

A Proposal Framework for Evaluating Risks of Information Technology Outsourcing

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Abstract

Information Technology Outsourcing (ITO) operations have important potential benefits including cost reduction, improved quality of service, and access to technological expertise. ITO has been recognized to have important potential benefit but ITO has some risks that it sometimes leads to undesirable consequence. This paper reviews research studies of ITO risks and proposes a framework for evaluating and prioritizing of them. Risk factors are studied domestically from the perspective of client.

Keywords

Information technology outsourcing, Risk, Domestic outsourcing, Client perspective

1. Introduction

In today's business environment, Information Technology (IT) is considered to be a key source of competitive advantage [1]. Organizations are making large investments in IT and there is growing realization that IT investments can be a significant source of competitive advantage [2]. As spending on IT raises steeply, organizations become increasingly technology-dependent and, consequently, they become highly vulnerable to the risks of IT failure. Therefore, IT risk management is one of the important issues facing information systems (IS) executives today [3]. Especially in the area of IT, where projects have a long history of failing, there is a great deal of interest in the effects of risk management [4]. Outsourcing IT operations is a topic that has gained popularity since Kodak first announced a major outsourcing agreement in 1989 [5]. He turned over its entire data center, network and microcomputer operation to three IS external parties [6].

Outsourcing information technology operations has been recognized to have important potential benefits, including cost reduction, improved quality of service, and access to technological expertise. Indeed, while firms enter outsourcing agreements with the objective of cutting costs and improving the level of service rendered to users, the outcome of such contracts may be just the opposite. Researchers and practitioners also recognize that, in some circumstances, ITO entails risk, and that it sometimes leads to undesirable consequences that are the opposite of the expected benefits [5]. The main purpose of this study was to investigate information technology outsourcing risk factors with considering the literature review of it and propose a framework for evaluation and prioritizing of these risks with ANP model. This study analyses domestic IT outsourcing risks from the perspective of client.

2. Literature Review

Aundhe and Mathew's [7] research revealed that there are three broad categories of risks: project specific, relationship specific, and macroeconomic. A case based approach using the principles of grounded theory was used for studying the risks and considered interaction among the categories. Chou and Chou [8] identified an information systems outsourcing life cycle through three project related periods: pre-contract phase, contract phase, and post-

contract phase. Also, various risk factors associated with each phase of the information system outsourcing practice have been identified and examined. Willcocks et al. [9] categorized these risks: contextual, building to contract and post-contract issues. A contribution of the paper was proposed a framework for analyzing the risk and then presented a case study. Bhattacharya et al. [10] categorized these risks: risk exposure of supplier capabilities and risk exposure of company capabilities. Akomode et al. [11] categorized these risks: performance, technical expertise, commitment, adequate time-to-volume, quality and adequate forecasting of total cost. They discussed IT outsourcing in detail and proposed a customized computer-orientated model based on action research and analytical hierarchy process. Currie [12] categorized these risks: delivery and enablement; integration; management and operations; business transformation; and client/vendor relationships and attempts to make knowledge explicit, whilst also recognizing the tacit aspects of evaluating consortium, project-based outsourcing. Insights from transaction costs theory, Bahli and Rivard [5] suggested that there are three major sources of risk factors for IT outsourcing: the transaction, the client and the supplier .they applied Partial Least Squares (PLS) to assess their reliability and validity of these risk factors. In the other papers, in spite of paying attention to identify the lists of information technology outsourcing risks, they have not categorized them [6, 13-15].

3. Methodology

To extract risk factors of ITO risks, the methodology proposed by Aloini et al. [16] is used. They reviewed and analyzed 75 key articles about ERP implementation and extracted risk factors. Furthermore, they analyze the impact of each risk on ERP projects' success and classified them in order to address each risk factor and its relevance during different stages of ERP project lifecycle. In this research, we have adopted the same methodology and reviewed 11 key papers published in 1998–2009 about ITO risks. In order to this, we searched for papers that have been published as full papers. Based on methodology was proposed by Aloini et al. [16] into the following five dimensions:

1 Research type: considering this dimension, the papers can be categorized into three general classes:

- Empirical works
- Conceptual/theoretical works
- Conceptual and empirical works

2 Research aim and sector: based on the aims of the research works, they can be classified into three classes:

- System selection
- System implementation
- Risk management

Considering the sector of research as a classification scheme, the research works are organized in three categories:

- Multiple sectors
- Business sector
- Size specific
- Small and medium enterprises (S-SMEs)
- Large corporate-enterprises (S-LC).

3 Research content: describes briefly the process and the research results.

4 Proposed risk factors: describes the extracted risk factors of each work in general.

5 Research tool: describes the research tool used in each study.

Beside for validating the factors of ITO risks from its literature and suitable categorizing of it, we tried to evaluate the structure and extracted risk factors and its functionality from the point of three experts.

4. Propose Framework

The results of categorizing act over key papers of ITO risks which have been published between the years 1998 to 2009 can be seen in Table 1. After extracting the ITO risks from the literature by using methodology Aloini et al. [16], the details of these papers have been reviewed from the point of any risk, used methods and its categorizing. These papers have been selected from among researches which have been mentioned by Bahli and Rivard [5] for general categorizing of risks and details of them. This study analyses domestic IT outsourcing risks from the client point of view. Also, other risks that have been described in pointed papers were evaluated and the common risks have been derived and placed in our categorized model. So, if there is any risk that not considered can be described. These three risks as following:

- 1) Inadequate user involvement
- 2) Breach of contract by the vendor
- 3) Vendor viability

Table 1: The result of categorizing act over key articles of ITO risks which have been published between the years 1998 to 2009

NO.	Reference	Research type	Aim/Sector	Research content	Proposed risk factors	Research tools
1	Willcocks et al. [9]	Conceptual and empirical works	system selection size specific /	The paper proposed a framework for analyzing IT outsourcing risk, whether risk mitigation tactics were successful or otherwise, and the reasons for those outcomes and then present a case study. Risk factors are studied from the perspective of client.	Contextual/ building to contract / post-contract issues	A questionnaire was issued to the 22 respondents, after which the short list was reduced to six.
2	Chou and Chou [8]	Conceptual/theoretical works	system implementation /multiple sector	Various risk factors that associated with each phase of the information system outsourcing practice have been identified and examined. ISO quality standards and risk management standards are also discussed in this paper.	pre-contract phase/ contract phase/ post-contract phase	-
3	Adeyele et al. [6]	Empirical works	system implementation size specific /	This research work focuses on the risk management practices adopted by Commercial Banks in Nigeria that are related to the outsourcing of information systems (IS). Risk factors study domestically from the perspective of client.	Benefit/time/resource	The main method of data collection was a questionnaire sent to 15 commercial banks, which was aimed at respondents in three distinct categories: executive management, systems managers and users
4	Bahli and Rivard [5]	Empirical works	Risk management /size specific	The main purpose of this study was to validate measures of the risk factors associated with outsourcing IT operations. Risk factors study domestically from the perspective of client.	the transaction/ the client/the supplier	data from a survey of 132 IT executives were analyzed with partial least squares to assess their reliability and validity
5	Akomode et al. [11]	Conceptual and empirical works	Risk management /multiple sector	The paper discusses IT outsourcing and proposes a customized computer-orientated model based on AR and AHP. Risk factors are studied domestically from the perspective of client.	Performance/ technical expertise/ commitment/ adequate time-to-volume/ quality / adequate forecasting of total-cost	-
6	Nakatsu, and Lacovou [13]	Empirical works	Risk management /multiple	This paper has investigated the risk factors of outsourced software development. First objective was to create empirically	Risks that appeared in both domestic and offshore contexts/ Risks that appeared in both but	Delphi technique was used for identifying risks by experts

NO.	Reference	Research type	Aim/Sector	Research content	Proposed risk factors	Research tools
			sector	generated lists of risk factors for both domestically and offshore outsourced projects from the perspective of client.	were exacerbated in the offshore context/ Risks that were unique to the offshore context	
7	Lacity et al. [15]	Conceptual/theoretical works	system selection / multiple sector	This paper provides substantial evidence that researchers have meaningfully and significantly addressed the call for academics to produce knowledge relevant to practitioners. risks study from the perspective of client.	contract/ client/supplier	-
8	Osei-Bryson and Ngwenyama [14]	Conceptual and empirical works	system implementation/ multiple sector	This paper offers a method and some mathematical models for analyzing risks and constructing incentive contracts for IS outsourcing This study analyses domestic ITO risks from the point of client/supplier.	Shirking/opportunistic bargaining	This method use in American corporation
9	Bhattacharya et al. [10]	Conceptual/theoretical works	risk management /size specific	This paper approaches IS outsourcing by explicitly integrating issues related to business process outsourcing. Risks study from the perspective of client/supplier.	risk exposure of supplier capabilities / risk exposure of company capabilities	-
10	Currie [12]	Conceptual and empirical works	system selection /small and medium enterprises (S-SMEs)	The overall aim of the research study is to develop a risk assessment framework for evaluating the deployment, hosting and integration of web-enabled software applications by ASPs.. Risks study from the point of client/supplier	delivery and enablement/ integration/ management and operations/ business transformation/ client/vendor relationships	data was collected from various sources including practitioner conferences and semi-structured questionnaire that 15 firms were interviewed
11	Aundhe and Mathew [7]	Conceptual and empirical works	system selection / size specific	This study analysis offshore IT outsourcing risks from the perspective of service providers.	project specific/ relationship specific/ and macroeconomic	the research process by interviewing 6 senior managers of an organization Since their goal was to understand . in 2006 they conducted 15 interviews with 5 mid-sized offshore party .

Which the first and third risk matter have been derived from the paper of Nakatsu and Lacovou [13] and the second one derived from Lacity et al. [15] (These risk have not been mention in our selected article) and categorize in our model of these risks. For being certain from the validity of derived structure, three experts were used. These experts have ten years of good experience in ITO field.

After specifying of derived the structure, details of risks and paying attention to the concept of each one, dependency or independency of them have been evaluated and then consulted with three experts. Many decision-making problems cannot be structured hierarchically because they involve interaction of various factors, with high-level factors occasionally depending on low-level factor. Structuring a problem with functional dependencies that allows for feedback among clusters is considered to be a network system. Saaty [17] suggested the use of AHP to solve the problem of independence among alternatives or criteria, and the use of ANP to solve the problem of dependence among alternatives or criteria. With due attention to consult with these three experts and concept of risks, we propose a structure for analyzing ITO risks with ANP model. (See Figure 1)

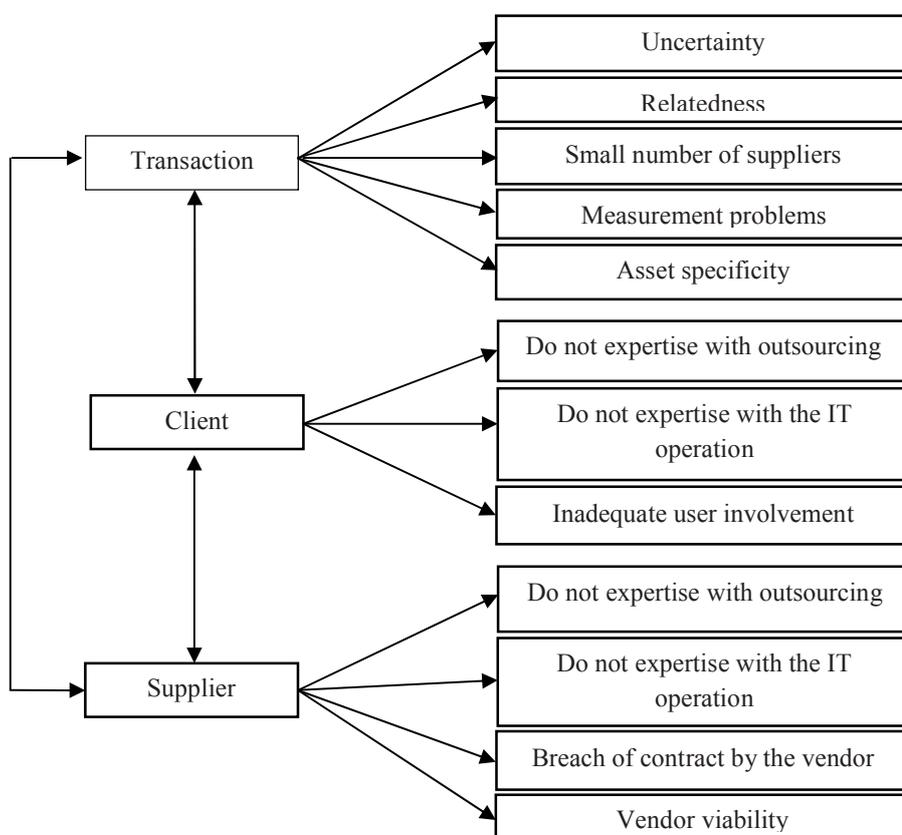


Figure 1: A framework for analyzing ITO risks with ANP model

5. Conclusions

In this paper, general categorization of the ITO risks has been done according to Bahli and Rivard's research [5]. The advantage of using this method is as the following these three points:

- The main purpose of this paper is validating measure of ITO risks, as result shows that the outcome of these factors are validate.
- the main purpose of outsourcing is decreasing the cost ,so transaction cost theory have been used for introducing and categorizing ITO risks in this article .we have to point out that the main reason for selection of this theory is adoption of the assumption to the real condition.
- The risks of this paper include the majority risks of other papers.

In addition to the mentioned reasons, also three experts were consulted and the structure of risks and the details of each risk have been confirmed by them. By considering the situation of relation between the risks, ANP model is proposed for evaluating and prioritizing of them. Now, we are gathering the information for priority of these risks by the method of ANP and we can evaluate ITO risks based on experts' judgments as a future work.

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