Analysis of Risks Faced by Information Technology Offshore Outsourcing Service Providers

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Abstract: To gain competitive advantage, organisations are considering information technology (IT) outsourcing as a strategic option by concentrating on their core operations and by reducing their operating costs. Many organisations are offering outsourcing services from various parts of the world. There are certain risks factors which IT outsourcing service providers come across while managing their service operations. Risk-related data from 50 Indian IT outsourcing service providers about their risks and concerns have been collected and archived. This study identifies risks from the providers’ perspective in regard to offshore outsourcing and put forward some guidelines to mitigate such risks.

1 Introduction and motivation

In a panel discussion with senior technology executive on IT outsourcing, Karlgaard [1] stated that: ‘You know we want our vendors to take the same risk we do and if we succeed, they get paid well and if we don’t succeed, we all suffer together’. IT plays an important role in driving the major operational capabilities of modern companies. Over the last decade, one of the major shifts in the development and management of software to meet an organisation’s IT needs has been the move to outsourcing. The concept of IT outsourcing fundamentally involves a client and a service provider in a business relationship. The roles and responsibilities of client and service provider are clearly defined and documented in the outsourcing contracts. When service providers are geographically located at a far off location, then more specifically the term outsourcing is called offshore outsourcing. Many firms from countries with low development costs, such as India, China, Ireland, Malaysia, and so on, have shown considerable interests in capturing a major portion of the outsourcing contracts from North American and European destinations to their own profit. The software industry is characterised by rapid technological changes and frequent new service offerings from service provider and emerging markets but these add to risks and raise the concerns of the service providers.

According to Aubert et al. [2], risk exposure is defined as a function of the probability of a negative outcome and the importance of the loss due to the occurrence of this outcome. Wüllenweber and Weitzel [3] suggest risk as the potential for an undesired outcome due to uncertainty about future developments. Risk is an integral part of a business process. IT outsourcing service providers closely monitor the developments in the relevant industries and regularly keep track of risk levels on various parameters, evolving strategies to mitigate the risk. Larger companies can see higher growth, since a range of activities from giving large orders to the breaking up of deals provides better price advantage. Competition from emerging low-cost destinations within or outside the country also threatens the business of the existing players. The job market for IT services is highly competitive, in a situation where it is a matter of concern to hire and retain staff to address the renewed demand. The risks emanating from changes in the global markets, such as the political landscape, financial meltdown or regulatory changes, could affect a firm’s operational viability and outlook. In order to be successful in this competitive business environment, a firm should constantly look to strengthen its ability to comply rigorously with the policy and procedures, breadth and depth of its service offering, price competitiveness, domain knowledge, and so on.

Risks in software development can be categorised into managerial and economic risks. Economic perspectives translate business risks into economic terms. According to Aundhe and Mathew [4], there are three categories of risks that are faced by the offshore service providers, namely: (i) project-specific risks, (ii) relationship-specific risks and (iii) macroeconomic risks. A risk management framework that enables firms to actively monitor the business environment and identify, assess and preempt or mitigate possible internal or external risks is essential for business survival. A formal reporting and control mechanism ensures timely information and makes it easier to manage risk proactively. A systematic risk assessment finds the severity of each identified risk and the likelihood of its occurrence.
All risks can be categorised as high, moderate or low depending upon these two factors. According to principles and guidelines of risk management proposed by International Standard Organisation (ISO) in the document ISO-31000: 2009 [5], the risk assessment activity is divided into set of three essential activities as follows:

I. Risk identification: Risk identification is to highlight potential risk factors. At the beginning of the fiscal year, a firm sets up a risk committee consisting of people with senior management skills and technical expertise to identify all the possible risks that could adversely affect the firm’s power to attain its business objectives. During the fiscal year, the risk committee periodically reviews the risks and also updates the risk list with new possibilities.

II. Risk analysis: Risk analysis further provides information about the consequence, likelihood of occurrence, avoidance and mitigation procedures. Management defines actions which are in the best interests of the firm’s business objectives.

III. Risk evaluation: Risk evaluation identifies and assesses various options, establishes response strategy and ranks priorities. The risk review committee and also people at all levels in the firm who take charge of a particular risk continue to monitor risks and officially report all changes in the level of risk.

The activities described above are common practice for risk management and are not standard. Risk management is a particular implementation of a commonly accepted phased approach (identification, analysis, evaluation, control, etc.), which may be slightly different in different organisation; for example, not all the companies implement a risk committee. A risk item denotes a particular aspect or property of a development task, process or environment, which, if ignored, will increase the likelihood of project failure, for example, threats to a successful software operation, major causes of software reworking, implementation difficulty or delay [6]. As the complexity and interconnectedness of information systems is growing, so do the risks. Longstaff et al. [7] present a model that identifies source of risks in system integration. Nowadays, risks to the IT infrastructure are another major concern; consequently, there are ways to systematically assess the risks of critical infrastructure [7]. The literature suggests that IT outsourcing bears inherent risks, including loss of control, knowledge transfer and service provider opportunism [3]. Tafti [8] considers some of the leading risks in the IT outsourcing business to be the outsourcing contract service, privacy and security, corporate policy, reduced technical returns and loss of IT expertise. According to Dijavanshir [9], the major risks in IT outsourcing are political and legal risks, enforcement of intellectual property rights and business contracts, information vulnerability and security, an immature business environment and socio-cultural problems. The risks faced by offshore service providers fall into three categories, namely project-specific risks, relationshipspecific risks and macroeconomic risks [4]. Regarding IT outsourcing, an increased volume of business in the recent past has attracted more players from various low-cost destinations to the field and the competition has become intense. Kumar and Thangavelu [10] highlight some risks such as hidden costs, insufficient level of required skills, lack of instantaneous communication, cultural differences and language barriers.

1.1 Software engineering perspective of risks

A software development project is considered to be risky due to the uncertainty of the information (customer requirements), the complexity of the process and the intangible nature of the product [11]. In software development and maintenance project, an understanding of the business-related risks can help project managers control those risks and thus increase the likelihood of a successful project outcome. The risk analysis activity prioritises the risks so that the project manager can determine where the extra effort for risk management should be applied in order to get the maximum benefit [12].

There has been evidence in literature that failure of a project is contingent upon the articulate study of risks items such as project scope, process activities, operational environment, management, business model, and so on. In the present study, our aim is to increase the understanding of business-related risks in the IT outsourcing from the offshore service provider’s perspective. In the industries of software development and service provision, some inevitable risks are connected with the product line on offer, due to rapid technological change, embryonic standards, changing client preferences and new product and service introductions. In software engineering more emphasis has always been given to the underlying process of developing a product and its attendant risks. But the risks associated with the business perspectives on the product are equally important and may lead to equally severe consequences. Therefore the concept of software engineering economics is gaining momentum, and many recent software development methodologies are considering business an important dimension such as software product line, software eco-systems, and so on.

One of the essential responsibilities of the management of an organisation is managing risks. They should emphasize the need to ensure that the risks which they might encounter while conducting their business activities are easily identified and managed with appropriate skills, so that their adverse impact can be effectively minimised or eliminated. Firms manage business risks through strict compliance and internal checks. The literature has covered various types of client risk and their sources, whereas it has yet to give full weight to the study of risks from the service provider’s point of view. Niazi et al. [13] identified factors such as face-to-face meeting, better communication, contract management between client and vendor, defining processes, tools, procedures and policies, reliable management, knowledge sharing, mutual expectations, better client–vendor relationship and training programs, which are generally considered critical for establishing trust in offshore software outsourcing relationships.

2 Study setup and data

In this study we collected quantitative data about the risk factors in managing the business of IT outsourcing in two phases. In the first phase we archived quantitative data about the possible risk factors highlighted by firms in their annual reports, which is their opinion about coming year. Annual reports are published by the service providers to provide shareholders with information about the company’s activities and financial performance in the current and previous financial year. It is a legal requirement on service providers to publish an annual report and make it available to the public if they are listed as public firms with limited

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liability. In all annual reports, management cautions the reader that the list of risks outlined in the report is not exhaustive and is inserted for information purposes only. All of the service providers from whom we gathered data are public firms with limited liability. The data are publicly available and there is no ethical or legal restriction on its use. Some of the commonly reported risks in these annual reports are to do with security, intellectual property, finance, the obsolescence of technology, laws of protectionism, pricing, economic conditions, strategy, increased competition, policy and process compliance, the attrition of skilled workers, forex volatility, geographical concentration, and client concentration.

Table 1 illustrates description of each risk type. We divided the risks into three categories of economic, managerial, and process. Economic risks cover the aspects of business-related risks, such as financial risk, pricing risk, economic conditions, forex volatility, geographical concentration, client concentration, increased competition. Managerial risks are more concern about human resource management, policies and strategies. Process risks deal with some technical aspects of the process. All of the IT outsourcing firms from whom we collected the data is offshore outsourcing companies. Although majority of the companies have regional offices in various parts of the world where they are providing the services but all of them are from India and have their main development offices in India.

In the second phase of data collection, we requested these firms to provide us their opinion about which risks items were faced by the firms in the preceding year. We contacted via emails to individual employees of the companies to collect their opinion. We ensured the participants that the data collected for this study is a part of a research project and neither the identity of an individual nor of an organisation will be disclosed. The respondents, on average, had been associated with the organisations for the last three years. The minimum qualification of respondents was an undergraduate university degree and the maximum was a PhD degree. Majority of the respondents were in the category of middle management. The organisations differed in size and range from small to medium scale. We assume that the small-scale organisation has number of employees less than 500, whereas a medium-scale organisation has employees from more than 500–1500 employees. The opinions we received from individuals solely represent individual’s perspectives and may not be a true representation of the organisational opinion. Out of 50 companies, we received response from 38. The rest of 12 organisations refuse to provide their opinions. We received maximum of 5 and minimum of 2 respondents from participating companies. Out of these 38 companies, three cover the aspects of business process management, four are hardware service providers, whereas 31 are software development and maintenance firms.

### 3 Study results and discussion

Fig. 1 illustrates the percentage of service providers reporting a particular risk in their annual report about future and their opinion about past experience. A total of 14 risk factors were observed in the data. Nearly 57% (8 out of 14) of the risks was reported by more than 25% of the IT outsourcing

<table>
<thead>
<tr>
<th>Risk category</th>
<th>Risks type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>economic</td>
<td>financial risk</td>
<td>financial risks are due to inability of an organisation to generate financial resources to carry our business</td>
</tr>
<tr>
<td>economic</td>
<td>pricing risk</td>
<td>pricing risks occur when customers may expect discounts and special pricing incentives on account of their budget constraints or due to increased competition</td>
</tr>
<tr>
<td>economic</td>
<td>economic conditions</td>
<td>economic conditions are the overall environment in a country or region (which includes political, financial, environmental, legal, etc.) and an economic slowdown resulting in reduction in IT spending or postponement which ultimately impacts the business</td>
</tr>
<tr>
<td>economic</td>
<td>forex volatility</td>
<td>forex volatility is a rapid change in currency rate across the world that can adversely affect a firm’s revenue and margins</td>
</tr>
<tr>
<td>economic</td>
<td>geographical concentration</td>
<td>firms are exposed to the geographical concentration of revenue from different countries</td>
</tr>
<tr>
<td>economic</td>
<td>client concentration</td>
<td>client concentration is the practice of a firm relying on a small number of clients for a large proportion of its income, and loss or discontinuance of any of these clients could adversely affect its revenue and profitability</td>
</tr>
<tr>
<td>managerial</td>
<td>attrition of skilled workers</td>
<td>increased competition is because of new entrants in the same business domain which could result in pressure on pricing and commoditisation of some services</td>
</tr>
<tr>
<td>managerial</td>
<td>policy and process compliance</td>
<td>attrition of skilled workers affects the ability of an organisation to hire or fire employees. Many successful companies believe that success is related to hiring highly skilled manpower and the ability to keep the turnover low</td>
</tr>
<tr>
<td>managerial</td>
<td>laws of protectionism</td>
<td>policy and process compliance risks occur when breach of any of the regulatory provisions results in penalty, revocation of permits or licenses, and so on, which leads to a significant reputation risk for the firm along with legal liability</td>
</tr>
<tr>
<td>managerial</td>
<td>strategy risk</td>
<td>political concerns on the issue of outsourcing lead to protectionism laws in some countries which could create uncertainty in the business.</td>
</tr>
<tr>
<td>managerial</td>
<td>process security risk</td>
<td>strategy risks occur when there is any significant and unfavourable shift in industry trends, customer preferences, or returns on R&amp;D investments or the product portfolio</td>
</tr>
<tr>
<td>managerial</td>
<td>intellectual property risk</td>
<td>the increase in risk to individuals and assets as a result of regular incidents of terrorism is a major risk for entities in security-related risks. Whereas acts of hacking, stealing information, cybercrimes are further notable risks associated with security</td>
</tr>
<tr>
<td>managerial</td>
<td>technology risk</td>
<td>intellectual property risk covers protection of one’s own developed software product and related artefacts as well as violating the copy rights of the others</td>
</tr>
</tbody>
</table>

In response to changes in technology, the vendor must adapt accordingly and failure to do so increases the technology risk. This makes the product less marketable or less competitive.
service providers. 61% of IT outsourcing service providers reported substantial exposure to the risk of foreign exchange volatility in coming year in comparison to 65% reported the risk faced by companies in the last fiscal year. Companies mainly hedge with the banking sector to mitigate such foreign currency risks. Overall economic conditions within the country or abroad also pose a major threat to business operations. 33% of service providers considered this a potential risk to their operating practices and something which impact on their business in comparison to last year and around 30% of the companies faced this risk factor. A slowdown in the economy creates a reduction in IT-related budgets and sometimes forces clients to cancel ongoing projects. Pricing the service to the client is a very important issue in business. One of the core purposes of pricing is to attract and retain customers in addition to making profit.

Owing to increased competition in the business of outsourcing, pricing has become a serious threat to service providers, because a great many bidders nowadays compete for a single contract. Many new entrants, in order to capture business, offer services to their clients at a throwaway price. In this study, around 25% of service providers considered this a serious threat in coming year, whereas 20% reported that they faced this issue in the last year. Service providers take measures to offer discounts, adjusting price with market trends, reducing operating expenditure to make pricing more attractive and by improving the quality of service.

In this study we found that about 65% of the IT outsourcing service providers reported increased competition as a major risk factor in coming year and according to the opinion of 52% firms that they faced increased competition in the preceding year. Increased competition forces service providers not to focus on one product or service but rather to aim to offer a wide range of service products in an effort to reduce uncertainty over the market size and opportunities, and so on. Outsourcing service providers operate in many countries and regions, but most significantly in North America and Europe. A heavy dependence on these particular geographic segments can lead only to volatility. As a result, these service providers are exposed to a range of risks typically associated with conducting business internationally, many of which are beyond their control, such as geographical, political or regulatory risks. Thus, concentrating on a specific region poses a serious threat in coming year to service providers, which is reported by 27% of the firms in this study whereas it was faced by around 20% of the companies in the previous year. Most of the service providers have local management teams in these countries, which clearly understand and foresee the future business model.

Service providers try to establish deeper customer relationships and aim at broadly varying the geographical spread to mitigate the risks specific to a single country or region. It has been observed among IT outsourcing businesses that firms rely on a small number of clients for a large share of their operating income, thus concentrating only on small business segment. This raises a serious threat, commonly known as client concentration risk; around 31% of service providers considered this of significant concern in future whereas it was lower (25%) in the past year. Most service providers are aware of the hazard and constantly strive to rebalance their business portfolios in terms of client numbers as well as overall industry exposure. They aim at a well-balanced mix of clients and industries and regularly monitor, evaluate and address the risk of over-dependency, which could adversely affect revenue and profitability.

Many service providers also faced the attrition of skilled workers (43%), a serious challenge to maintaining business performance. In the last year, 45% companies reported that they faced risks of attrition of skilled workers. Higher levels of the rate of attrition affect the company’s operating efficiency and productivity and thus its profitability. Service providers have taken a number of new initiatives to reduce employee attrition, including competitive remuneration, better employee engagement, career counselling and the offer of constant learning opportunities in cutting edge and challenging technologies. Companies focus sharply on reducing attrition by linking it to reward mechanisms. Policy and process compliance is a significant issue in outsourcing business, for a rapid or sudden change in governmental or client policies that could badly affect a
business. Of IT outsourcing service providers 33% reported this as a grave risk in the coming year whereas 30% reported that they faced such a risk in the last year. A service provider tends to emphasize his willingness to act and perform according to the agreed contractual terms and regulations in order to avoid any compliance-related issues.

There are some risk factors which are reported by less than 25% of the service providers in this study, such as strategy risks (20%), risks from the laws of protectionism (6%), risks of technological obsolescence (14%), financial (12%), intellectual property (8%) and security-related risks (14%). However, lesser number of companies reported that these risks were faced in the previous year, for example, strategy risks (15%), risks from the laws of protectionism (3%), risks of technological obsolescence (10%), financial (10%), intellectual property (2%) and security-related risks (8%). Service providers develop their strategic plan with the objectives of defining long-term goals and the ways to attain them. These strategic plans may include acquisitions, mergers, new business services, product development and so on. Such plans are under extreme pressure from the chance of any change in the external or internal environment, for instance in economic conditions, regulations, political or even environmental conditions.

One of the major drawbacks of IT outsourcing from the client’s perspective is having fewer opportunities for local labour and the shifting of jobs to offshore locations. This puts enormous pressure on government to suggest and implement laws to protect job migration. Any drastic change in such laws not only has an impact on current outsourcing projects but also the total amount of business being done. Service providers try to mitigate such risks by exploring possibilities of business across various geographic locations and also by creating a presence in the client’s country. Service providers understand that their failure to meet the challenges of technological obsolescence by continuously improving the features, functionality, scalability and robustness of their product will affect their ability to compete and retain customers and market share. Service providers use financial measures to keep themselves alive in the business by generating enough funds. The companies in the business of IT outsourcing follow the laws of the land strictly in order to streamline their operations and activities to protect intellectual property rights. Any breach of the laws in this area results in heavy fines and damage to the reputation of the firm. Security breaches in the form of physical data or privacy, and so on have a heavy deep impact on the reputation and liability of the service providers and pose serious threat to their business. The study shows that increase competition and volatile currencies are of great concern, whereas intellectual property and laws of protectionism are less relevant to outsourcing.

Our primary objective to collect data from organisations by requesting employees to provide us their opinion about which risks items were faced by the firms in the preceding year is to analyse the relative error in experience and future perspective. Some of the risks such as intellectual property, security and laws of protectionism have wide error ranging more than 50% of experience to future perspectives. In all these three types of risks, future perspectives of these risks to occur are much higher than the experience in the past year. One of the possible reasons to this larger gap is perhaps in recent years these issues are becoming more serious. On the contrary, two risks types, forex volatility and attrition of skilled workers, have been slightly reduced from experience to future perspectives. Forex volatility is more related with the economic conditions, since all the companies under study are from India, which has been in stable economic conditions. The other risk of attrition of skilled workers has possible reasons of better and stable working environment and increased competition in the job market.

3.1 Offshore outsourcing risks

There is an important difference between outsourcing companies and offshore outsourcing companies, especially on the risk space. In this study we collected the data from offshore outsourcing companies. There are some risks which directly deal with the offshore outsourcing environment. Increased competition is one of the main concerns of these offshore outsourcing companies. Over a period of time many new companies enter into the business of providing IT services to offshore clients. These new entrants tend to offer the services at a lower price tag to attract and acquire business. This poses serious threats to the early movers on their pricing model. Most of the targeted markets for these offshore vendors are from either North America or Europe. The overall world economic conditions in general and internal conditions in particular are a major issue to the offshore outsourcing companies. Offshore companies are usually paid in dollars, a fluctuation in the conversion rate to the local currency poses a risk to the financial conditions of the company. In some cases offshore outsourcing companies have to follow certain process and policies specifically introduced for offshore vendors, which may have certain implications. Similarly some countries introduce laws of protectionism specifically targeting the offshore outsourcing companies in order to protect the local companies. This has a relationship with economic conditions as well. In case of poor economic conditions, a country is under tremendous pressure to introduce certain measures to restrict the offshore outsourcing.

3.2 Offshore outsourcing risks and profit earning

Organisations tend to increase their profit margins by exploiting market and better product development activities. In order to improve readability, we define and use linguistic titles of firm size in terms of profit earning as ‘small firm’ (0–10 million), ‘medium firm’ (>10 to 50 million), ‘large firm’ (>50–100 million) and ‘very large firm’ (>100 millions). The amount is in Indian rupee. Fig. 2 illustrates the risks identified by different sizes of organisations. The highest reported risk in case of small and medium size firm is ‘increased competition’, whereas large and very large firms reported ‘forex volatility’ and ‘policy and process compliance’, respectively, as their main concern. Around 50% of the medium, large and very large firms reported ‘forex volatility’ as one of their main risk. More than 50% of the small, medium and large companies also consider ‘increased competition’ as major risk. Only 50% of the large firms consider ‘attrition of skilled worker’ as an issue. The highest percentage of large size firms reported ‘client concentration’ as a potential risks, whereas small size firms are the least category to report this type of risk. Small, medium and large size firms do not consider ‘strategy risk’ as main concerned; on the contrary, 42% of the very large size firms reported this as potential risks factor. Small and very large size firms both reported ‘pricing’ as a potential risks whereas less number of medium and large size firms
consider this an issue of concern. Small firms are more concerned about the ‘technology risks’ in comparison to other firm’s sizes. We use here the term ‘loss’ as when last year profit is greater than current year. The firms who were in loss mostly reported ‘increased competition’ as their highly ranked risk whereas those firms which earned highest profits consider ‘policy and process compliance’ as major risk factor. Many risks such as ‘strategy’, ‘economic conditions’, ‘laws of protectionism’ and ‘intellectual property’ are not reported by any of the firms which are in loss. Whereas ‘intellectual property’ is the only risk type that is not reported by any of the highest profits earning companies. After analysing the various risks associated with different types of organisations in terms of amount of profit they earn, we conclude that risks list is different from organisational type to type.

4 Final remarks

In IT outsourcing, the customers generally aims at reducing the cost of their operations, whereas the outsourcing service providers endeavour to increase their business opportunities in order to be profitable. Over a period of time, this could be a win–win scenario for both the parties involved in outsourcing. Nevertheless, service providers, despite the illusion that they are in a wholly profitable position, also face certain risks. In this study we report the empirical evidence about some of the commonly identified risks from the service providers’ perspective and discuss some of the initiatives that they might take to mitigate such risks.

5 References

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