

# THE ANALYSIS OF IT OUTSOURCING RISK IDENTIFICATION ON PRINCIPAL-AGENT THEORY

Lin Qu and Zhongliang Guan

*School of Economics and Management, Beijing Jiaotong University, Haidian District, Beijing 100044, China*

Keywords: IT, Outsourcing, Risk.

Abstract: IT outsourcing as a strategic business innovation has been adopted by more and more enterprises. The essence of IT outsourcing service is the Principal-agent relationship between enterprise and agent. As between enterprise and agent, there is information asymmetry, information distortion, coupled with the uncertainty of the market and the macroeconomic environment, resulting in IT outsourcing companies in the implementation encounter various risks existing in the process. This paper discusses the causes of IT outsourcing risk, and analyzes the losing control risk, uncertainty risk, cost risk and flexibility risk, and base on this, combined with the comprehensive COSO risk management framework, proposes a model of IT outsourcing risk identification.

## 1 INTRODUCTION

In 1989, the data center, network and computer operations of Kodak which is the world famous Image processing were outsourced to IBM, Digital Equipment, and DEC (Zhang Yuanlin, 2008). Thus, IT outsourcing industry is rapidly developing. So far, IT outsourcing has become an essential systems strategy of information field. However, there are some risks during IT outsourcing. In the empirical study, about one-third of IT outsourcing cases were failed in the end (Christine Koh, 2007)

From late 1980s and early 1990s, the study for the IT outsourcing has gone through several stages, in the early stages, mainly for IT outsourcing motives and decision-making analysis. With the further development of IT outsourcing, more empirical research for IT outsourcing management focus on explaining the results of IT outsourcing, summarizing the experiences of IT outsourcing, and the study for risk of IT outsourcing is one of the hot spot.

## 2 THE LITERATURE REVIEW

### 2.1 Principal-agent Theory

Principal-agent theory is the main part of the contract theory in Institutional Economics. The main research agency relationship is that one or more actors, according to a ostensive or implied contract, appoint or hire other actors, At the same time grant certain right to the latter, and give the payment to the latter as per quantity and quality of services provided by latter.

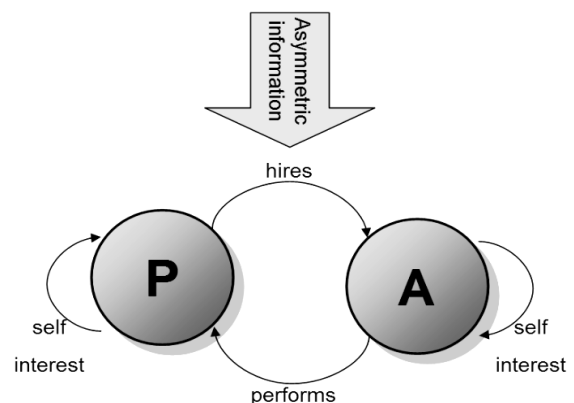


Figure 1: Basic idea of Principal-agent Theory.

In the traditional Arrow-Debreu system, the enterprise is regarded as a "black box", which absorbs all kinds of factor and take profit-maximizing behavior within the budget constraints. This view is too simple, which ignores the internal information asymmetry and incentive problems, and can not explain many behaviors of the modern enterprise. Principal-agent theory goes deep into the "black box" to research enterprise's information asymmetry and incentive problems, together with transaction cost theory as an integral part of modern business theory. Principal-agent relationship is defined as a person or persons (the client) commission others (agents) according to the client's interests and give agents grant to engaging in certain activities and the corresponding decision, which is also in IT outsourcing business. In IT outsourcing, there are many inconsistencies in the objectives between the agent and the principal. Agency cost is the important aspect to be considered of the outsourcing decision. As the complexity of IT outsourcing, many scholars tried to build a decision-making model by principal-agent theory for IT outsourcing. (Zhang Mengjun, 2005)

## 2.2 IT Outsourcing Risk Analysis

(1) Hiding Information: it corresponds to the "principal-agent" model of another very important concept—"adverse selection". It is before signing the contract, the agent has already got some information which clients do not know, and may be the principal disadvantage for clients. Therefore, the agents signed contracts with their advantage, while the clients are in position against themselves because they can not get the information, so vulnerable to damage their own interests. This is opportunistic behavior during the stage of signing a contract. Hiding information problems is very universal in process of outsourcing service provider selection. Due to asymmetric information, agents understand their credit and the real technical ability better than clients, and to provide inadequate or false information to clients (Yang, 2001).

(2) Hiding Action: it corresponds to another very important concept of the "principal-agent" model—"moral hazard", which means: Assuming the information owned by the principal and the agents can basically be considered as symmetrical, when they sign the contract, but after reached a contract, the client can not observe certain behavior, or changes in the external environment can be

observed only by agent. In this case, under the protection of the contract, the agent may take some action against the client, to the detriment of the client's interests. This is the opportunistic behavior during the contract implementation phase. Hidden action problem is also very universal in the enterprise contract management process. Once the outsourcing relationship between providers and enterprises is fixed in the form of contract, the enterprises can not understand the operation of the whole process outsourcing sector as much as before. When the internal information technology operations and resources managed by external service providers, enterprises can not control the outsourced content directly, not get service from the outsourcer's direct reports. If the rights and obligations of both parties are not clearly defined in the contract, the risk of loss of control is obvious. Such as service quality, provide efficiency, flexibility to changes in demand for services, cost control, business trade secrets and inside information, as well as intellectual property rights may be at risk (Yang, 2001).

## 3 CASE STUDY AND SUGGESTION

### 3.1 Case Study

(1) The risk of Losing Control: Include, outsourcing may lead to lose control of providing services on time and guarantee quality of service; agent and its staff may be permitted to access to confidential information; intellectual property protection may be at risk; any changes on demand must be permitted by outsourcing agent; outsourcing agent cut its ways of learning the latest information technology development and application.(Wen Shaoguo, 2005)

(2) Uncertainty Risk, Include: If outsourcing the system, companies are able to continue learning and improving information technology to meet business needs or not; the relation between software, hardware, network and application is close and interdependent, so that outsourcing any one of them will lead to extreme confusion and uncertainty.

(3) The Cost Risk, Include: information systems outsourcing may not reduce the cost, unforeseen and unspecified changes usually bring about higher cost; agent inherently focused more on profits from its own interests, of course, want to do less; the corporate culture between client and agent is

different, which leads to conflict and inefficiency, and increases costs (Lu Hong, 2007).

(4) Flexibility risk. The capacity of resource reorganization, and the adaptability for changes in business environment; the ability of reengineering the business process and strategic, also includes information technology (Lu Hong, 2007)

### 3.2 Analysis and Advices

The current theory of IT outsourcing risk analysis and classification has been more perfect, but there is no good solution for IT outsourcing risk identification problems in the outsourcing process. In view of this, the introduction of risk identification framework is very important; COSO's comprehensive risk management framework covers the risk space of business operations better in three dimensions, and able to do identify risks qualitative analysis effectively. For some characteristics of IT outsourcing risk, I modify the ERM framework:

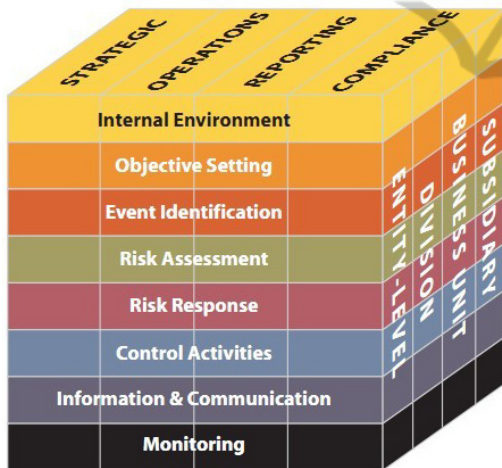


Figure 2: Framework of COSO Risk Management.

The first dimension is the enterprise objectives of IT outsourcing, including the strategic level objectives, management level objectives and operational level objectives; the second dimension is all the enterprise levels, including the entire enterprise, the various functional departments, business lines and subsidiaries; the third dimension is the seven factors in the IT outsourcing risk management, including the internal environment, goal setting, risk assessment, risk response, control activities, information and communication, monitoring.

This paper modifies the third dimension of COSO, and redefines the seven factors according to the IT

outsourcing characteristics and objectives to be achieved; the following is the main content:

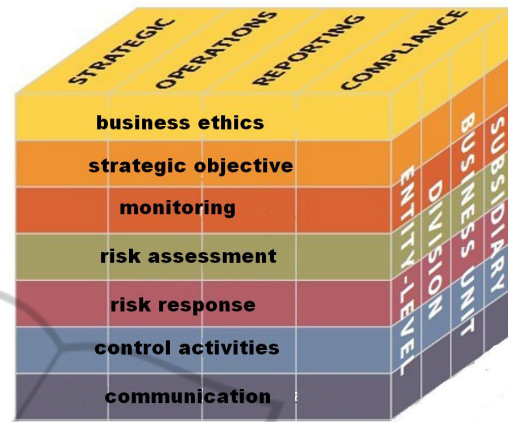


Figure 3: Framework of IT Outsourcing Risk Identification.

1. Business ethics and staff competence, staff training, management business model, distribution of authority and the way responsibilities of IT outsourcing agent, also includes the corporate culture.
2. IT outsourcing business managers determine the strategic business objective, identify relevant sub-goals down to every level in the enterprise and the implementation.
3. Risk assessment can enable enterprises to understand how the potential issues affect goals of IT outsourcing. Managers should assess risk from two aspects – the likelihood and impact of risk.
4. IT outsourcing managers can develop different risk response schemes, consider how each scheme impact the likelihood of matters and issues the impact on enterprise under the risk tolerance and cost-effective premise. Management should also design and implement of risk response schemes.
5. Control activities are relevant policy and procedure to help to ensure the correct implementation of risk response programs, including procedures and policies of approval, authorization, adjustment and evaluation between IT contractor and subcontractor which are used to execute the program successfully. Control activity is part of the process to achieve business goals, usually consists of two elements: a policy to determine what should be done and a series of processes influencing this policy
6. Enterprise and IT contractors can communicate effectively or not.

7. Monitoring of enterprise risk management is a process of assessing the content of risk management elements, operation, and implementation quality for a period. Enterprises have two ways to monitor risk management - continuous monitoring and individual assessment. Continuous monitoring and individual assessments are used to ensure that enterprise risk management continues to be implemented in the enterprise management level and within the various departments.

#### 4 CONCLUSIONS

There are various risks during the cooperation between the enterprise and subcontractor, due to information asymmetry, information distortion, outsourcing market maturity, the competitive environment of uncertainty, technology updates, political, economic, and legal and other factors. In order to enable enterprises and contractor to achieve win-win cooperation, both sides should take certain measures to avoid risks, such as the establishment of monitoring mechanisms, optimization the contract, information sharing. The theoretical framework of risk identification and control during the cooperation between the enterprise and contractor is of great significance, is also the focus of future research. In this paper, combined with COSO comprehensive enterprise risk management framework, I give the idea that how to identify the IT outsourcing risk. Combined with the framework, to identify the risk of IT outsourcing from qualitative analysis to quantitative analysis and continuous improvement is the future work to be performed.

#### REFERENCES

Zhang Yuanlin (2008) "A Review in IT Outsourcing Research", China Management Informationization, 2,75-80  
 Christine Koh, (2007) Does IT Outsourcing Create Firm Value  
 Liang Xinhong (2004) "The Cause and Risk Prevention of IT Outsourcing", Science and Technology Management Research, 1,64-69  
 Wang Chun (2008) " The Study Review of IT Outsourcing Risk", Science and Technology Management Research, 1,64-69

Zhang Mengjun (2005) " Avoid the IT Outsourcing Risk", Software Engineer,8,45-46  
 Zhang Qin (2008) "The Review of Risk Management Theory and Study", Financial Theory and Practice,8,45-46  
 COSO, (2004b)Enterprise Risk Management-Intergrated Framework, 1-16  
 Yang Ying (2001) " IT Outsourcing in Enterprises and Its Risk Analysis ", China Soft Science, 3,98-107  
 Wen Zhaoguo (2005) " The Risk and Control of IT Outsourcing ", Economic Tribune,16,57-59  
 Lu Hong (2007) "The Risk and Solution of IT Outsourcing", Enterprise Economics,6,49-52