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Research paper



Critical Success Factors of IT/IS Outsourcing in Malaysian Public Sectors

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Abstract

IT/IS outsourcing has been in the IT industry for so many years. Many studies have been carried out about the success factors in IT/IS Outsourcing. However, most authors focused more on the success factors in the private sector compared to the public sector. This paper focuses on understanding the benefits and determining the critical success factors of information technology/information system (IT/IS) outsourcing in the public sector. Apart from that, the reader is also being exposed to the reasons why an organization opt for outsourcing. This paper reviews published journals and reports from various authors, focusing on the connections and similarities. It then extracts and summarize the benefits and critical success factors that organization can refer to before organization endeavors in IT/IS outsourcing activities.

Keywords: *IT Outsourcing; IS Outsourcing; public sector; outsourcing; critical success factors.*

1. Introduction

Information technology (IT) and information system (IS) outsourcing has been in Malaysia for quite some time. Many organizations decided to outsource since it benefited the organizations in the long run. In 2017, it is reported that about 32% of IT services have been outsourced [12]. This will continue to grow in the future. Apart from IT, other sectors such as healthcare and finance sectors are outsourced to the third party. In 2018 alone there is a prediction that outsourcing will further rise worldwide especially in business related to innovation, technology, social responsibility and data security [12].

The Information Technology Outsourcing (ITO) era started when Eastman Kodak outsourced its IT services to the third party, back in 1989 [22]. The decision to outsource has made a large-scale ITO to be accepted and it has been a strategic substitute for IT managers [8]. The first academic work on ITO was published in the early 1990s [9].

There are several benefits of outsourcing, which are known to most organizations. In general, the benefits of outsourcing are it allows employees to focus on the core business by releasing internal resources for other purposes; reduce production cost but at the same time improving employees productivities and service quality. Furthermore, an organization get access to new technology and embrace new knowledge [20], [21].

Outsourcing is now the new strategy for public sectors to move forward. Outsourcing in the public sectors is now a necessary practices in today's complex operating environment [23]. The key to strategic outsourcing in the public sector is an ongoing process of 'reflect and react' [23]. A public sector now works through smart contracts negotiated through well-informed, thorough, flexible and competitive public procurement processes [23].

Although the benefits of IT/IS outsourcing are known to most people and is mentioned in this paper, this study will focuses on the success factors of IT/IS outsourcing in the public sector in addition to the benefits of IT/IS outsourcing. This paper will further explain the benefits and critical success factors in achieving the success in IT/IS Outsourcing in the public sector in Malaysia that can be applied in the government sectors in the future.

2. IT/IS Outsourcing

ITO has grown to be a multi-billion-dollar industry by allowing organizations to focus on what is important and leverage expertise where it is available [5]. Information Technology (IT) or Information Systems (IS) Outsourcing later known as IT/IS outsourcing, means that the physical and/or human resources related to one organisation's Information Technologies (ITs) are supplied and/or administered by an external specialised provider. IT/IS outsourcing means using outside services for performing certain ICT functions for a period based on an agreement document with agreed payment. Scope of the services provided are different, from the preparation comprehensive ICT services to the provision of services support [17].

Outsourcing is seen as an ever-growing industry. According to an article published by [7], in 2017 alone, there were 31% of IT services being outsourced and the numbers will keep on growing. The other sectors are also showing an increasing in outsourcing services namely health sector with 36% increasing and finance sector at 30% increasing. Outsourcing is aimed at accelerating performance and increasing efficiencies of organization. Organization that practices outsourcing will be investing a lot in outsourcing services especially businesses that relate to innovation technology, data security and social responsibility [7].

Hambardiker, P. [12] tabulated eight (8) expected outsourcing trends that will boost the outsourcing market in the year of 2018. Among the trends are cloud computing, information and data security, artificial intelligence and robotics process automation, wider use of cloud technology, virtual employment, outsourcing as the success key for companies, digital transformation and rise in freelance and independent outsourcing services [12].

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Most organization outsource due to two reasons. First is to focus on core business and second is to minimize the overhead costs incur by IT [15], [22]. This is supported by a report from Deloitte [7], which stated that at about 59% of organizations outsource in order to cut cost, followed by 57% of organizations outsource to enable focus on core business. Some other reasons why organizations outsource are to solve capacity issues, to enhance service quality, to get access to intellectual capital and to drive transformational change. Furthermore, from the survey, Deloitte [7] discover that some organizations outsource to seek innovation from outsourcing agreements. Innovation through outsourcing engagement is achieved by increasing the quality level of services, lowering delivery costs, improve user experience and increasing the revenue growth for the client [7].

2.1. IT/IS Outsourcing in the Public Sector

Despite that there are several studies mentioning about the success factors of IT/IS outsourcing in the private sectors, there is still lack of studies on the IT/IS outsourcing success factors in the public sectors. There is a need to improve our understanding on the reasons for success of IT/IS outsourcing operations from the point of view of public administrators.

There is a need to increase exploration on IT/IS Outsourcing in the public sector due to two arguments, presented by Marco-Simo et.al [18]. The first reason is the efficiency of the management of public money. As a public sector organization, it is of the interest of the public to know how government managing its money and cash flows. Relating to the political concerns, government must accomplish this social requirement of the public.

The second reason is that public administrators are great IS consumers. Public administrator is thus a very interesting and prime customer for any supplier of information systems, technologies or services. They can become a leader in promoting positive changes in the ways that IS outsourcing is performed, on how providers act or how the relationship must be managed. Thus, it is important to have knowledge on the factors that contribute to the success of IT/IS outsourcing in the public sectors, so that public sectors can achieve more successful IT/IS outsourcing projects in the future.

3. Benefits of IT/IS Outsourcing

Organization that practices outsourcing will obtain several benefits from outsourcing projects. Among the benefits are benefits to the organization, benefits to the IT function, technological benefits and relationship quality. Benefits of outsourcing to the organization includes execution of strategic strategies and achieving business goals, by understanding the link between the technology and business goals. Through this, organization will be able to focus on core business and free internal resources for other purposes; hence it will improve operational efficiency [20], [21]. On the aspects of economic benefits, it involves the ability to utilize expertise in human and technological resources efficiently [21]. In addition, through outsourcing, organization will be able to manage cost structure via unambiguous contract and at the same time be able to reduce and control operating costs [20].

Benefits to the IT function of an organization relates to the benefit to an organization from utilizing contractor's expertise to improve IT as corporate function. By improving IS performance, the whole IT department will be improved. Organization engaging in IT/IS outsourcing will benefit in terms of knowledge transfer from contractors to the organization project team or staffs [21].

Technological benefits revolves around the ability of the organization to acquire, secure and control IT capabilities and resources [21]. With the assistance from contractors, it will help to accelerate development and improve time-to-market for new products or product enhancement [21]. Furthermore, it will increase access to skills and new technologies and avoid risk of technological obsolescence due to rapid changes in technology [20], [21].

4. Methodology

The process of selecting the CSFs for the success factors of IT/IS outsourcing in the public sectors involved four (4) main steps. Step 1- the exploratory study, step 2- sorting and analyses of the CSFs, step 3 – interviews and analyses and step 4 – result.

The exploratory study involved research literature reviews of about 150 journals and papers published from various authors talking about the recommended IT/IS outsourcing success factors in the private and public organizations. Next, in step 2, the CSFs found in the reviews were then sorted out by eliminating duplicates together with CSFs that are not IT/IS specific and factors that have only a single source for a CSF. The result of this process is a reduced list of CSFs to 36 CSFs, which was then presented to a group of experts for validation in step 3. The interviews were carried out with five (5) experts who has more than 10 years of experiences in the IT/IS outsourcing projects during their working experiences. The purpose of the interview is to validate all the 36 CSFs found from the collected journals. In the last steps, these experts validated all the 36 CSFs and come to an agreement that only 16 factors are closely related to the success factors of IT/IS outsourcing. The 16 factors are then grouped into four (4) construct variables. The four construct variables are organizational environment, contract/project characteristics, project management and partnership management as in Table 1.

5. IT/IS Outsourcing Success Factors

Several factors are known to determine the success of IT /IS outsourcing. Referring to several authors, IT/IS outsourcing success is determined in terms of the attainment of strategic, economic and technological benefits, and satisfaction, that need to be weighed against changes in transaction costs, flexibility, and conflicting objectives of the outsourcer [6]. Furthermore, many journals have discussed the critical success factors (CSF) that can be used as the guideline for organization when engaging in IT/IS outsourcing projects. The most important success factors that have been concluded or quoted by other authors are listed in Table 2. These success factors have been categorised into four groups, which are organizational environment, contract/project characteristics, project management and partnership management. In the next paragraph, the four groups are elaborated.

Table 1: Critical success factors of IT/IS outsourcing

	Success Factors	E1	E2	E3	E4	E5
	Organizational Environment					
1.	Organization size	√		√	√	
2.	IT department size	√	√	√	√	√
3.	IT department role	√	√	√	√	
4.	Top management support and involvement	√	√	√	√	√
	Contract/Project Characteristics					
5.	Project size	√	√		√	
6.	Contract duration	√	√	√	√	√
7.	Project complexity	√	√		√	
8.	Proper contract structure	√	√	√	√	√
9.	Project cost	√	√			√
10.	Selection of IT functions to be outsourced	√	√	√	√	√
	Project Management					
11.	Frequency of project status meeting	√	√	√	√	√
12.	Open communication	√	√	√	√	√
13.	Human resource management	√	√			√
	Partnership Management					
14.	Information sharing	√	√	√	√	√

15.	Knowledge transfer	√	√	√	√	√
16.	Partnership quality	√				√

E = Expert

Table 2: Critical success factors from previous researches

	Critical Success Factors	Related studies
i.	Organizational Environment {Organization size, IT Department size, The role of IT Department, Top management involvement and support}	[1]; [2]; [8]; [10]-[11]; [14]; [17]; [19]; [20];
ii.	Contract/Project Characteristics {Project size, Contract duration, Project complexity, Proper contract structure, Project cost, Careful selection of IT functions to be outsourced}	[13]; [17]; [19]; [20];
iii.	Project Management {Frequency of project status meeting, Open communication, Human resource management}	[4]; [19]; [20]; [13];
iv.	Partnership Management {Information sharing, Knowledge transfer, Partnership quality}	[2]; [3]; [19]; [20];

5.1. Organizational Environment

Organizational environment revolves around organizational size, IT department size, the role of IT department and top management involvement towards the role of IT in an organization. Organizational size is said to have a positive impact on the success of IT/IS outsourcing of an organization. According to author such as Barthélemy & Geyer [2], through IT/IS outsourcing, large organization are more likely to adopt innovations from the outsourcing providers. Organization size refers to the number of employees in the organization. The larger the organization size, the more likely it is to be involved in the long-term deals with a proper governing mechanism that allows adoption of innovation. Thus, organization size is positively related to IT/IS outsourcing success.

The IT department size is the number of staffs in the IT department [19]. Organizations with small headcounts is able to reduce costs greater than organizations with large headcounts. This is due to when organization outsource, number of users is calculated as one of the costs. If the number of staffs at the department is small, thus the cost will be minimal. However, a financially successful or unsuccessful decision is not determined by IT function size of an organization [15]. Organizations with small IT functions would be expected to gain significant savings by accessing a vendor's economies of scale through outsourcing. Organizations with large IT functions would also be expected to have equivalent economies of scale as a vendor and therefore could achieve cost savings on their own through insourcing. Meanwhile, according to Barthélemy & Geyer [2], a large IT department usually do not apply total outsourcing compared to a small organization. This means that large internal IT departments enjoy internal economies of scale due to their huge size and a large organization has massive resources, which solve the issue of lack of expertise in IT/IS skills. Size does not usefully differentiate an organization's ability to achieve expected cost saving [15]. In practice, the ability to reduce IT costs may depend more on IT managerial practices than inherent economies of scale associated with the organization size.

The existence of IT department in an organization plays an important role especially in improving organizational performances and achieving competitive advantages. Organization that emphasis more on the core competencies is more successful when engaging IT/IS outsourcing. The essential of having IT department and realization of the importance of its role as strategic priority will encourage organization to be more agile when competing in the market through IT/IS outsourcing [19].

The top management attitude influences the success of IT/IS outsourcing. This is due to the needs of IT/IS outsourcing that requires integrated steps and components by the top management in addressing the interrelated issues at every stage of the process [14], [19]. Top management support is important in obtaining the required resources and cooperation among organizational groups in the IT/IS outsourcing projects. Furthermore, commitment meant that the right level of sponsorship was engaged and that significant resources were utilized prior to and during the outsourcing to support a partnership [5]. The role of top management may be different depending on the job scope. As for the senior management, this team is responsible to identify the outsourcing objectives, the scope of outsourcing works, and develop and verify bid analysis [11]. Meanwhile, the IT management team is responsible to develop a detailed request for proposal, estimate pricing, evaluate contractor's capability and evaluate technologies to be used when engaging IT/IS outsourcing [11].

The organizational size, IT department size, IT department role in an organization and top management support may or may not be influential to the success of the IT/IS outsourcing in the public sector, depending on the purpose of IT/IS outsourcing projects. However, organizations need to consider these factors in order to achieve the business and IT goals.

5.2 Contract/Project Characteristics

According to Moon et. al [19], contract/project characteristics are related to project size, proper contract structuring, contract duration and complexity of the project. Project size refers to the amount of contract money. The larger the amount the higher the success rate will be. However, this is not always true since it actually depends on the project scope, project team and other related matters to IT/IS outsourcing projects.

When an organization outsource its IT/IS function, the only document to make sure that the expectations are realised is through a legal binding contract. The contract must be as comprehensive and as complete as possible, defining all related issues in the project. The content of the contract revolves around the obligation of both parties, cost, project duration and other terms and conditions relating to the project [11]. Furthermore, clauses such as service level agreement (SLA) and the penalty imposed if SLA is not meet or termination of the contract must be clearly stated and understood by both parties.

Contract duration revolves around the length of an IT/IS outsourcing in days. Short-term contracts are more likely to achieve more of the expected cost savings. According to Lacity & Willcocks [14], [15], a short-term contract involves less uncertainty, whereby the financial success for the short-term is due to the reason that organization only outsourced according to their agreed requirements. This will allow organization to have adequate time to evaluate any costs implication for the IT/IS outsourcing decision. In addition, short-term contracts ensure contractors to perform at their best since both parties aware that when the contract is over, organization has the option for another solution from other contractors. Furthermore, short-term contracts allow organization to recover faster from the last contract if there is any problem or mistakes. Lastly, short-term contracts ensure that the fixed price offered is not above the market price.

Project complexity means having a project that involves problems when integrating, or a system that links to too many other systems, or having massively automated processes and lack of understanding of the new technology [19]. In other words, IT/IS outsourcing project is said to be difficult in the first place before knowing the exact requirements. Hodosi and Rusu [13], suggested organization and contractors to used flexible contract that can be updated regularly. Flexibility allows version to fast changes in IT/IS outsourcing needs whenever it is applicable. This means that when business change, IT/IS might also change along with IT/IS outsourcing [13]. When updating the contracts according to the changes that need to be applied, involvement and commitment from management is important which will influence the IT/IS outsourcing decision. Furthermore, involvement from strategic procurement

and legal is important to apply changes in the service-level agreement and contracts [13]. Project/contract characteristics requires organization and contractor to look into the detail of understanding of the project scope and looking at the project size, project duration and complexity of the project. This is important to avoid any project delays due to scope creep or extension on the contract duration, which will delays the whole project progress.

The factors in contract/project characteristics involves the value of money to be invested in the IT/IS outsourcing. Project complexity, contract structure and contract duration are related to the project size. The size of the project determine the amount of money to be paid and success must be ensures if the value is huge. In the public sector, every single cent invested is valuable and the success of IT/IS outsourcing project is important since it is carry out for the organization that serves the citizen.

5.3 Project Management

By having only the knowledge of IT is not enough when making the decision to outsource IT. Successful IT/IS outsourcing requires knowledge of strategic procurement, contracting, quality assurance and project management [13]. Apart from organizational and managerial issues that arise from IS outsourcing, technical issues such as, project management, software quality and quality assessment method need consideration. The same thing for IT outsourcing. Project management is another important element when it comes to IT/IS outsourcing project [4]. There are several reasons that causes IT managers to be worried when managing IT projects. It is known that most managers are worried to manage IT projects due to lack of control over projects, hence fail to manage it [19]. One of the solutions to the above-mentioned worries is for IT managers to have frequent project status meetings. Project status meeting generate new and useful ideas for both the organization and the contractor [19]. Furthermore, this will prevent organization from losing control over projects and enable frequent communication between both parties.

Open communications mean that there must be a consistent, active communication and interaction between the organization and the contractors. The benefits of such interaction and communication are obvious especially when there is mutual decisions need to be made or when problem resolution encountered including any discussion related to proposed innovations or changes in the outsourcing directions. Open communication is known as the best way of minimizing concerns and potential disruption due to outsourcing [20].

Getting into an open communication with all project team members is a basic step of any relationship. One needs to understand the stakeholders' requirements and through open communication, this can help the project team to understand better of what to deliver. Better connection with personnel will make it easier to deliver the outsourcing plans and reduce rejection from people who are afraid of changes in the organization. Furthermore, there should be an ongoing relationship management and effective communication channels at various organizational levels. For example, the project committee will receive regular feedbacks and reporting on the project progress and problems and this will help the organization mitigate the problem more efficiently [20]

Project management effort is important as one of the requirements in order to achieve success in IT/IS outsourcing. Organization that outsource and apply project management in their IT/IS outsourcing will achieve higher potential to success. In the government sector, project management practice is important and some organizations do form a Project Management Office (PMO) to handle IT projects, inclusive of IT/IS outsourcing projects, to ensure that the investment made is valuable.

5.4 Partnership Management

Partnership management revolves around the relationship between organization and contractors when dealing with IT/IS outsourcing projects. Several options are available in the market when it comes to outsourcing management system, for example, partner relationship management (PRM) and business network systems (BNS). Before organization invest in this kind of system, a thoughtful strategic consideration is needed. It will be easier to implement a successful strategic supplier relationship management if the organization understand the management issues between the two parties [3]. As an example, in Korea, there is no standard in selection criteria and very vague evaluation system that can value the strategic partnership among contractors and the organization [3].

Cha & Kim [3] mentioned that there are six (6) success factors for strategic partnership and its implementation. The six (6) success factors are management strategy for suppliers; process innovation; information sharing and communication; collaboration for joint project; standardisation for supplier selection and evaluation and feedback of Performance Evaluation.

The management strategy for suppliers is the first factor, whereby fostering a strategic partnership, both the contractor and the organization pursue the common goals through a win-win strategy [3]. The implementation is by establishing a supplier management strategic plan based on a strategic implementation plan for accomplishing a long-term business goal and short-term business goals [3]. Selection of partner is through the partner evaluation criteria with its own weighted accordingly.

Next success factor is process innovation. Through process innovation, the manual or semi—manual procurement system is changed to electronic purchasing system to simplify the business burden of the suppliers. Through continuous use of online procurement system, it can reduce business burden by improving unnecessary business process.

The third success factor is information sharing and communication. The most important tools in securing partnership is to share information through collaboration system and frequent communication between both parties.

The fourth success factor is collaboration for joint project. It is believed that if suppliers are given the chance to joint projects such as project bidding, development project assessment, joint R&D investment or collaborative new technology development, it will increase their collaboration and bi-lateral support towards the organisation.

Standardization for supplier selection and evaluation is the fifth success factor, where a standard evaluation system applies a clear objective, transparent and fair evaluation to all contractors [3]. This will enhance supplier's collaboration for future evaluation.

The last success factor is feedback of Performance Evaluation where a continuous evaluation, monitoring and reflection of the results to the strategic partnership management is done to ensure continuous monitoring on the supplier's performance and for future enhancement of the partnership management.

Partnership quality is another point to ponder. Partnership quality is a method to encourage information equality between the contractor and the organization [2]. An organization that ventures into IT/IS outsourcing project must be ready to overcome misalignment of information between both parties through a strong and smart partnership with the contractor. This, in a way, may lead to both contractor and organization to share risks in IT/IS outsourcing project.

In the public sector, having a strong partnership, exchanging knowledge and transfer of technology are the key goals when organization engaging in IT/IS outsourcing. This is important since the technology keep on changing rapidly and government may not be able to cope due to financial issue and work force.

6. Conclusion

There are four categories in determining the success factors in IT/IS outsourcing in the public sectors. The four categories are the organizational environment, contract/project characteristics, project management and partnership management. Each one of this

can be inter-related or can be on individual. Organization may achieve success based on these four categories or may only be success based on one category only. It is all depends on the main goals of organization when It/IS outsourcing project is initiated.
An organization that practicing outsourcing must know what the organization wants to achieve when deciding venture into IT/IS outsourcing. Even though the benefits are clear, it still depends on the success factors that the author discuss previously. Although there are four categories of success factors, organization need to look at where the point that they are lacking and need to improve it. If an organization is able to fulfil the four categories, it will be beneficial to the organization. This study still needs further research in terms of the points in each category since the IT/IS keep on changing and there may be a new point that contributes to the success factors.

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