipped to deal with performance metrics than their clients, and client-controls would unnecessarily add to the total costs of outsourcing.

Apart from client control costs, the researcher identified these costs as critical to offshoring strategy:

1. Offshore resource costs
2. Infrastructure costs
3. Knowledge transfer costs
4. Communication costs
5. Re-specification costs
6. Business travel costs
7. Proposal and prototyping costs
8. Product development and technology transfer costs
9. Project monitoring and control costs
10. Product quality costs
11. Product disposal and upgrade costs, and
12. Onsite customer satisfaction costs.

Of the above-mentioned costs, [1],[5],[7],[8],[12] can be directly attributed to vendor's service capability assessment, [3],[4],[6],[9],[10] to cross-cultural issues, trust, control and associated costs, and [2],[11] to offshoring strategy. A majority of these costs can be controlled by cost-optimization measures which are in turn driven by the

client and the vendor's motivation for outsourcing. It is unreasonable to expect that outsourcing costs can be reduced if the vendor's sole motivation is enhancing their skills and domain expertise. At the same time, the client expects that a business relationship is based on clear expectations and the vendor's ability to navigate through the unknowns, and that their relationship with vendors should largely be successful. This holds special significance for countries like China who are trying to make a move from manufacturing to services outsourcing. The domestic IT market in China has not been able to leverage their IT capabilities and the outsourcing revenue is quite small compared to that of India. The literature review has suggested that client companies in Japan are more willing to work with Chinese vendors as they usually possess a lower maturity level in product and process management and it turns out to be a better value-for-cost proposition for the Japanese companies. It may not take a long time for Chinese vendors to catch up with the domain expertise that their competitors are able to offer, but it might take a while to offer viable value propositions to their clients, since they do not have mature processes that can help optimize costs. The cost implications can have a major impact on the vendor's capability to build a product to service client's need vis-à-vis the vendor's capability to provide services at offshore. It is easy to illustrate this point by judging the effectiveness of a triage document that is commonly used for service support. Triage is defined in Wikipedia as a process for sorting injured people into groups based on their need for or likely benefit from immediate medical treatment ("Triage," 2009). However, one must note that there are limitations on the use of a triage document. Service level expectations may not be fully met with the help of just a triage document; they require

domain expertise and an understanding of the business interfaces to diagnose the defects affecting the chain of components that are part of the service. The researcher also learnt that a vendor's risk management is focused more around business transparency, operations, work environment, behavioral aspects, and ethical contract execution. However, the researcher observed that vendor's risk management did not address specific issues for service intangibility, technological uncertainty, and service complexity that can lead to vendor opportunism and increased risk of failure. Although the clients or vendors did not agree that these could lead to an increase in transaction costs and vendor opportunism, the researcher felt there was a need to have processes that effectively measure service metrics for the above mentioned and determine the service resolution methodology at the onset of a new outsourcing relationship.

Based on our research, the following measures have been suggested as important in improving offshoring effectiveness.

- Service capability measures
 - Ability to support these outsourcing service functions from a computing and service availability perspective: Manageability, Maintainability, Extensibility and Supportability. Identify service activities that are inseparable and will be better managed at offshore captive centers.
 - Ability to estimate correctly the amount of client contribution required for offshore design and development.
 - Ability to operate and maintain services from offshore with the promise of uninterrupted service delivery.

- Ability to support and maintain IT infrastructure investment from offshore.
- Proof of safety engineering standards (e.g., delivered software should support decision systems that help prevent working in hazardous conditions).
- Ability to manage transition risks from legacy systems to newer and more mature technology (e.g., re-architecture should yield performance gains).
- Ensure resources have right level of domain expertise to interface with client's internal resources.
- Cross-cultural issues
 - Ability of offshore leadership to reduce client related cultural costs.
 - Proof of measures taken to resolve cultural issues with U.S., European, or Japanese clients.
 - Replace foreigners at offshore with people who have cultural ties with the offshored country to provide effective leadership and a reassuring work atmosphere.
 - Resolve communication delays posed by cultural interaction and address hidden costs due to associated problems of trust and control.
 - Set right expectations with the client by leading, motivating and managing staff, and building a sense of ownership.

- Trust, control, costs, and IT outsourcing
 - Establish service provider's motivation for outsourcing at the onset of a new relationship.
 - Identify and resolve issues that could create an impression of vendor opportunism (e.g., resolve uncertainty in requirement specifications).
 - Identify if clients have controls to measure productivity and how these controls relate to the vendor controls for measuring offshoring effectiveness.
 - Address IP protection and core competitiveness issues by using offshore captive centers (for core operations) and outsourced service providers (for non-core operations and variable demand).
 - Build effective processes to generate trust and effective knowledge transition via frequent and relevant information exchange, inter-group exchange, and documented knowledge processes.
 - Reduce client interaction costs and quality costs by mutually defined control mechanisms.
- Offshoring strategy
 - Ability to effectively meet cyclical demand and maximize resource utilization.
 - Ability to meet service delivery expectations of user community and stakeholders.

- Identify client or country specific needs for unique technical expertise and use them to gain entry into U.S. and EU markets. Leverage the need with channel partners to seek U.S. and EU markets and establish development centers at cost-effective outsourcing destinations that have a time-zone advantage with U.S. and European countries.
- Build and sustain global strategy and competence centers that can cater to unique client business and cultural needs.
- Offshore risk mitigation
 - Leverage knowledge acquisition process of service provider to negotiate post-contractual opportunism.
 - Establish benchmarks to bridge the gap between effort estimation and knowledge acquisition process.
 - Address technological uncertainty, service complexity, and communication issues jointly with client to improve service delivery.
 - Ability to correctly estimate effort required to negotiate communication delays, requirement uncertainty, and unclear software specifications.

5.3 Recommendations for further research

The scope of our study was limited to evaluating offshoring strategy and offshore resource effectiveness as a measure of offshoring effectiveness. There are other factors that might influence the outsourcing relationship and it is important to measure their effects and interaction with the above-mentioned measurement metrics. It was also felt that service providers have widely different approaches while dealing with a transition

from a legacy system to a newer and mature technology driven system, and adopting good safety engineering principles in software solutions and services. Vendors reportedly have frameworks to deal with technology acquisition and transition issues, but it was evident that quality and control costs can affect an otherwise successful client-vendor relationship. It is important to conduct research on the complexity of services and services componentization with relation to hosted services, and the inherent limitations in offshore service delivery. The scope of such an investigation should also include research on the extent of redundancy mechanisms, infrastructure investment, and customer support response times that can be supported and sustained by the offshore service provider. Outsourcing in recent years has profoundly impacted many countries and it would be appropriate to investigate the impact of outsourcing successes and failures on social behavior, and how change in social outlook reflects on resource effectiveness and the continued success of offshoring.

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