

# A STUDY ON THE BARRIERS OF IT OUTSOURCING IN GOVERNMENT AGENCIES: CASE STUDY OF THE PUBLIC SECTOR OF TEHRAN PROVINCE

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## ABSTRACT

*The high costs of maintaining networks and IT infrastructure for organizations and companies in any position and scale, in addition to having a direct impact on the level of earnings, have always affected their work processes and performance. This is more important and vital in businesses not related to ICT. Thus, the owners and managers of these businesses are more interested in outsourcing information technology and services related to it. This research has aimed to identify the factors affecting the outsourcing of information technology services, based on the prioritization of these factors, to provide the necessary solutions for the optimal use of outsourcing services in this area.*

*This research is a survey and applied research. The data collection instrument was a questionnaire. The method of data collection is field-based. In this research, indicators were first identified and the research hypotheses were formed based on these indicators. For analyzing the data, structural equation techniques are used. Also, the Lisrel Software was used, and finally all the hypotheses proved to be true.*

**Keywords:** Outsourcing, the barriers of outsourcing, human resources, financial resources, public sector

## INTRODUCTION

With the vast development of information technology and its widespread use, many organizations and governments have been forced to invest heavily on it. In this regard, effective management practices depend on the management of IT investment. This dependence can be examined in three respects.

First, many organizations are compelled to invest in information technology, because of the competition that exist, even if they do not have a thorough analysis of the return on investment in information technology.

Second, many operational processes have been intensely integrated with information technology, so that information technology has become an integral part of the process and even the structure of organizations, and the separation of IT from other sources and activities of the organization is impossible.

Third, organizations invest heavily on information technology, which is constantly expanding (Willcocks, 1999).

Reports published by the World Bank show that in our country, because of the above-mentioned reasons, as in other countries, the amount of investment in information technology is increasing.

One of the best ways to utilize information technology is to use the services of companies that have enough experience and expertise in this field. The tendency of organizations to use IT outsourcing has increased dramatically to respond effectively to the context. The reason for this, is global competition, minimization, moving towards smooth organizations, increasing flexibility, adapting to the rapid technological changes, and focusing on core capabilities, which can be achieved under the shadow of the outsourcing of IT. On the other hand, the issue the senior executives face, is not the use of outsourcing, but those activities that need to be outsourced. In fact, the most important issue in outsourcing is the proper determination of assignable activities. To select the right kind of activities, there is a need for a number of determinants, which means that it will generate benefits to the organization. (Sanam Momeni, 2016, p. 1).

Accordingly, this study aims to answer this question: "What are the barriers to outsourcing information technology in governmental agencies?"

## **REVIEW OF RELATED LITERATURE**

Outsourcing is the act of transferring some of the internal activities of an organization and assigning the right to make decisions to a supplier outside the organization on the basis of the contract. In fact, and in practice, outsourcing involves not only activities, but also the factors of production and the right to decide in the most cases. (ibid). Production factors include:

### **Employees of Technology Equipment Facilities for Other Assets**

The right to decide also includes: "the responsibility to decide on the main components of the transferred activities".

Peter Draker, about the outsourcing and its effects, states: "This is actually a fundamental change in the structure of tomorrow's world organizations. This means that big business companies, government departments, hospitals, and large universities are no longer required to become organizations that employ a large number of people. Such institutions become organizations that earn high revenues and significant outcomes because they concentrate only on the activities they have been assigned for, and do things that are exactly related to their organizational goals; They know their job well and know about their peculiarities of it, and pay the wages and salaries to their performers, in proportion to their value and credibility, and the rest of the services of such organizations are delegated to external institutions." (ibid).

The objective of outsourcing is to reduce costs, increase the quality, or release some of the resources of the company to allocate it to something that has higher priority. Outsourcing concepts, though proposed and developed in the area of information technology, is believed by some to be shaped in the production of different types of goods, since the time mass production shifted to customer-oriented production. It is now a century passed from the era of mass production, but today it is not cost-effective for any investment, or even it can be said that it is impossible to produce all the components and assemblies needed for a product in a company.

Indeed, it can be said that increasing effectiveness by focusing on what the organization is doing best, acquiring expertise, skills and technologies that have not previously been achievable, obtaining the new and innovative ideas, reducing investment on assets and better use of it for other purposes, acquisition of market share and business opportunities through a provider network, and changing fixed costs into variable costs are among the main reasons for outsourcing (Turbon, 2003, p.52).

Today, the extensiveness and variety of ICT areas, in many cases, have practically incapacitated the service providers to effectively provide all components of a value chain, and proportionate to subjects, and due to reasons such as the lack of in-house knowledge, simple separability and lack of direct dependence of Service components to each other, constraints on internal resources, lack of economic justification and, of course, strategic requirements, a server organization may decide to outsource parts of its core service to others.

A partial order of a service to a third party, although for the reasons given above, can be considered as a pervasive one, but the ad hoc effectiveness of the outsourcing should not be regarded as an always successful phenomenon and a definite approach of the service provider, since the outsourcing, merely with the intention of dedicating work to another, is a false decision; or in other words, the mere transfer of a part of the whole to another does not facilitate the qualitative and quantitative fulfillment of obligations; Secondly, observing the rules and factors for success in outsourcing is required, and lack of skill in managing it, or bungling, can lead to serious risks to the original project. Achieving organizational maturity in the field of contractors' management and operational agility in planning, identifying, assigning, managing, and receiving a service from a contractor, are among the most important elements of outsourcing success. Also, to the extent a complex have a deeper knowledge-based foundations and is based on the standards and frameworks of the IT business, generally, it should be more professional in dividing the whole work between the components and subsequently, aggregating the results. One of the main achievements of outsourcing, especially in the so-called technology edge projects, is the injection and absorption of new knowledge for the organization, and to the extent this absorption is more ordered and compiled, the results of the receipt of service from a professional subcontractor would penetrate ore n the body of the organization (Mir Babayi, 2015, p.1).

Always, reasons such as simpler management of quality, continuous and non-impediment monitoring, compliance with the confidentiality of the organization's projects, the lack of precise compliance with market supply, logistics costs, the dream of progress, and organizational pride and bias, can be very justifiable obstacles for not deciding to outsource, and stimulate the input of service, however, the acceptance or rejection of this approach is by no means an emotional phenomenon and can be assessed and verified by compiled models. Remember that in most cases, the maintenance and completion of each project within the organization is directly proportional to the inordinate and uneven growth of the organization's organs, which has an inverse relationship with agility and professionalism (ibid).

The main concern of the researcher in the current study is the risks involved in outsourcing IT. And if these risks were identified, what solutions can be made to solve the IT outsourcing problems? So far, there has not been a comprehensive study that can identify these barriers, and this research can help with solving this problem. The governmental organizations of Tehran province are among the companies with many outsourcing projects and in the current study, it is aimed to identify, and eventually rank the risks of the outsourcing of information technology. Considering these discussions, in this research, the intention is to investigate and control the barriers of IT outsourcing in governmental organizations.

## **RESEARCH HYPOTHESES**

The risks arising from the change are effective on the lack of outsourcing of information technology in government agencies in Tehran province.

The risks arising from human resources and corporate knowledge are effective on the lack of outsourcing of information technology in governmental organizations in the province of Tehran.

The risks arising from financial resources are effective on the lack of outsourcing of information technology in governmental organizations of Tehran province.

## METHODOLOGY

A sample of 70 managers of governmental organizations in the field of IT, in Tehran province has been used in the current study in order to test the hypotheses and achieve the objectives. These experts have been selected using the Cochran formula. This descriptive-correlational study is among the linear regression studies. In this research, the structural equation technique and the Lisrel Software were used to analyze the data.

## DATA ANALYSIS

Firstly, the Kolmogorov-Smirnov test was used to investigate the normality of the data. The results indicated that the data are normal. The following table shows the descriptive status of the data for the statistical population of the study.

**Table 1. Mean and standard deviation of research variables**

Component	Mean	Standard deviation
Dimensions (risks) arising from change	3/7072	0/43111
Dimensions (risks) arising from human resources and corporate knowledge	3/6986	0/58066
Dimensions (risks) arising from financial resources	3/4281	0/66108

After entering the data of the questionnaire based on the distance scale, the t-test was used to examine the research hypotheses. This test is used for quantitative variables and, in some cases, is also used to determine whether one of the variables is effective or ineffective in the examined situation. Therefore, in order to investigate the research hypothesis, the one sample t-test was used which actually examines the difference between the mean of the sample being tested and a given value. In the following, the results of the mean test of a population on the samples are discussed.

### First Hypothesis Testing

**Table 2. Results of First Hypothesis Testing**

Variable	t-test value	Degree of freedom	Significance level (two domains)	95% confidence interval		Result
				Lower limit	Upper limit	
Risks arising from change	14/015	79	0/0001	0/6066	0/8078	Approved

value of test=3 One sample t-test

Based on the results of the test (table 2) and the fact that the significance level for the variable of the risks arising from change, is lower than 0.05, it can be concluded that the mean of risks arising from change has a significant difference with the number 3. The last two columns indicate the lower and upper limits of 95% confidence interval for this variable's mean. Since the lower and upper limits of this variable are positive, its mean is above 3. As a result, regarding the upper and lower limits of the last line of this output, it can be concluded that the risks arising from change are effective on the lack of outsourcing of information technology

in government agencies in Tehran province. Therefore, there is no reasons for approving the null hypothesis  $H_0$ , and the  $H_0$  is rejected while the  $H_1$  is approved.

### Second Hypothesis Testing

**Table 3. second hypothesis testing results**

Variable	t-test value	Degree of freedom	Significance level (two domains)	95% confidence interval		Result
				Lower limit	Upper limit	
Risks arising from human resources and corporate knowledge	10/280	79	0/0001	0/5632	0/8341	Approved

value of test=3 One sample t-test

Now, regarding the results of this test (table 3), and the fact that the significance level for the variable of the risks arising from human resources and corporate knowledge, is lower than 0.05, it can be concluded that the mean of risks arising from human resources and corporate knowledge has a significant difference with the number 3. The last two columns indicate the lower and upper limits of 95% confidence interval for this variable's mean. Since the lower and upper limits of this variable are positive, its mean is above 3. As a result, regarding the upper and lower limits of the last line of this output, it can be concluded that the risks arising from human resources and corporate knowledge are effective on the lack of outsourcing of information technology in government agencies in Tehran province. Therefore, there is no reasons for approving the null hypothesis  $H_0$ , and the  $H_0$  is rejected while the  $H_1$  is approved.

### Third Hypothesis Testing

**Table 4. Results of Third Hypothesis Testing Results**

Variable	t-test value	Degree of freedom	Significance level (two domains)	95% confidence interval		Result
				Lower limit	Upper limit	
Risks arising from financial resources	5/533	79	0/0001	0/2738	0/5832	Approved

value of test=3 One sample t-test

The results of this test (table 4) shows that the mean of the risks arising from financial resources has a significant difference with the number 3. The last two columns indicate the lower and upper limits of 95% confidence interval for this variable's mean. Since the lower and upper limits of this variable are positive, its mean is above 3. As a result, regarding the upper and lower limits of the last line of this output, it can be concluded that the risks arising from financial resources are effective on the lack of outsourcing of information technology in government agencies in Tehran province. Therefore, there is no reasons for approving the null hypothesis  $H_0$ , and the  $H_0$  is rejected while the  $H_1$  is approved.

### Prioritization of the Barriers of IT Outsourcing

The Friedman test result consists of two outputs. The first output (Table 5) is the frequency of data for each variable, the value of Chi-square, the degree of freedom, and the level of significance. Since the significance level is lower than 0.05, the null hypothesis (the priorities

of the dimensions are equal) is rejected and the claim of the equality of rank (priority) of these sub-components is not accepted.

**Table 5. Friedman Test Indicators**

Sample size	Degree of freedom	Chi-square	Significance level
79	2	31/892	0/0001

The second output (table 6) is the descriptive statistics indicating the mean of each variable's ranks.

**Table 6. Friedman test results based on barriers of IT outsourcing**

Variable	Obtained Mean	Rank
Dimensions (risks) arising from change	2/11	2
Dimensions (risks) arising from human resources and corporate knowledge	2/39	1
Dimensions (risks) arising from financial resources	1/50	3

## SUGGESTIONS

According to the results of the data analysis in the current study, the following suggestions are presented and provided for the deployment and implementation of outsourcing of information technology services:

**Service level:** The agreement on service level should describe the exact conditions of the types, range and nature of the services that are required, and when these types of services are to be available, as well as the level of performance that is required. It should also include clauses allowing the outsourcing client to measure the performance of the service provider.

**Transfer of assets:** At the time of IT outsourcing, various assets from IT may be transferred. Some examples are: computer hardware and rental equipment, telecommunications equipment, software license, maintenance contract for various equipment, and contract for telecommunication circuits. Third-party consent may be required to lease contracts from a customer to a service provider.

**Transfer of staff:** One of the more outsourcing features is the transfer of staff from the customer company to the service provider, but if the outsourcing provider wants to recruit new employees, in order for the customer to be able to monitor the process of selecting employees and ensure that they are competent and suitable, there should be a clause in the contract that the provider of the service should not do this without consulting the customer.

**Pricing and payment terms:** An agreement on pricing, payment, and its schedule, is one of the key points in outsourcing contracts. It must be specified when, how, and to whom, the payment must be made and the amount of the payment must be determined.

**Warranty and liability:** The failure of the terms of the agreement by the provider of outsourcing services in relation to the level of service can provide the basis for the outsourcing client seeking damages. However, litigation for damages is often expensive and time-consuming, and involves a degree of uncertainty that is far more convenient and easier

for a customer in an outsourcing contract to ask the service provider to provide an explicit guarantee.

**Dispute resolution and termination:** Outsourcing often involves a large amount of money and complex issues, so the dispute and its outbreak is a natural occurrence. Instead of spending a lot of time and money for complaints and legal actions, there should be a third person who is autonomous, to be chosen as an arbitrator, and it should be noted in the contract. However, in cases where the arbitration does not have an effect and the contract must be terminated, the consequences of termination should be considered, and appropriate provisions should be stated in the contract. The items that are important to mention in the contract are:

An agreement to repurchase the equipment should be made, and a formula should be set for the price determination.

A guarantee from the service provider to provide assistance and cooperation in the delivery of IT functionality, should be provided.

**Ownership of intellectual property rights:** There must be an agreement on the ownership of intellectual property right (such as: copyright or patent, etc.) The factors that may attract the ownership of intellectual property right are: data, Software programs Software, guides and etc. The outsourcing client should try to get the ownership of intellectual property right.

**Information security and confidentiality:** Information security is a necessary part of all outsourcing activities, and it is important for the outsourcing company to reach an agreement on what type and level of information security should exist.

On the other hand, the following applied suggestions are provided for the statistical population of the research:

1. Developing an IT outsourcing strategy.
2. Maintaining Information Technology Professionals.
3. Confirming the service provider's understanding of the needs of the organization.
4. Evaluation of the financial and operating conditions of the service provider.
5. Assessing the experience, expertise and adequacy of the service provider's resources.
6. Assessment of the adequacy of the internal controls of the service provider.
7. Considering the use of third parties.
8. Determination of the expected transfer period.
9. Compilation and follow-up of performance measurement criteria.
10. Establishment of a relationship and contract management team.
11. Establishing a business continuity plan.
12. Preparation of the final version of the agreement between the parties.

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