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# A comparative study of important risk factors involved in offshore and domestic outsourcing of software development projects: A two-panel Delphi study

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ABSTRACT

We investigated the risk factors of outsourced software development. Our first objective was to create empirically generated lists of risk factors for both domestically- and offshore-outsourced projects. Our second objective was to compare these two contexts: how do the risk factors change and which ones are most important in each. To address these objectives, we conducted two Delphi surveys to identify the important risk factors from a client perspective, in domestic and offshore settings. We qualitatively compared the results of the surveys to identify similarities and differences across their risk profiles. We identified three types of risks: those that appeared in both contexts; those that appeared in both but were exacerbated in the offshore context; and those that were unique to the offshore context. Our findings suggested that traditional project management risks were important in both contexts; however, the offshore context seemed to be more vulnerable to some traditional risks as well as factors that were unique to it.



IT outsourcing may occur in the same country or offshore. In the late 1990s American companies witnessed the rapid growth of offshore outsourcing due to the lower labor costs and an acute shortage of programmers in the USA. Another important factor was the improvement in telecommunications technology and emergence of the Internet.

Unfortunately, for many companies, the expected benefits of outsourcing have failed to materialize. It appears that half of offshore outsourcing initiatives "fail" or do not meet stated performance objectives. Reasons for this include: the inability to navigate difficult organizational and cultural barriers; middle-management resistance and failure to communicate—to provide clear, succinct statements of requirements and manage the process from afar. In short, many outsourced projects are mismanaged and the risk factors of these projects are poorly understood.

Our study attempted to determine the most important outsourcing risk factors. Our first objective was to create empirically validated lists of the most important risk factors. Second, we wanted to find out how domestically outsourced projects differed from offshore ones. It is obvious that it is more difficult to maintain control over long distances and with destinations having different cultures, laws, and languages.

To address these objectives, we conducted two Delphi surveys to identify the important risk factors, from the client perspective, in domestic and offshore outsourcing settings. Also, we qualitatively compared the results to identify the similarities and differences across their risk profiles.

## 1. Background

Software project failure has been studied extensively in the IT project management literature. To address this issue, scholars have spent considerable time identifying risk factors. IT project risks frequently materialize in delays, resource overruns, and project abandonment. Such problems reduce the net benefits that a client organization reaps from the use of IT.

A common method of identifying and managing risk is through the use of checklists. In the project management literature, there are a number of checklists that have been made available to help with this task (see e.g., [3]). In order to provide some sense and order to the myriad types of risks, Wallace et al. [30] categorized the risk factors along six dimensions. We employ this categorization in Table 1. These risk factors can be found in all types of IT projects.

In more recent years, a number of checklists have been developed for outsourced software development. We summarized these in Table 2. For example, Earl [9] identifies 11 risks of outsourcing. Although he includes some risk factors related to short-term implementation issues, his discussion is focused on long-term implications (termed *Strategic Risks*).

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**Table 1**
Risk factors from IT project management literature.

| Category | Risk examples | Representative references |
|---|---|---|
| Team-related | Staff turnover<br>Lack of team communication<br>Lack of required technical and business knowledge<br>Lack of motivation<br>Team conflicts | [5,25,26,30] |
| Organizational environment | Lack of top management support<br>Organizational politics<br>Stability of organizational environment<br>Changes in organizational priorities | [14,26,28] |
| Requirements | Original set of requirements is miscommunicated<br>Continually changing system requirements<br>Unclear system requirements | [7,25,26,28] |
| Planning and control | Lack of project management know-how<br>Poor planning of schedules and budget<br>Poor change controls<br>Failure to consider all costs | [2,26,28,29] |
| User-related | Lack of adequate user involvement<br>Failure to gain user commitment<br>Failure to manage end-user expectations<br>Conflicts between user departments | [25,26,30] |
| Project complexity | Difficulties with integration<br>Large number of links to other systems<br>Processes being automated are complex<br>Inadequate understanding of new technology | [9,15,26,29,30] |

Some recent frameworks are more focused on the offshoring context. Rao [24] explored issues about doing business overseas, and discussed factors from the availability of telecommunications infrastructure to cultural differences and language barriers, as well as legal and regulatory challenges of conducting business elsewhere. Kliem [16] discussed factors that are applicable only to the offshoring context, such as import–export restrictions (trade barriers), political instability, language barriers, cross-national cultural issues, and currency exchange fluctuations.

From these frameworks, it is obvious that there is overlap in the risk factors. Taken together, they delineate the wide variety of risks that can serve as useful guidelines for managing IT outsourced projects. However, they are limited: they are based on anecdote and speculation, and often lack any validation; nor are they ordered in importance. A second limitation is that that there is little cross-fertilization between the outsourcing and software project management literatures.

Schmidt et al. [26] generated an empirically validated list of the important risk factors in software development projects. They employed a Delphi survey to produce a rank-order of risk factors. In their final list, they created 14 categories, including corporate environment, sponsorship/ownership, relationship management, project management, scope, requirements, and funding. We utilized these findings as a baseline for our empirical work and employed the Delphi technique with two groups of outsourcing experts: domestic and offshore. At the outset, we assumed that there would be some common risk factors across both types of projects. At the same time, we predicted that there would be issues unique to each type of outsourcing. An important objective of our study, then, was to discover how outsourced projects differed from generic projects, and what risk factors were most important to IT managers in each type of outsourcing.

## 2. Research method

To execute our study, we assembled two panels of experts with significant experience in managing outsourced projects, both domestic and offshore. One was asked to identify the critical risk factors that are likely to influence the outcome of offshore-outsourced projects [13]; the other was asked to do this for domestically outsourced projects. The input of the expert panels was collected using Delphi surveys.

### 2.1. The Delphi method

The Delphi technique allowed us to (1) capitalize on the diverse experience of the experts in identifying key risk factors and (2) identify the most important factors by facilitating convergence of the experts' opinions through controlled feedback.

We selected the Delphi method for two reasons. First, prior research has not yielded a set of validated measures of the construct of interest (project risks). Second, because we were interested in generating findings that would be generalizable, we did not feel that case studies or field interviews were feasible given our available resources. The Delphi method provided a good solution that allowed us to conduct our investigation with rigor and internal consistency, while allowing us to produce results efficiently and with external validity.

To execute the study, we followed the normal multi-round methodology. During Round 1, we asked the experts to identify the important risk factors that influence outsourced IT project outcomes. In subsequent rounds, their responses were summarized and disseminated anonymously to the panel. To achieve consensus, participants were asked to consider revising their earlier input after reviewing the feedback of their peers.

### 2.2. The panels of experts

The quality of the panels of participants was, of course, of paramount importance. We recruited individuals from whom companies usually seek advice when dealing with projects: experienced IT project managers of organizations that engage in outsourcing. Our sampling frame consisted of qualified members of the Project Management Institute (PMI).

We established *a priori* minimum qualifications to identify qualified participants. Specifically, participants were required to