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Mitigation of risks due to service provider behavior in offshore software development

Service provider behavior

A relationship approach

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Abstract

Purpose – Although risks and client-vendor relationships in IT outsourcing have been studied in prior research, there is a paucity of studies providing insights on the mitigation of client risks through the relationship. This research aims to focus on mitigation of the *ex post* risks of firms engaged in offshore software development (OSD). Client risks due to service provider behavior are identified first. Further, this work seeks to identify relationship variables that could reduce the impact of determinants of risk on a risk category.

Design/methodology/approach – This research followed a multiple case study method aiming to build insights and directions that would facilitate further research. The paper's goal of sampling was to choose cases which were likely to extend the emergent theory pertaining to risks and their mitigation through relationships.

Findings – Findings from this study show that shirking, loss of control over information assets, and service provider lock-in are the three categories of *ex post* risks. A relationship management strategy ensuring reasonable profits to the vendor could mitigate shirking risk. Trustworthiness of vendors established through credibility and benevolence in prior engagements could mitigate the risk of loss of control over information assets. Further, dependence balancing through a multi-vendor offshoring strategy and joint investments in relationship-specific assets could mitigate the risk of service provider lock-in.

Practical implications – The findings from this research provide useful insights in vendor selection and management process.

Originality/value – This paper adds to the growing body of literature in offshore IT outsourcing and makes two significant contributions: identification and categorization of risks due to vendor behavior and their determinants in OSD; and understanding the role of relationship dimension in mitigating such risks in OSD.

Keywords Offshore software development, Risk management, Mitigation, Relationship, Outsourcing, Vendor behavior

Paper type Research paper

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Introduction

Project-oriented services which includes offshore software development (OSD) as a major category grew at 23 percent CAGR during 2005-2009 and growth trend is expected to continue[1]. Despite the steady growth and compelling business cases, OSD entails significant risks. From the close proximities of the organization where line managers once enjoyed “management by walking around”, the development activity shifts to a distant country with distinct culture, salary levels and time zones. Many challenges stem from these differences, often in unexpected ways. The differences in work styles, interests and expectations of stakeholders at offshore and onshore sites of OSD further complicate the task and trigger additional risks (Kaiser and Hawk, 2004; Carmel and Tjia, 2005).

The global delivery model of software development which follows a geographically distributed project management structure (Carmel and Tjia, 2005) while promising significant productivity advantages such as access to global resources and cost savings from labor arbitrage also creates a unique set of risks to both clients and service providers (Rottman and Lacity, 2008). Prior research has highlighted some such risks specific to offshore context of software development as delivery delays, additional costs and additional management overheads (Lai *et al.*, 2003) in addition to serious threats to data security (Camp *et al.*, 2006). Although these studies have generated insights on the phenomenon, developing a theoretical framework to study OSD risks was not the main focus of these studies.

Early research on outsourcing risks provided a general treatment to IT outsourcing risks and followed anecdotal approach useful for generating management insights (Earl, 1996; Klepper and Jones, 1998). Willcocks and Lacity (1999) studied IT outsourcing risks in insurance services domain; some scholars following case study approach identified dimensions for classification and mitigation of IT outsourcing risks (Kern and Willcocks, 2001; Aubert *et al.*, 2005). Aron *et al.* (2005) classified outsourcing risks into strategic risks, operational risks, intrinsic risks of atrophy and intrinsic risks of location. Some scholars have developed conceptual frameworks for IT outsourcing risk analysis (Kern and Willcocks, 2001; Tafti, 2005; Chatfield and Wanninayaka, 2008). Smith *et al.* (1996) developed a framework based on resource, environmental and project management perspectives to analyse issues in OSD and maintenance. Some studies have focused on software development risks (Barki *et al.*, 1993, 2001) at a project level, and a recent empirical study (Iacovou and Nakatsu, 2008) identified these risks in the offshore outsourcing context. However, most studies either do not consider the offshore context of IT outsourcing with due treatment of their linkages to theory at a firm level or they treat all IT outsourcing as consisting of homogeneous kind of services. However, risks have different determinants and characteristics for different types of offshore IT services at different levels of analysis and they entail a service-specific treatment (Beulen *et al.*, 2005; Aundhe and Mathew, 2009). For example, an outsourced service like OSD is a project-based activity based on requirements that may or may not be stable (Gopal *et al.*, 2003) whereas remote infrastructure management service involves continuous monitoring based on pre-defined service levels. These two contexts would involve different types of risks to the client which entails focused attention in risks analysis based on the nature of service.

Risk mitigation in software projects has been recognized as an integral part of risk management (Fairley, 1994) and formal (Goo *et al.*, 2009), informal mechanisms (Sabherwal, 1999; Koh *et al.*, 2004) and portfolio approaches (Choudhury and Sbarwal, 2003) have been suggested for risk mitigation by various scholars. While highlighting the role of informal contracts in IT outsourcing, Koh *et al.* (2004) through an empirical study demonstrated how psychological contract supported by trust could effectively complement written contracts in outsourcing and lead to more successful outcomes. Prior research has also shown more specifically that offshore engagements with more congruent relationship between the client and the service provider have delivered projects more on time and within budget (Heeks *et al.*, 2001). Although several studies have suggested relational contract theory (RCT) (Macneil, 1980) to analyze the role of relationship in IT outsourcing, there has been wide disparity in the application of relationship constructs to explain inter-firm relationships in IT outsourcing (Goles and Chin, 2005).

Focusing on OSD, this study further builds a comprehensive taxonomy of client risks in OSD based on extant literature and prior theory and subsequently seeks to:

- identify *ex post* risks and their determinants arising from service provider behavior; and
- find the role of relationship in the mitigation of such risks.

The conceptual elements for this study are primarily drawn from transaction cost economics (TCE), agency theory (AT) and RCT to formulate a theoretical framework for our study. The analysis in this study is based on 24 interviews conducted with senior executives of five US clients who engage third-party vendors or captive centers in India for OSD, and six Indian IT service providers who engage in OSD with the USA and European clients. Based on the interview data, the OSD risks arising from service-provider behavior *ex post* are first identified, their determinants are examined and specific relationship management mechanisms that effectively target and mitigate each of the identified behavioral risk are then discussed.

Taxonomy of risks in OSD

A significant amount of work in software project risks has focused on risk management at a project level (Boehm and Ross, 1989; Barki *et al.*, 1993). However, these studies are not sufficient to develop a clear understanding of OSD risks involving inter-firm relationships. IT outsourcing research has used various strategic management, economic and social theories such as resource-based view, resource dependency theory, transition cost economics, AT, power political and social exchange theories (Lee *et al.*, 2000; Dibbern *et al.*, 2004). Theories of the firm that provide the most significant insights into the contexts and behaviors in OSD processes are TCE and AT and have been used extensively in prior research on risk identification (Aron *et al.*, 2005; Chen and Bharadwaj, 2009), although knowledge-based view of the firm has been suggested in a recent IS study as a complementary stream of reasoning (Dibbern *et al.*, 2008). TCE and AT provide the concepts of bounded rationality, information asymmetry and opportunism (Williamson, 1985; Eisenhardt, 1989) which are useful for risk classification. TCE also classifies transaction costs into two time frames of *ex ante* and *ex post*. As pointed out by Williamson (1985):

Transaction costs of *ex ante* and *ex post* are usefully distinguished. The first are the costs of drafting, negotiating, and safeguarding an agreement (p. 20) [...] *Ex post* costs of contracting take several forms. These include (1) the mal adaptation costs incurred when transactions drift out of alignment [...] (2) the haggling costs incurred if bilateral efforts are made to correct *ex post* misalignments (3) the set up and running costs associated with the governance structures (often not the courts) to which disputes are referred, and (4) the bonding costs of effecting secure commitments (p. 21).

While reviewing prior literature on AT, Eisenhardt (1989, p. 58) highlighted self-interest, bounded rationality and risk aversion as the three human-related assumptions of the theory and also noted:

Agency Theory is concerned with resolving two problems that can occur in agency relationships. The first is the agency problem that arises when (a) the desires or goals of the principal and agent conflict (b) it is difficult or expensive for the principal to verify what the agent is actually doing.

The concepts of goal conflict and monitoring difficulty in AT provide additional useful dimensions to study risks as client and service provider firms interact over thousands of miles apart for software development in the context of offshore outsourcing.

Drawing from TCE, AT and extant literature, Table I lists the OSD risks of outsourcing firms (clients). Risks have been classified into two broad categories of *ex ante* risks and *ex post* risks based on the timing of the risk, i.e. whether the risks emerge *ex ante* (prior to signing of contract) or *ex post* (after the contract is signed). Risks could arise out of client decisions, service provider behavior or from the interaction between the two (Clemons *et al.*, 1993). Risks originating from client decisions *ex ante*, especially risks due to country and location decisions are explained by bounded rationality and information asymmetry under which these decisions are made. In the case of vendor selection, information asymmetry, opportunism and monitoring difficulty also play a role in the origin of risks (Eisenhardt, 1989; Williamson, 1985). During the operational phase of OSD, risk could arise out of poor governance structures and contract design (Eisenhardt, 1989a, b; Williamson, 1985).

Ex ante risks could be understood by analyzing the hierarchical structure of decision process since each decision prior to contract is made under limited information about future, when judgmental errors could trigger risks (Graf and Mudambi, 2005). Risks which are outcomes of such strategic decisions under uncertainty involve various aspects of risks pertaining to country, government policy, and quality and availability of infrastructure and human capital. In the context of India as an offshore destination, the country's ongoing war-like crisis with its neighbor Pakistan poses a challenge to offshoring nations as force major conditions arising out of war could adversely impact critical development projects of clients. In addition, vendor selection risk due to poor choice made under limited knowledge about the vendor's capability could also surface. This risk could also be due to vendor opportunism by misrepresenting information to win a deal (Eisenhardt, 1989; Kern and Willcocks, 2001; Kern *et al.*, 2002). Adverse selection could lead to poor performance at a project level in terms of quality, time and cost of delivery.

Ex post risks that arise mostly from client's poor offshore governance structure include client's loss of competence in the outsourced IT service (Kaiser and Hawk, 2004).

Time	Risk category and supporting literature	Major risks	Underlying theory	Offshore context
<i>Ex ante</i>	<p>1. Risks originating from client decisions (Graf and Mudambi, 2005; Carmel and Tjia, 2005)</p> <p>2. Risks originating from client decision and service provider behavior (Kern and Willcocks, 2001; Kern <i>et al.</i>, 2002)</p>	<p>Country risk</p> <p>Adverse government policy</p> <p>Poor IT infrastructure</p> <p>Poor quality and availability of human capital</p> <p>Vendor selection risk</p> <p>Attrition</p>	<p>TCE and AT: bounded rationality, information asymmetry</p> <p>AT and TCE: information asymmetry, opportunism, monitoring difficulty</p>	<p>This risk is particularly high in the offshore context as offshoring depends on resources from another country</p> <p>Offshoring increases this risk as distance could act as a hindrance to exactly understanding service provider's capability and service provider's control over its resources. Clients often mitigate this by country visits and assessment through face-to-face interactions</p>
<i>Ex post</i>	<p>1. Risks originating from client's poor offshoring governance (Barthelemy, 2001)</p> <p>2. Risks originating from service provider behavior (Aron <i>et al.</i>, 2005; Kern and Willcocks, 2001; Clemons and Hitt, 2004)</p>	<p>Loss of client's competence</p> <p>Transition delays</p> <p>Shirking</p> <p>Poaching</p> <p>Opportunistic re-negotiation</p>	<p>AT and TCE: governance structure, contract design, goal conflict, monitoring difficulty</p> <p>AT and TCE: information asymmetry, opportunism, monitoring difficulty, goal conflict</p>	<p>Risk of transition delay is high in offshore context due to increased geographical and cultural distance</p> <p>The difficulty in monitoring service provider's actions from a long distance could add to this risk in the offshore context</p>

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Table I.
Client-risks classification
in OSD

Co-sourcing contract is often adopted by clients as a strategy to mitigate this type of risks. Further, offshoring of IT often results in unexpected delays in transition, which could arise due to staff resistance toward knowledge transfer as well as due to cultural differences. This risk is often termed as hidden costs to the client in offshore outsourcing (Barthelemy, 2001). Vendor firm's high attrition rate is another potential risk for clients. The outsourcing growth has fueled a very competitive job market in countries like India and IT employees frequently change jobs for career benefits which could adversely affect the ongoing project of a client (Carmel and Tjia, 2005).

The post-contract time frame has also a higher potential for goal conflict and vendor opportunism. During this period, the client has already incurred a switching cost. Further, close monitoring of the behavior of a distant vendor is often prohibitively costly. Potential risks involve the vendor delivering less than acceptable product or service quality while claiming full payment (shirking), vendor misusing the client's intellectual property (IP) and the vendor renegotiating for larger share of the client's business due to the client's business dependence on the vendor (Aron *et al.*, 2005; Kern and Willcocks, 2001).

Considerable amount of research attention has been focused on addressing the above categories of risks and their mitigation strategies based on contractual due diligence and incentive mechanisms (Gopal *et al.*, 2003; Chen and Bharadwaj, 2009; Goo *et al.*, 2009) However, inter-organizational studies have shown that relationship between the contracting parties plays an important role in mitigating risks due to vendor opportunism *ex post*. For example, studies in marketing channels have shown that potential risks due to supplier opportunism could be controlled through a customer's relationship strategy (Anderson and Narus, 1990; Ganesan, 1994).

Relationship for risk mitigation

RCT suggests that formal contracts alone do not ensure performance of an engagement, but informal contracts in the form of relationship between the client and the vendor complements and help evolve formal contracts (Macneil, 1980; Sabherwal, 1999; Koh *et al.*, 2004). In the case of OSD, a prudent selection of fixed price and time and materials contract based on requirements uncertainty could mitigate project-level risks to some extent (Gopal *et al.*, 2003; Chen and Bharadwaj, 2009). However, several failures of OSD in the recent past have shown that such diligence in legal contracts alone are insufficient to ensure OSD success (Dignan, 2005; Frank, 2005). Some studies on offshore IT outsourcing has highlighted the role of relationship in the success of such engagements (Sabherwal, 1999; Kern and Wilcocks, 2001). A recent study in OSD has reported that addition of relational factors to the set of project characteristics and agency factors significantly enhances the variance explained in offshore IS projects (Rai *et al.*, 2009).

Client-vendor relationship in IT outsourcing has been studied by several scholars highlighting the role of elements of relationship such as cooperation, commitment, conflict, power and dependency in determining desired outcome of an engagement (Lee and Kim, 1999; Kern and Willcocks, 2000, 2001). Goles and Chin (2005) reviewed the various relationship constructs used in IT outsourcing research and reported three issues while concluding the survey:

- (1) A total of 23 constructs related to relationship were used in aggregate by various researchers.

(2) Conceptual overlaps among the constructs.

(3) Most constructs were based on the set of norms advanced by Macneil (1980).

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These findings further emphasize the need to identify relevant constructs in client-vendor relationship specific to:

- OSD context; and
- useful for mitigation of client risks.

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The risk mitigation framework as shown in Figure 1 draws on findings from prior studies in IS literature, which suggested that clients could control vendor behavior through informal mechanisms (Choudhury and Sabharwal, 2003; Rai *et al.*, 2009). These findings point to the important role of relationship in mitigating risks due to vendor behavior. Drawing from RCT, the further focus of this study is on the category of client risks which arise from vendor's opportunistic behavior and their mitigation through aspects of relationship. It is expected that relationship between client and service provider reduces the impact of the determinants of risks on *ex post* risks arising out of adverse vendor behavior. Here, determinants of risks are the factors that cause a specific vendor behavior. Following the above framework, *ex post* risks of client organizations in OSD arising out of service provider behavior and their mitigation through relationship are further analyzed from the data gathered from clients and service provider organizations.

Research methodology

This research followed a multiple case study method aiming to build insights and directions that would facilitate further research (Yin, 1994). Case study method was deemed most appropriate for this research as OSD is a relatively nascent phenomenon (Levina and Ross, 2003) wherein case study method is particularly suitable (Eisenhardt, 1989). According to Myers (1997), "case study research is the most common qualitative method used in information systems" and this method is particularly relevant for this study of as it seeks to understand information systems development in the context of organizations. A framework based on existing theories and supporting literature (Figure 1) was used in the study. This specification of constructs prior to study supported theory building process. Eisenhardt (1989, p. 6) stated: "if these constructs prove important as the study progresses, the researchers have a firmer empirical grounding for the emergent theory".

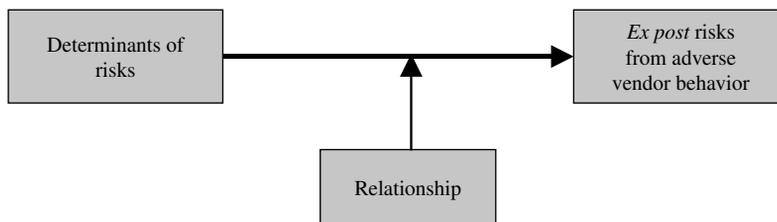


Figure 1.
Mitigation of *ex post* risks
through relationship:
suggested framework

Site selection

We purposively adopted a multiple case design to capture conceptual elements of client risks, their determinants and elements of relationship that would mitigate the risks. Our goal of sampling was to choose cases which were likely to extend the emergent theory pertaining to these risks and their mitigation through relationship (Yin, 1994; Eisenhardt, 1989). Without aiming to test an existing theory, this case study design seeks to establish generalization to theory (Yin, 1994; Dibbern *et al.*, 2008).

Table II provides the characteristics of the organizations chosen for conducting this research. Two major sources of data were identified in this study:

- (1) Senior executives of six IT service providers based out of India.
- (2) Senior executives of five clients based in the USA who OSD to India.

The following criteria were followed in the selection of case sites:

- The organization has been in OSD relations with an overseas partner for at least five years.
- The organization has current long-term contracts with foreign partner(s).
- The organization was willing to give access to one or more key informants in the senior management.

The last criterion was followed owing to the confidentiality issues involved in outsourcing (Tanriverdi *et al.*, 2005).

Sl. no.	Engagement type	No of employees	Country	Interviewees
1	ISV with ODC in India	120	USA	Executive VP (1)
2	Electrical product company with offshore partner in India	–	USA	CEO (1)
3	ISV with ODC in India	1,450	USA	IT director (1)
4	ISV with ODC in India	100	USA	CEO (1)
5	Financial services firm having OSD with Indian IT service provider	4,000	USA	Executive director (1)
6	IT service provider with US clients	1,500	India	CEO (1), senior VP (1), operations manager (1)
7	IT service provider with US and European clients	3,400	India	Assistant VP (1), senior manager (1), program manager (2), manager-contracts (1), project manager (1)
8	IT service provider with US and European clients	2,400	India	Executive director (1), senior VP (1), general manager(1)
9	IT service provider with US clients	400	India	Vice president (1), assistant VP (1)
10	IT service provider with US clients	500	India	General manager (1)
11	IT Service provider with global clientele	55,000	India	Senior VP (1), vice president(1), general manager (1), operations manager (1)

Table II.
Characteristics of
organizations studied

Notes: ISV, independent software service provider; ODC, offshore development center

In order to ensure the validity of our informants who responded to our questions on behalf of the organizations they belonged to (Kumar *et al.*, 1993), it was ensured that they had the requisite knowledge and involvement in OSD. Following this criterion, the respondents selected for interviews were having:

- minimum ten years of experience in IT outsourcing engagements involving OSD; and had
- active involvement in the decision-making process of OSD contracts.

Table II provides information about the respondents and the positions they held in their respective organizations. A combination of structured and open-ended questions was used during our interviews with service provider executives. A typical interview structure with client executives involved enquiries such as challenges faced in OSD during operations phase and service provider behavior that adversely affects the client how they were managed. These questions triggered more elaborations on the topic. Service provider interviews covered challenges faced during OSD and how they were overcome. Except for two telephonic interviews with client executives, all other interviews were held face to face. All service provider executives gave permission to audio tape the interviews which were transcribed later. Since client executives were not comfortable with audio taping their interviews, extensive notes were taken during the interview process.

In addition to structured questions, follow-up questions were served telephonically seeking clarifications and sometimes examples. For further validity of our data, we included multiple sources of evidence in our data collection (Yin, 1994) which included request for proposals, master services agreement (MSA) and service level agreements (SLA). SLAs were rarely followed in OSD except in few cases involving full life cycle projects where SLAs were used to ensure compliance with committed deadlines for requirement specification. One service provider organization shared their MSA during the interview process.

Data analyses procedure

During the course of the interviews, different concepts on *ex post* service provider behavior (risks) were discussed and subsequently questions were re-framed to draw more insights on the concepts. Listening to both service providers and clients at the two ends of the exchange relationship often enriched the formation of reliable concepts. The text of recorded interview data was analyzed to capture elements of risks as highlighted by the respondents. The coding of interview data was carried out by a research associate with significant industry experience in offshore IT outsourcing in India and subsequently the author did the coding. The concepts from both the sources were compared and related to theoretical categories by the author.

Based on the categories of risks provided by our analytical framework, the data pertaining to each case site were examined to check if the summary information and descriptions were replicating the same categories of risks (Yin, 1994). Concepts were labeled mostly based on the semantics of items drawn from the data and in some cases labels used in previous research were retained, e.g. limited observability (Clemons and Hitt, 2004); risk and benefit sharing (Lee and Kim, 1999). No new concepts emerged that demanded the creation of a risk category other than what was provided by the early findings based on TCE and AT (Table I). However, the determinants of risks

and relationship constructs were labeled based on the aggregate theme of the concepts that emerged from the analysis. Documents collected from the case sites were used to check for consistency of concepts from interview data.

Findings

Table III summarizes the major risk categories and the concepts that emerged from the interviews. The conceptual elements that relate together to form a specific risk category were grouped together with selected quotes. Based on the aggregate theme of the various concepts belonging to a risk category, risks were labeled as shirking, loss of control over information assets and service provider lock-in. Another category defined the determinants of risks which based on the themes were labeled as perceived effort incentive gap, limited observability, contract inadequacy, IP vulnerability, competitors in service provider's clientele, client's relationship-specific investments and scarcity of service providers. Some concepts when clustered together had a reducing (mitigating) impact on the risk which characterized the client-service provider relationship dimension. This category consisted of risks and benefits sharing, client's experience with the given service provider, service provider's credibility and trust.

Risks and their determinants

Shirking

As shown in Table III, a few concepts were identified that pointed towards service providers' shirking behavior. Sometimes, this behavior was exhibited through the deployment of inferior quality resources by a service provider. An India-based service provider's senior executive reflected on certain instances when they substituted a well-experienced resource in a project with a recently trained employee who might be fulfilling the requisite skill levels as per contract, but would not be an effective replacement for the existing team member (Table III). This could affect the timely delivery of the software in time and materials projects.

Data analysis showed that perceived effort incentive gap which involved a sense of loss or less than expected profit in an ongoing engagement was a potential driver of shirking risk in OSD. It was not uncommon for service providers to attempt to withdraw key personnel from an engagement when they perceive that the project was heading toward a loss. Here, there was a conflict in goals between the client and the service provider, explained by AT, which formed the major cause of shirking behavior.

Shirking in OSD context exhibited as a behavioral problem pertaining to third-party service providers when they knew that the client could not effectively monitor their actions. In OSDs, involving third-party service providers located thousands of miles away, physical monitoring of service provider actions was prohibitively expensive and often impractical. Though some service providers offered web-based monitoring tools to build client confidence by facilitating online project performance monitoring, it was difficult to monitor service provider actions especially when their motivation was to reduce perceived loss. This limited observability resulting in information asymmetry was thus identified as a determinant of shirking risk.

Several instances were cited by respondents during the case discussions about uncertainties that arose during the development phase when software code was being created for business applications that were subject to market forces. Contracts were

Risk	Category	Concepts	Data (sample quotes)
Shirking	Risk factors	Poor quality of delivery Project delays in time and materials contracts Substitution of resources with inferior ones	“Obviously every year we ask for renewal of rates; it might or might not work out. One way we have learnt to manage it is that we kind of solve it on our own [...] The fresher builds up the gap and the customer does not perceive the difference because he was already there in the team for one or two years. So my cost here is balanced out because I have replaced the experienced guy with a lower cost resource, and even if I don’t get a rise [in billing rate] I manage the cost. Second I have taken that [experienced] person who has been on the team into a new customer where I am negotiating contract today and getting current market price for them” (An Indian IT service provider’s senior executive, words in brackets added)
	Determinants of risk	Effort-incentive gap Contract inadequacy Limited observability	“Squeezing the service provider leads to shirking behavior” (Chairman of a US based ISV)
	Relationship	Risk and benefit sharing Client’s experience with the service provider	“I think there is a good understanding between customers and provides saying that it has to be either way (mutual understanding). If I loose money, customer looses” (Executive VP of an India based IT provider)
Loss of control over information assets	Risk factors	Leakage of process information Loss of source code Contract inadequacy	“If we make a mistake, we put in a virus, our programmers do something, we will have insurance also for that. It will cost you. We have to pay for an insurance to get over that. We do not want that to happen, but we never know an employ can do something and after six months it comes to our steps” (Manager (Contracts) of an India based IT Provider)
	Determinants of risk	Limited observability Service provider’s credibility IP vulnerability	“We retain thought leadership of the product under development. The offshore service provider would not know about the whole product. They get access only to some low hanging fruits” (The IT Director of a US based Independent Software Service provider)
	Relationship	Competitors in service provider’s clientele Service provider’s credibility Service provider’s benevolence	

(continued)

Service provider behavior

Table III.
Formation of risks, determinants and relationship from data

Table III.

Risk	Category	Concepts	Data (sample quotes)
Service provider lock-in	Risk factors	Dependence on service provider Switching cost	<p>“Even for customers to go to some other organization and then start that (work) is not an easy thing-switching off here and switching on there. They cannot do that. They have to understand that part of the relationship” (VP of an India based IT provider)</p> <p>“They [customer] wanted to retain their key people [such as systems architects]. Bu we refused to allow that and insisted that it [key IT staff of the customer] comes as a package [to the service provider through outsourcing arrangement]. If they break this contract [by not transferring key people to service provider] they need to pay us so much cost. This was put in the contract. We talked about it and they [customer] allowed the architect also to go with us” (Indian IT service provider’s senior executive, words in brackets added)</p> <p>“We brought in Maya (real name camouflaged) to reduce our dependence on one IT provider” (Executive Director of a US based financial services firm)</p>

written based on past experience and the future was seldom an exact replica of the past. Here, contract inadequacy or the limitation of contracts to completely and correctly specify all possible terms allowed shirking risk to occur. Since contractual terms were also subject to variations in interpretations with respect to scope, cost and time, a service provider could opportunistically interpret the service terms and performance aspects in their favor.

Loss of control over information assets

Service provider firms were very diligent in ensuring the protection of their clients' IP assets such as source code and client's process-specific information. However, they were also aware that the service provider's employees could leak IP to the client's competitors. A software service provider's manager in charge of contracts disclosed that the company invests in insurance to mitigate such risks (Table III). Service provider firms also complied with contractual terms to protect client's IP. Following is a brief extract from a MSA a service provider shared with us in this context:

XYZ shall keep confidential and not use or disclose to others, except as expressly consented to in writing of a Outsourced Contract, or as required by applicable federal, state and local laws and regulations, any secrets or confidential technology, proprietary information, customer lists, or trade secrets of the service recipient [...]

The IT director of a US-based ISV (Table III) perceived the potential threat of loss of its new product's IP and was diligent in distribution of tasks to the service provider so that the service provider did not get a full picture of the product and its targeted market, thus retaining thought leadership of its product. However, since service providers were concerned about a long-term relationship with clients, they cared about the IP issues of the client.

Respondents highlighted that software development involved intense information exchange from beginning to end and as such a service provider involved in a turn-key software development project could understand the functional requirements of the software only by a detailed study of the client's business processes. However, this business knowledge which tacitly registered into an offshore providers' knowledge base also increased the vulnerability of such information assets. This risk involved the inability of the client to be in charge of its business critical information assets which the service provider was admitted to access. Client's loss of control over outflow of information assets stemmed from its inability to observe all external communications of the service provider (limited observability) and control every IP infringement behavior of the service provider through contractual provisions (contract inadequacy).

Further antecedents of this risk involved IP vulnerability and competitors in service provider's clientele. Client executives were aware of insufficient legal environment in offshore nations like India where their service providers were based. These countries have outdated IP laws and lack of cultural and political will to enforce IP protection laws. They were concerned that such IP vulnerability could lead to service provider behavior involving poaching of information assets. The presence of potential rivals in the client base of the service provider was another enabler for loss of control over information assets as clients often selected a service provider based on their prior experience with similar projects.

Service provider lock-in

A senior manager in an IT service provider company recalled the tensions during contract negotiation when his company insisted on retaining some of the key client personnel (Table III). Experienced service providers tried to transfer key personnel of the client to their rolls to effectively work with client in a long-term relationship. However, movement of experienced IT personnel from client to service provider organization increased switching cost for the client. It resulted in dependence imbalance and increased the future bargaining power of the service provider, leading to service provider lock-in risk.

Offshore service providers considered long-term engagement with US clients as very important to their firms' future business. All service provider representatives interviewed in our study deem repeat order from the client, rather than financial success of the ongoing project, as the success factor of their individual performance. This alluded to the incentive of the IT service provider's offshore staff for engaging in bonding behavior to create switching costs for their clients. This analysis pointed to client's relationship-specific investments and scarcity of service providers as the determinants of this risk.

Clients often make relationship-specific investments in the form of software, networks, specialized personnel, etc. in offshore relationships. A US telecom major invested in work stations, software and network for WIMAX-related R&D in the facility of an India-based IT provider studied in this research. Such relationship-specific investments, also known as "asset specificity" in TCE, increased supplier power through asymmetric dependence. Scarcity of service providers with specific domain knowledge was another reason for service provider lock-in. An India-based IT provider's senior executive noted that "switching off from here and switching on there" was not an easy thing to do for the clients, implying the awareness of "client's limited options" in service provider switching. A service provider could turn opportunistic from knowing client's helplessness to bring in similar alternate service providers. Such situations arose in the above context as the type of service provided by the service provider was highly specialized and the service provider enjoyed rare resources specific to that service. Thus, service provider attractiveness due to vertical specialization resulted in this hidden risk.

Relationship and risk mitigation

The above analysis of interview data showed that client-service provider relationship in OSD played a very important role in mitigating client risks. The moderating (mitigating) effect of various relationship factors on the drivers of risks leading to risk mitigation is shown in Figure 2.

The findings from the case analyses showed that perceived effort-incentive gap, which was an important cause of shirking risk could be mitigated by risks and benefit sharing behavior of the client. Service providers experienced that "matured clients ensure reasonable profit to providers" and clients realized that "squeezing the service provider leads to shirking behavior". In a risk and benefit sharing approach, the client adjusted its behavior to safeguard against the likely opportunistic behavior of the service provider. The span of experience of the client in a specific offshore relationship with the service provider was another important factor in moderating shirking behavior. More experienced clients not only conducted good contractual due diligence

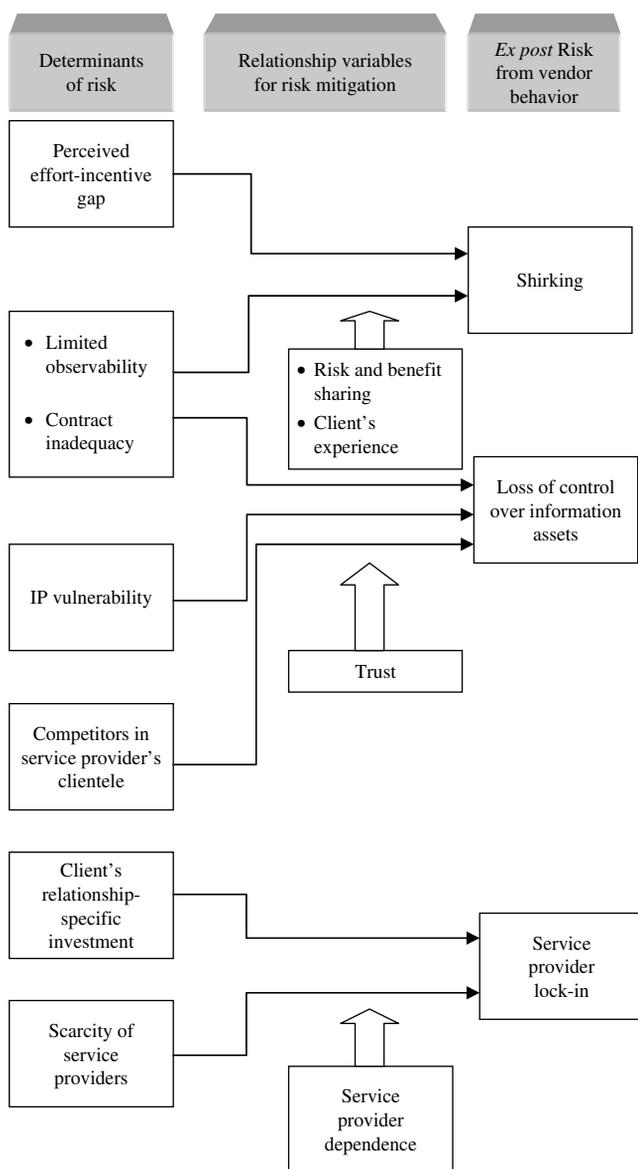


Figure 2.
Relationship constructs
and their moderating
effect on risks due to
service provider behavior

but also fostered mutual relationship. Thus, client's experience in the relationship also had a mitigating effect on the risk of shirking:

- P1. Risk and benefit sharing would mitigate the risk of shirking.
- P2. Client's experience in a relationship will mitigate the risk of shirking.

IT service providers perceived receiving repeat business from their clients and not just one project's profit as the major element of their success metrics in outsourcing. Such long-term orientation required that service providers behaved in the best interests of their clients. Thus, trust, served to mitigate the risk of loss of control over information assets:

P3. Trust will mitigate the risk of loss of control over information assets.

A US-based financial services firm offshored some of its applications to its IT service provider's competitor. The client perceived its dependence on one service provider for its entire development and maintenance projects as a cause for future service provider opportunism leading to contract re-negotiation. In OSD, clients and service providers who made significant relationship-specific investments often insisted that service providers share the cost or make similar investments in the form of personnel, networks, etc. specific to the relationship, thus creating service provider dependence. Such dependence balancing initiatives by clients served to mitigate the risk of service provider lock-in:

P4. Service provider dependence will mitigate the risk of service provider lock-in.

Discussion

Consistent with the RCT theory (Macneil, 1980), this study showed that developing strong service provider relationships was particularly important in software development where requirements of the final product cannot be correctly and completely documented in advance. Relationship embedded the spirit of the contract in unwritten and unspecified form, similar to how individuals relate in social exchanges with unspecified obligations. Both clients and service providers perceived good client-service provider relationship as an important aspect of risk mitigation. This is also consistent with the findings from inter-organizational studies on the significant role of relationship management in supplier-customer engagements (Anderson and Narus, 1990; Ganesan, 1994).

Three risks categories and their determinants pertaining to service provider behavior were identified from this study. The conceptual elements of various risks categories and their determinants enumerated in this study extend TCE and AT to inter-firm engagements in OSD. Shirking risk identified in the study corresponds to the behavior of "self interest with guile" (Williamson, 1985) and is an obvious case of a moral hazard problem in AT (Jensen and Meckling, 1976; Eisenhardt, 1989) which was also highlighted in some early studies (Aron *et al.*, 2005). As reported in this study, risks and benefits sharing as a client strategy in relationship management would serve to mitigate the risk of shirking. Risk and benefits sharing characterize partnerships with matured relationships (Anderson and Narus, 1990; Lee and Kim, 1999). Such relationships recognize the mutuality of obligations and unwritten promises. This aspect of relationship in mitigating shirking risk is consistent with the central arguments of RCT in the context of OSD.

Loss of control over information assets and their antecedents of limited observability and contract inadequacy closely follow issues in contracts highlighted in TCE and AT such as information asymmetry, bounded rationality and uncertainty (Williamson, 1985; Eisenhardt, 1989). Analogous to the supplier customer relationships in Marketing Channels, trust, comprising of service provider's credibility and service provider's

benevolence (Anderson and Narus, 1990; Ganesan, 1994) served to mitigate the risk of loss of control over information assets. The loss of software source code through employees in offshore nations in the case of Jolly Technologies in India and Alibre Inc. in Russia serve as supporting cases for IP vulnerability leading to loss of information assets (Frank, 2005). IP vulnerability in these cases arose because the IT service firms did not have control over the behavior of their employees and the IP laws in the countries were either not updated or not enforced. Further, despite contractual provisions, a service provider could persuade its client's competitor for a prospective OSD project by sharing information assets of the client, especially when the competitor has complementary information to develop competing products (Clemons and Hitt, 2004). This study showed that in offshore outsourcing relationships involving exchange of information assets, the credibility of the service provider enabled clients to entrust the service provider with confidential information. These findings are consistent with results reported in marketing literature where service provider credibility has been identified as the trajectory of satisfaction, reputation and the specific service provider investments made in the relationship. Also, benevolence of the service provider based on past outcomes, experience and investments of the channel partner enabled clients to trust that the partner would act in the best interest of the client (Anderson and Narus, 1990; Ganesan, 1994).

Service provider lock-in has been characterized as a condition in inter-organizational relations when power shifts asymmetrically to one party involved in the exchange, leading to opportunistic behavior (Williamson, 1985; Aron *et al.*, 2005). In OSD, lock-in sometimes manifested in the form of hidden costs to the client which the service provider discloses and negotiates only *ex post*, when switching costs are high for the client. General motor's multi-vendor IT outsourcing decision in June 2006 which broke the ten-year old single service provider total IT outsourcing contract it had with EDS provides another case of service provider lock-in and its mitigation by multi-vendor outsourcing strategy. The background information on GM-EDS relationship alludes to a higher cost EDS charged on GM[2] (Dignan, 2005). However, EDS still won the major part of the multi-service provider IT outsourcing arrangement. This brought to light GM's prohibitively high switching costs due to its dependence on EDS during the ten years of strategic IT partnership. Such cases have made many clients to resort to multi-service provider outsourcing, which is an act of dependence balancing for mitigating lock-in risk. Mitigation of this risk through dependence balancing is also supported by marketing channel research which has shown that while asymmetry in power and dependence in channels negatively affect trust, investments on dependence balancing through offsetting investments guards against opportunism (Heide and John, 1998).

Conclusion

This paper contributes to the growing body of literature in offshore IT outsourcing. Drawing on TCE and AT concepts, this study developed a comprehensive taxonomy of client risks in OSD context. Further, this study followed a multiple case study approach and made two significant contributions:

- (1) Identification and categorization of risks due to service provider behavior and their determinants in OSD.
- (2) Understanding the role of relationship dimension in mitigating such risks in OSD.

Whereas, much attention in research has well been focused on IT outsourcing in general and risks to client firms thereof, much less attention has been focused on service specific risks in offshoring of software development. Further, addressing the disparity among relationship constructs in literature pertaining to inter-firm relationships in IT outsourcing this study identified relationship constructs relevant to OSD. The findings from this study shows that:

- Service providers do involve in shirking behavior under the conditions of perceived effort incentive gap, backed by the difficulty in effective monitoring and contracting.
- Clients could lose control over their important information assets especially when their service providers provide similar services to their competitors.
- Clients face the risk of service provider lock-in emerging from the long-term interests of the service providers, due to relationship-specific investments, and scarcity of service providers with the needed specialization.

These findings provide important insights for practicing managers of client firms for risk mitigation in OSD engagements. A loss-making engagement for the service provider is a threat to the client and leads to misalignment of interests. Client firms need to ensure that service providers make reasonable profit through an OSD engagement. Price negotiations should not only focus on minimizing cost by squeezing the service provider, but also on the impact of the cost on service provider's profit margin which drives shirking behavior. The findings from this research also point to the importance of a rigorous service provider selection process particularly in development projects involving critical information assets of the client. Since close monitoring and comprehensive contracting are not fully practical in OSD context, service provider credibility and benevolence must be evaluated and monitored before awarding important development projects. Clients may also be diligent about long-term service provider interests and consequent lock-in leading to a future loss of bargaining power. Service providers could bargain for more fees for the maintenance of an application developed by them when they perceive the dependence of the client for expertise in the specific service.

This study involved informants from service provider and client firms whose responses from past experience in OSD relationships converged into specific conceptual formations in OSD risks which could be further tested with sample data for statistical significance. This study focused entirely on OSD. Service specific studies in offshore outsourcing are rare in literature and would require further attention. More studies would be needed from service provider and client perspectives to understand risks in other IT services such as remote infrastructure management, applications maintenance, software-related R&D services, etc. Future research could also draw from the findings of our study for an empirical investigation to examine the relationships among the determinants, moderators and consequences of risk.

Notes

1. These figures are based on the reports of Kearney (2008) and CRISL Research (2009).
2. Based on a report in *Baseline* magazine (Dignan, 2005).

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