ICT Outsourcing: Inherent Risks, Issues and Challenges

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Abstract: - The Malaysian government has worked together with non-governmental entities to develop and operate internal management systems as well as deliver public services to citizens. Much attention has been given to the computerization of government ministries and agencies to improve the government's capacity to carry out its tasks and cope with the future challenges in order to achieve performance goals. The aims of this research are to determine the ICT services that are currently being outsourced and to describe the inherent risks, issues and challenges in ICT outsourcing in the Malaysian public sector. The findings from this research showed that network services is the most common ICT services activity that is being outsourced and that outsourcers who do not comply with contract has the most influence on ICT outsourcing inherent risks. The main issue raised in ICT outsourcing is the inappropriateness of ICT projects being outsourced. Through the findings, public sector organizations would be able to identify the most common ICT services outsourced, analyse the inherent risks, and address the issues that are being raised. In so doing, the potential impact of failure can be anticipated and dealt with accordingly.

Keywords: - ICT Outsourcing; ICT Services Outsourced; Inherent Risk; Issues in Outsourcing

1 Introduction

In Malaysia, Information Technology and Communication (ICT) outsourcing practices are evolving as many organizations continue to identify its opportunities and benefits. This upward trend will likely keep growing as increasing fiscal pressures, citizen demands and workforce attrition drive both governments and public sectors to explore new operating models with embedded ICT technology.

Since outsourcing ICT has received much attention and has become a widespread worldwide phenomenon both in the private and public sectors [6], Malaysia has the opportunity to become a key player in the global outsourcing arena especially in the role of outsourcer. It needs to position itself correctly or it will lose that opportunity. This is shown by the study conducted on global outsourcing that currently ranked Malaysia third (after India and China) in global standing ahead of other prominent Asian destinations [24]. With a well-developed infrastructure, attractive business environment and strong government support, Malaysia is poised as a rising alternative to India and China [12]. Its increasing prominence as the global choice for shared services and outsourcing hotbed has been in no small part due to engaging government policies and efforts in offering a world-class environment and attractive incentives through the Multimedia Super Corridor (MSC) [17]. MSC is a National IT Agenda that was formulated in 1996. It provides the framework for the orderly development of the country into an information and knowledge-based society by the vear 2020.

The objective of this paper is to present empirical findings on the ICT services that are commonly being outsourced, the inherent risks and also the issues and challenges. The primary focus is on government agencies. The findings will provide important inputs for researchers researching risk management in ICT outsourcing and for organizations, a better understanding of what would be anticipated when conducting ICT outsourcing.

2 ICT Outsourcing, Inherent Risk and Issues

ICT outsourcing can be carried out in many combinations depending on the component of services scope that is outsourced and the responsibilities attached to the outsourced contract. Different authors describe ICT outsourcing arrangements differently. Mainly, there are four types of ICT outsourcing categories, which are total outsourcing, insourcing, selective sourcing and strategic alliance/joint venture [7].

Outsourcing requires a significant investment that will, by necessity, affect the organizations' bottom line, culture, risk profile, customer relationship, flexibility and day-to-day operation. Therefore, quality of the services, relationship between parties, laws and legislation and cost should be taken into consideration in outsourcing activities. At the same time, consideration should also be given to complex risks such as reliability/service ability, availability, contractual obligation and security [11]

The global revenues for ICT outsourcing is estimated to grow at a rapid rate. A survey of 1200 companies conducted by the Outsourcing Institute indicated that 50% of all companies with information technology (IT) budgets of USD5 million or more are either outsourcing or evaluating the option. The ICT outsourcing industry revenue was USD194 billion in 1999 and grew to USD531 billion in 2002 as reported by Dataquest [26]. It is also estimated that USD500 billion or RM1.9 trillion global industries will be created by 2008 [25].

The growth of ITO (Information Technology Outsourcing) can be seen in Malaysia as Malaysia is considered as an attractive location for offshore outsourcing contracts due to its strong infrastructure and multilingual skills [10]. Once organizations realized the benefits of outsourcing for its IT operations, there will be more organizations expected to embrace outsourcing. Many companies in Malaysia are forced to focus on their core businesses and outsource other operations due to the current volatile global economy. For example, Computer Systems Advisors (M) Berhad (CSA Malaysia) has invested RM8 million to build an advanced call centre and a data centre, and expanded its training centre for its ICT outsourcing division [13].

For effective implementation of ICT outsourcing, Linder [14] stated that managing risk explicitly is one of the critical success factors. Reed [20] agreed that it is important to perform active risk management throughout all stages of the outsourcing lifecycle. However, the first step in a good risk management program is to identify the risks and produce a list of risks that have the potential to minimize the ITO from delivering on time, within budget and to an acceptable level of quality. Identifying risks is the process of developing an understanding of the potential unsatisfactory outcomes associated with a particular project [22].

In view of the recurring problems and risks involved in ICT outsourcing projects, it is crucial for the public agencies to properly control and monitor the outsourcing projects. Berthelemy [2] mentioned that organizations have to avoid the seven deadly sins commonly made in outsourcing. These mistakes include outsourcing activities that should not be outsourced, selecting the wrong vendor, writing a poor contract, overlooking personnel issues, losing control over outsourced activities, overlooking the hidden cost of outsourcing and failing to plan an exit strategy.

There is much research in ICT outsourcing that has been conducted internationally but few in Malaysia. Moreover, academic research regarding public sector outsourcing in Malaysia is limited. However, with increasing outsourcing activities in Malaysia, it is therefore necessary to identify the inherent risks, issues and challenges that may help pave the way to increasing the ICT outsourcing implementation success in Malaysia's public sector.

3 Research Methodology

An empirical study using a combination of questionnaire survey and interview was

applied in this research. Both primary and secondary data were used in order to achieve this objective. Based on secondary data, risks inherent in ICT outsourcing were collected from previous research, mostly conducted in Kuwait, Spain and United States of America (USA). These inherent risks were used in this research to determine whether similar risks exist in the Malaysian public sector.

4 Research Model

The research model in Figure 1 is built based on the combination of several past literatures instead of a single research model. The research model discusses the inherent risks in ICT outsourcing.

The twelve inherent risks are irreversibility of decision [5,9], ability to operate new system [1,21], lack of legacy and new system integration [3,21], lack of experience managing the outsourcing relationship [18], excessive dependence on outsourcer [5,16,20], the lack of outsourcer staff experience [5,8,9,23], the outsourcer not complying with the contract [5,9], the hidden costs in outsourcing contract [1,5,9], unclear cost-benefit relationship [1], security (data confidentiality) [1,5,9], the loss of IT expertise [19], and the opposition of internal staff [5,9].

Based on the twelve inherent risks, the research has formed the following hypotheses:

- H1: ICT outsourcing inherent the irreversibility of outsourcing decision risk
- H2: ICT outsourcing inherent the ability to operate new system risk
- H3: ICT outsourcing inherent the lack of legacy and new system integration risk
- H4: ICT outsourcing inherent the lack of experience managing the outsourcing relationship risk
- H5: ICT outsourcing inherent the excessive dependence on outsourcer risk
- H6: ICT outsourcing inherent the lack of outsourcer staff experience risk
- H7: ICT outsourcing inherent the outsourcer not complying with the contract risk
- H8: ICT outsourcing inherent the hidden costs in outsourcing contract risk

- H9: ICT outsourcing inherent the unclear cost-benefit relationship risk
- H10: ICT outsourcing inherent the security (data confidentiality) risk
- H11: ICT outsourcing inherent the loss of IT expertise risk
- H12: ICT outsourcing inherent the opposition of internal staff risk



Figure 1 Research Model on ICT Outsourcing Inherent Risks

5 Findings and Results

The survey questionnaire and interview captured background data of respondents profile as well as their project profile. This section discusses the types of ICT services being outsourced in Malaysian public sector, the risks inherent in ICT outsourcing and also the hypotheses results.

5.1 Demographic profile

Demographic characteristics examined were organization name, respondents' position, organization status and age. 250 sets of questionnaires were distributed by hand or by email to federal and state government agencies and only 190 sets of questionnaires were returned.

When analysing the respondents' responses, it was noted that 6.0 percent of the respondents were IT/IS managers while the rest of the respondents were senior IT/IS officers. The majority of the respondents (67.9 percent) were from federal government agencies and 32.1 percent from state government agencies. The highest response was received from organizations established for more than 20 years (53.7 percent) with those between 16 to 20 years at 8.4 percent, between 11 to 15 at 10.5 percent, between 6 to 10 years at 10 percent, and between 1 to 5 years at 17.4 percent.

5.2 Reliability Test

Cronbach's Alpha Coefficient was used to test the survey items' reliability in this study. A coefficient value, which is closer to value "1" is desired. Since all measured items in Table 1 had a reliability of more than 0.7, the scales for these constructs were deemed to exhibit an adequate reliability.

Table 1 Reliability Test

	Item	Cronbach's alpha	N
ICT Services	11	0.953	190
Inherent Risks	12	0.870	190
Innerent Kisks	12	0.870	190

Note: Item – Number of variables

N - Total number of respondents

5.3 Results of ICT Services being Outsourced

The highest mean in Table 2 represents the most outsourced ICT services while the lowest mean represents the least important ICT in public services outsourced sector organizations. Network services, surprisingly, is the most outsourced ICT services activity from the study. Meanwhile, previous studies conducted in Spanish public universities and firms [5,9] found that network services tend to be ranked lower among the ICT outsourced services. This contradiction may be due to the influence of the size of the organization studied whereby Malaysian public sector organizations larger are than public universities and firms covered in previous studies.

Under the 9th Malaysia Plan, the Malaysian government will allocate a total of

RM12.9 billion on ICT [4]. This amount is almost doubled that from the previous allocation of RM7.8 billion. Hence, a major portion of ICT allocation is on the computerization of government ministries and agencies with focus largely on supply and maintenance of computers and Internet access. indicative public This is of sector organizations moving forward to computerize more work processes and providing adequate support to its electronic government initiative. With more computers being used and better Internet access being provided, the need for network services increases. These network services are being outsourced largely due to the complexity of the tasks and the large number of tasks that need to be performed in the public sector industry. Among the important things related to the network service are the security and the speed of the network within the organization.

 Table 2 Ranking for the ICT Services being

 Outsourced

No.	ICT Services	Mean	Std.
			Deviation
1	Network services	61.1579	28.21585
2	Programming	59.9512	27.61648
3	Software maintenance	59.8305	26.31931
4	Hardware maintenance	57.0000	26.98787
5	System implementation	56.8786	26.27948
6	System operation	55.7723	32.00090
7	Application analysis	54.3440	24.84601
8	E-business solution	53.2763	27.29474
9	Security	50.6585	29.44621
10	Support end users	50.2846	26.71419
11	Staff/user training	49.2639	28.19115

Other findings are programming, software maintenance, hardware maintenance, security and support to end users services depict almost similar levels of outsourced services with previous studies conducted in Spanish public universities and firms, even though the studies are conducted in different countries and on different industries. Staff or user training tends to be the lowest outsourced activity in this research. The assumption made here is that public sector organizations have the expertise and facilities to conduct training and hence, this service was done internally.

5.5 Results of Hypotheses Testing

Pearson's Correlation Coefficient analysis was used to test whether there was positive relationship between ICT outsourcing and inherent risks. In order to test these hypotheses, the value of Pearson's correlation coefficient was calculated. Weak relationship is indicated by a value of less than 0.5, value between 0.5 to 0.7 indicate moderate relationship while a strong relationship has a value higher than 0.7.

 Table 3 Association Between Outsourcing and Inherent Risks

	Pearson	Sig.	Result	
	Coeff.			
H1	0.724	.000*	High +ve relationship	
H2	0.527	.000*	Moderate +ve relationship	
H3	0.626	.000*	Moderate +ve relationship	
H4	0.562	.000*	Moderate +ve relationship	
H5	0.654	.000*	Moderate +ve relationship	
H6	0.712	.000*	High +ve relationship	
H7	0.748	.000*	High +ve relationship	
H8	0.691	.000*	Moderate +ve relationship	
H9	0.682	.000*	Moderate +ve relationship	
H10	0.490	.000*	Weak +ve relationship	
H11	0.632	.000*	Moderate +ve relationship	
H12	0.495	.000*	Weak +ve relationship	

*Significantce at 0.05 levels

Results in Table 3 show that all the hypotheses (H1 to H12) were accepted where p-value < 0.05. The results however, indicated that H1, H6 and H7 have strong positive relationships. Based on the result of hypothesis H1, the assumption made is that public sector organizations may have experienced some loss when conducting ICT outsourcing due to irreversibility of outsourcing decision. Such a situation may happen when an organization is unable to ensure similar conditions before and after outsourcing. The possibility of some reversibility factor in ICT outsourcing decisions may need to be considered for public sector organizations especially if it pertains to, say, the organization's strategic IT. If by chance, that should be unintentionally outsourced, upon realization, reversibility could prevent further exposure.

Based on hypothesis H6 which was accepted, public sector organizations may have experienced situations where the results of outsourced activities are not as expected due to the lack of outsourcer staff experience in performing those activities. Even if some of the outsourcer had expertise in certain fields of ICT, there is no guarantee that they can handle a large outsourcing contract such as those from Malaysian public sector where projects are large-scale, diverse in nature and highly complex.

The result of hypothesis H7 indicated that sector organizations may public have experienced outsourcing results whereby the scope specified in the contract is not met. This could be due to the limited number of viable outsourcers in the market and high switching costs for the organizations if outsourcers did not perform. Many organizations in public sector have experienced outsourcer termination or interruption of contracts before all contractual tasks are completed and as a result organizations lose part of their investment on the contracts.

Surprisingly, hypothesis H10 has the weakest positive relationship. Apparently, the criticality of data confidentiality may not have been amply stressed by public sectors when they outsource their ICT activities. Information security should be an important issue in ICT outsourcing. The need for audit and control of data is of utmost importance because confidential and sensitive information about citizens are handled by many public sector organizations.

In general, based on the hypotheses, Table 3 shows that even though some of the inherent risks are important, overall influence of the inherent risks to outsourcing activities is only moderate. Nevertheless, this result is consistent with previous literature, where ICT outsourcing has positive relationship with inherent risks.

5.6 Issues and Challenges of Outsourcing in Malaysian Government Agencies

Given the diverse and highly complex nature of government projects, the Malaysian government appointed the Malaysian Administrative Modernisation and Management Planning Unit (MAMPU) to coordinate the planning, implementation and management of government projects for the entire public sector. Although MAMPU has produced the guidelines for ICT outsourcing for government agencies, there are still a number of issues and challenges that need to be addressed.

The subsequent section provides some descriptions of the major issues and challenges of ICT outsourcing in the Malaysian public sector.

a. Inappropriate ICT Outsourcing.

In one of the outsourcing guidelines provided by MAMPU [15], it states that any activity that involves the control of strategic IT for a government agency is deemed an inappropriate element to be outsourced. The inappropriateness of outsourcing such an activity is evident from the fact that once an agency outsources its strategic IT, the system may be duplicated and thus, fails to play a strategic role. This supports hypothesis H10 whereby in outsourcing, information security should be carefully monitored, even more so if it involves strategic plans and decisions made by the agency.

Another area of inappropriateness may be seen in relation to an organization's human resource. Reasons generally given for outsourcing are insufficient in-house skills and insufficient manpower. Although these are viable reasons, the fact remains that with outsourcing, in-house skills may never be well-developed and this may not be accepted by internal staff. In support of hypotheses H11 and H12, eventually, such opposition from internal staff may lead to the loss of potential expert staff.

Therefore, it is important that when reorganizing the IT function, organizations give serious consideration to deciding what part of the IT function is to be performed internally and what part would be appropriate to be outsourced to external parties.

b. Transfer of Technology (ToT)

One of the major concerns of ICT outsourcing is the assurance that the outsourcer personnel possess adequate knowledge regarding the related technologies used in the ICT outsourcing projects. Although MAMPU has the Request for Proposal (RFP) concept outlined, government agencies may still experience problems in managing the technology transfer due to some internal factors. One of which is that since ICT outsourcing projects may sometimes take years to complete, it is difficult to assign any permanent IT personnel to be part of the project team during the project lifecycle. In addition, ToT may not be successful owing to staff turnover or staff transfers to other government agencies. Such situations support hypotheses H2, H3, H6 and H11, and emphasize the need to address related ToT issues and challenges.

One of the pre-emptive measures taken by the government was to outline in the RFP concept that a structured ToT programme must be delivered, including detailing the entire ToT execution and evaluation process. To get the full benefit of ToT, it is best that government agencies work closely with the service provider and the relationship must be stated clearly in the management contract. Furthermore, human resource management should be planned properly to ensure the availability of the IT personnel from the development to deliverable phase.

c. Poor Documentation

Poor documentation is another major issue in ICT outsourcing. End-user documentation is of critical importance to the user-friendliness of an application, and in this regard, the issue of quality documentation from ICT outsourcing needs considerable improvement. Many service providers are unable to provide complete project documentation. The main reason given is that there is no specific standard defined for preparing the project documentation. Moreover, documentation provided by some service providers may be difficult to understand (owing to technical terminology used) or fail to meet user requirements. Hypotheses H7 and H8 are supported in such instances as lack of good documentation will hamper the outsourcer's claim of compliance with the contract and may introduce hidden costs not apparent in the contractual agreement.

In order to overcome the difficulties in preparing quality documentation, standardization of the project's documentation format is necessary. However, the challenge for preparing a standardize format comes from the lack of expertise from personnel with adequate know-how.

d. Vendor Management

The Malaysian government has a centralized vendor management group whereby the vendor management process is led by MAMPU and the Ministry of Finance (MoF). The vendor management group proactively evaluates the health of a vendor once the contract has been signed by conducting risk assessments such as pending legal actions, large contract wins, or contract losses. In support of hypothesis H5, the risk of excessive dependence on the outsourcer spurs the need for the vendor management group to improve on the measurement used to determine a vendor's business performance, especially in terms of business outcomes and vendor performance. Moreover, the vendor or contractor from the outsourcing organization may be faced with the inability to respond rapidly to changing business needs owing to a lack of experience on the part of the vendor. This supports hypothesis H4 whereby such a lack of experience may be detrimental to the outsourcing relationship between the outsourcer and the client.

To reduce these problems, it is recommended that the outsourcing organization provide incentives to the service provider (vendor) to motivate them to exceed performance requirements. On the other hand, penalty clauses in contracts may be sufficient deterrents if properly enforced.

e. Transparency in Awarding the ICT Outsourcing Project

In ICT outsourcing in government agencies, the Tender Evaluation Committee of the outsourcing organization will evaluate the service provider's proposal without knowledge of the identity of the service provider. After evaluation of the close tenders, a short list of eligible service providers is sent to MAMPU and MoF to be finalised. The government agencies have no power to ensure that the ICT outsourcing project goes to any one of the service provider listed during the tender evaluation. An absence of adequate transparency and inadequate monitoring may result in collusion and abuse in the awarding of tenders.

In any large ICT outsourcing projects that involve significant sums of money, there exist possible elements of influence towards the outsourcing decisions. Therefore, there is a necessity for transparency in awarding the project to the most eligible service provider. In support of hypothesis H1, once an award is made and agreements signed, the outsourcing decision is irreversible and finalized, for better or worse. Hence, it is necessary to emphasize the need for openness, transparency and competitiveness for all implementation of ICT.

f. Specification in Request for Proposal (RFP)

Some organizations lack the expertise in producing good RFP. Therefore, many organizations have to turn to the service providers for ideas and recommendations. However, when preparing the RFP, the specifications may be influenced by external parties pushing for the latest technology that might not be necessary for that particular application. The hypothesis H9 is supported in this respect as risk increases with unclear benefit-cost relationship. It is best for agencies to evaluate the service provider's proposal against the agencies' needs in terms of promised project benefits to realistic project costs.

6 Conclusion

The main objectives of this study are to determine the ICT services that are currently being outsourced, and to describe the inherent risks, issues and challenges in ICT outsourcing. Pertaining to the most common services being outsourced, network services was ranked the highest with outsourcers not complying with contracts being the most significant risk factor in ICT outsourcing. It is critical that organizations understand how to

manage the risks that can contribute to ICT outsourcing failure. With effective risk management, the prime focus should be on planning to avoid future problems rather than solving the current problems. Moreover, by recognising and addressing inherent risks, organizations could improve the outsourcing this environment. In way, potential outsourcing organizations may be able to offer an additional incentive of a more secured outsourcing environment to prospective clients.

In order to reap as many benefits as possible from outsourcing while simultaneously avoiding many potential pitfalls, it is essential for governments to utilize a solid governance approach in managing outsourcing process. Such a regulatory framework may pave the way for a secured and successful deployment of ICT outsourcing with proper risk management and strong enforcement of policies and procedures.

ICT outsourcing holds great promise for organizations, giving them more time to focus on the core business and at the same time provide efficient services to the customer. Studies in this area may be enriched with a comparison of ICT services and inherent risks between public and private sectors.

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