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Key Decision-Making Phases and Tasks for Outsourcing Information Technology

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Abstract
Outsourcing has become an attractive option for today’s organisation. To guide management in the decision whether or not to outsource Information Technology (IT), the study developed and tested a decision-making model comprising the phases of intelligence, analysis and planning, strategy selection, action, and evaluation and monitoring. The significance of decision phases and tasks contained in the model was established through a survey of major Australian organisations. The study found that the ‘action’ phase of IT outsourcing is the most important decision-making phase. It is largely determined by the track record and the ability of the potential vendor to provide high service levels for the client. The need for an acceptable level of service is also strongly apparent when management evaluates and monitors the outcome of IT outsourcing.

Keywords: IT Outsourcing, IT Outsourcing Decision-Making, IT Outsourcing Decision-Making Model, IT Outsourcing Decision-Making Research

1. Introduction

The business world is increasingly adopting the practice of outsourcing various organisational activities. In the Information Systems (IS) discipline, outsourcing has become a viable, strategic alternative to acquiring and managing costly and complex Information Technologies (IT) (Grover et al, 1995). For example, in the United Kingdom, 800 million pounds was spent on IS outsourcing in 1993; this is projected to rise to 1.72 billion pounds by 1998. (Willcocks et al, 1995). IS/IT outsourcing, nevertheless, is a recent phenomenon and relatively little research has been carried out into the management strategies required to ensure outsourcing success.

The objective of this research was to develop and test a decision-making model to guide organisations contemplating IT outsourcing. The study aimed to establish the key decision phases and task that organisations should focus on when considering the desirability of outsourcing as an option to insourcing. In this paper we outline the nature of the model and discuss the findings of an Australia wide survey that established the significance of IT outsourcing decision phases and tasks. Conclusions are drawn from the work carried out and presented at the end of the paper. We begin by providing an overview of the IT outsourcing decision-making before proceeding to the study itself.

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2 Ashraf Shoeib is currently completing his Masters degree at Edith Cowan University.
2. Information Technology Outsourcing Decision-making

IT outsourcing is the act of subcontracting all or parts of the IT function to an external vendor as an alternative to relying solely on inhouse IT resources and capabilities (Martinson, 1993). IT outsourcing is a feasible and attractive alternative for IT departments confronted with one or more of the following situations (Gupta and Gupta, 1992):

- A dire and immediate need to reduce or stabilise costs. This is regarded as one of the primary factors driving the move to outsourcing (Horwitt, 1993).\(^1\)
- A critical shortage of IT talent within the organisation. An outsourcing vendor can provide employees who have the necessary skills and experience in the job.
- A lack of strategic activities in the IT function. Under IT outsourcing, managers will be able to focus on business processes, customers, costs and quality, while leaving the IT service delivery function to the vendor (James, 1993).
- Out-of-date technology and systems. This is often evident when talented and skilled IT staff are spending most of their time maintaining old systems rather than developing new ones.

Decision-making for IT outsourcing is behavioural in nature because it is a highly complex and cognitive demanding task. The decision-maker has to consider and trade-off a variety of information and criteria. Furthermore, the decisions are difficult to evaluate because adequate outcome feedback only takes place once outsourcing has been implemented and been operational for a period of time. It is therefore an area worthy of in-depth research but this needs to be done systematically. Simon (1960) provided an early, well-known framework for decision-making consisting of the following phases:

- **Intelligence phase** for problem identification or opportunity seeking. In this stage, the environment is searched for clues that may identify problems or opportunities.
- **Design phase** for the planning of alternative solutions. This involves processes to understand the problem, to generate solutions, and to test solutions for feasibility.
- **Choice phase** for selecting an alternative or course of action from those available. A choice is made and implemented.

The above decision-making model does not provide a formal feedback mechanism that allows experience to be incorporated into subsequent decision-making processes. For IT outsourcing this is important because not all systems or operations are outsourced at once. The processes of evaluation, learning and strategy reformulation are continual and lessons learned should be applied to new areas of IS/IT being outsourced. Simon’s model therefore can be improved by the addition of an evaluation/monitoring phase.

For this research, Simon’s design and choice phases have been renamed as 3 phases, namely analysis/planning, strategy selection, and action. Our decision-making model therefore consists of 5 phases: intelligence, analysis/planning, strategy selection, action, and evaluation/monitoring. They are discussed as research variables below.
3. Research Variables

The research variables of the study, which reflect the 5 phases of our IT outsourcing decision-making model, were constructed as follows.

3.1 Intelligence Phase

The purpose of the intelligence phase is to build and prepare a solid informational platform on which subsequent decisions can be built. In the words of Minoli (1995, p. 167), this requires the “Development of the current IS baseline model, the so-called present mode of operations (PMO)” which can be used to consider:

- Organisational needs and circumstances. These are wide ranging and include the use of IT to improve productivity, quality of services and products, and to develop an appropriate IT architecture.
- The IT function. There are two main issues, namely IT support and IT staffing. For the former, consideration should be given to, inter alia, IT responsiveness and processing request for system changes. The latter is largely concerned with the quality and competence of IT staff and their relationships with end users.
- The IT outsourcing phenomenon. This should be studied by reading material on the subject, visiting other companies to learn about their experiences, and gaining advice from IT outsourcing consultants.

3.2 Analysis and Planning Phase

During this phase, the current IT are analysed and the feasibility of outsourcing established. The following decision-making activities occur.

- The effectiveness and the efficiency of the IT department should be evaluated on technical, operational, and economic criteria (Davis and Olson, 1985). The analysis should reveal whether or not the IT align with the objectives of the organisation, are operating effectively and efficiently, and are experiencing problems. If not, outsourcing may be an attractive option.
- The IT outsourcing option itself should be evaluated against a range of factors as identified by Minoli (1995). Factors supporting IT outsourcing include cost savings in IT personnel, service improvements, IT skills not currently available, and freeing up staff for more strategic functions. Factors against IT outsourcing include IT function is too critical or strategic, costs savings are difficult to demonstrate, the vendor may be difficult to manage or is unable to meet service and contractual goals.

3.3 Strategy Selection Phase

In this phase, the decision should be made whether to outsource totally, to outsource partially, or to insource. When determining which strategy to adopt, the decision maker has to consider whether or not IT is core to business success, control can be maintained over IT under outsourcing, levels of service can be improved, service can be delivered more flexibly, and new risks can be managed.
3.4 Action Phase

Once the IT outsourcing strategy has been selected, the organisation should take action in respect of

- Selecting the outsourcing vendor. According to Minoli (1995), there are a number of decision criteria along which potential vendors should be evaluated. They include track record, support talent, reasonableness of pricing, financial stability, negotiated performance measurements, and ability to meet organisation specific criteria.

- Managing the outsourcing contract. To arrive at a suitable agreement, it is important that an appropriate price be negotiated and that business requirements are determined and communicated to the vendor (Crone, 1992). Furthermore, service levels should be negotiated, the contract period be determined, and provisions be made for withdrawing from the contract and having it extended.

3.5 Evaluation and Monitoring Phase

According to Callaghan (1993, p. 125), “Without a framework that allows for regular reviews, a feedback mechanism and monitoring of progress, you are not destined for a smooth journey.” The evaluation of IT outsourcing should focus on its outcomes such as improvement in service levels and quality of products and services, and cost reductions. An assessment should also be made whether or not the outsourced IT function meets organisational and management objectives and whether the question of redundant staff has been satisfactorily resolved. The evaluation and monitoring of the IT outsourcing project should be carried out by management since they are the ones with the necessary authority to enter into and vary outsourcing arrangements.

4. Research Design

In Australia no data exist on the extent of IT outsourcing taking place within organisations. We were therefore not able to establish population characteristics for our study. Instead, we decided to survey large Australian organisations as we reasonably believed that they would have large IT installations and therefore would have greater knowledge and experiences with IT outsourcing. Furthermore, because of their significant IT budgets that would have been deliberate in their decision-making when considering outsourcing as an option for their IT investment.

We selected 200 organisations in terms of market capitalisation and 200 organisations in terms of their numbers of employees from the Australian Stock Exchange database kept in the university’s library. Sixty organisations were common to both listings; we therefore substituted these with 50 large government agencies. Altogether 390 questionnaires were sent out. Of those 137 were returned because of incorrect addresses (125), unwillingness to participate (7), no longer in business (3), or IT department not large enough (2). Forty-eight completed responses were received of which 4 were inadequately completed. This left 44 useable responses for data analysis.

The questionnaire was designed to capture background information about participating respondents and their employers. Opinions were sought on the research variables as discussed above. They were presented as decision-making phases, tasks and subtasks. Participants were requested to express their opinions on a 7-item scale. To ensure the validity of the
questionnaire, a pilot test was carried out. The testing involved an information systems academic with extensive industry experience, including IT outsourcing, and a Ph.D. student who was also studying in the area of IT outsourcing.

5. Data Analysis

From the data collected, we established that participants in our study were highly experienced; their mean experience in the field of IT was around 18 years and in IT outsourcing around 4 years. They worked mostly for large organisations (mean of 5,490 employees) which typically employed around 189 IT employees. The organisations had been considering IT outsourcing for a number of years as indicated by the mean of 3.37. The majority of organisations, about 30 percent, were in government. Two other major groups namely manufacturing (18.2%) and finance, insurance and business services (11.4%) existed. The others were fairly evenly spread across various industry types.

The mean responses for the 5 decision-making phases and the decision-making tasks within each of the phases are shown in Table 1. We also computed Cronbach-Alpha values in order to establish the internal reliability of the questionnaire responses, i.e. the extent to which all of the subparts of an instrument or scale measure the same characteristics.

<table>
<thead>
<tr>
<th>Decision Phase/Task</th>
<th>Mean</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intelligence</td>
<td>5.14</td>
<td>.87</td>
</tr>
<tr>
<td>Gathering information on IT outsourcing</td>
<td>5.15</td>
<td>.45</td>
</tr>
<tr>
<td>Considering organisational needs and circumstances</td>
<td>4.96</td>
<td>.70</td>
</tr>
<tr>
<td>Considering current IT support issues</td>
<td>5.09</td>
<td>.80</td>
</tr>
<tr>
<td>Considering current IT staff issues</td>
<td>5.47</td>
<td>.91</td>
</tr>
<tr>
<td>Analysis and planning</td>
<td>5.11</td>
<td>.79</td>
</tr>
<tr>
<td>Evaluation of current IT</td>
<td>5.65</td>
<td>.79</td>
</tr>
<tr>
<td>Determining IT outsourcing feasibility</td>
<td>4.76</td>
<td>.79</td>
</tr>
<tr>
<td>Strategy selection</td>
<td>4.82</td>
<td>.68</td>
</tr>
<tr>
<td>Determining IT outsourcing options</td>
<td>4.82</td>
<td>.68</td>
</tr>
<tr>
<td>Action</td>
<td>5.40</td>
<td>.87</td>
</tr>
<tr>
<td>Selection of IT outsourcing vendor</td>
<td>5.69</td>
<td>.85</td>
</tr>
<tr>
<td>Determining IT outsourcing contract</td>
<td>5.14</td>
<td>.70</td>
</tr>
<tr>
<td>Evaluation and Monitoring</td>
<td>5.22</td>
<td>.79</td>
</tr>
<tr>
<td>Considering management satisfaction with IT</td>
<td>5.22</td>
<td>.79</td>
</tr>
</tbody>
</table>

The Alpha coefficients indicated that with the exception of the task ‘gathering information on IT outsourcing’, all responses can be regarded as reliable. This conclusion was arrived at because ‘A commonly used threshold for acceptable reliability is .70, although this is not an absolute standard, and values below .70 have been deemed acceptable if the research is
exploratory in nature.” (Hair, et al, 1995, p 641). It was decided not to remove this particular task since the phase (intelligence) in which it was in showed a high reliability factor of .87.

Cluster analysis was used to classify respondents so that each respondent is very similar to others in the cluster with respect to the significance they place on IT outsourcing decision-making tasks Cluster analysis “is an objective methodology for quantifying the structural characteristics of a set of observations.” (Hair, et al, 1995, p 435). The dendrogram (tree graph) produced as an outcome of a hierarchical cluster analysis using the agglomerative method (each object starts out as its own cluster) and squared Euclidean distances which is a popular measure of the similarity (straight line) between 2 objects. It showed that 39 cases belong to one cluster, 3 cases to another cluster and 1 case each to 2 other clusters. The cluster analysis (not shown in this paper because of space constraints) therefore indicates that the study sample was fairly homogenous with most cases belonging to 1 cluster.

To test the strength of the association between decision-making phases, Pearson correlation coefficients were computed. All decision-making phases varied with each to a significant extent in a positive manner (see Table 2). To establish the statistical significance of the differences between the means of decision-making phases, t-tests were conducted. Significant differences existed between some of the decision-making phases. A graphical view of the differences is provided in Figure 1.

<table>
<thead>
<tr>
<th></th>
<th>Intelligence</th>
<th>Analyses &amp; Planning</th>
<th>Strategy Selection</th>
<th>Action</th>
<th>Evaluation &amp; Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intelligence</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analyses &amp; Planning</td>
<td>.546 ***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategy Selection</td>
<td>.571 ***</td>
<td>.380 **</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Action</td>
<td>.520 ***</td>
<td>.678 ***</td>
<td>.261 *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation &amp; Monitoring</td>
<td>.611 ***</td>
<td>.540 ***</td>
<td>.568 ***</td>
<td>.584 ***</td>
<td>-</td>
</tr>
</tbody>
</table>

*** p < .01   ** p<.05   * p<.10
As seen from Figure 1, the action phase has a mean of 5.40 which is significantly higher than the means for the phases of intelligence (5.14), analysis and planning (5.11), and strategy selection (4.82). It is, however, not significantly higher than the mean of evaluation and monitoring phase (5.22). Details of the responses at decision task levels for the action phase and the evaluation and monitoring phase are shown in Table 3.

Figure 1. Significant Differences between Decision-making Phases

<table>
<thead>
<tr>
<th>Table 3. Key Decision-making Tasks and Sub-tasks</th>
<th>Mean</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection of IT outsourcing vendor</td>
<td>5.69</td>
<td></td>
</tr>
<tr>
<td>A good track record by the vendor</td>
<td>5.92</td>
<td>.67</td>
</tr>
<tr>
<td>Appropriate talent to support the organisation</td>
<td>5.76</td>
<td>.87</td>
</tr>
<tr>
<td>Reasonable price for the service agreed</td>
<td>5.42</td>
<td>1.03</td>
</tr>
<tr>
<td>Financial stability of the vendor</td>
<td>5.66</td>
<td>.92</td>
</tr>
<tr>
<td>Ability to negotiate performance measurements</td>
<td>5.69</td>
<td>1.19</td>
</tr>
<tr>
<td>Satisfying organisation specific criteria</td>
<td>5.66</td>
<td>.72</td>
</tr>
<tr>
<td>Determining IT outsourcing contract</td>
<td>5.14</td>
<td></td>
</tr>
<tr>
<td>Ability to negotiate the price</td>
<td>5.11</td>
<td>1.32</td>
</tr>
<tr>
<td>Determining business requirements up front</td>
<td>5.35</td>
<td>1.14</td>
</tr>
<tr>
<td>Determining services to be provided</td>
<td>5.71</td>
<td>.99</td>
</tr>
<tr>
<td>Negotiating service levels</td>
<td>5.61</td>
<td>.98</td>
</tr>
<tr>
<td>Ability to withdraw from the contract</td>
<td>4.80</td>
<td>1.50</td>
</tr>
<tr>
<td>Determining the duration of the contract</td>
<td>4.71</td>
<td>1.23</td>
</tr>
<tr>
<td>Possibility of extending the contract</td>
<td>4.73</td>
<td>1.25</td>
</tr>
<tr>
<td>Considering management satisfaction with IT outsourcing</td>
<td>5.22</td>
<td></td>
</tr>
</tbody>
</table>
6. Discussion of Findings

The cluster analysis carried out showed that respondents were a fairly homogenous group when expressing their opinions on the phases and tasks that should be carried out during the outsourcing of IT. This provided an indication of agreement among the respondents for the data they provided. Furthermore, responses for decision-making phases were positively correlated so that they vary to a consistent extent and in the same direction with each other. The study, however, established statistically significant differences in the evaluation of decision-making phases.

As seen in Figure 1, the *action phase* during IT outsourcing decision-making seems to dominate other phases. There are 2 major tasks in this phase, namely the selection of the outsourcing vendor and management of the outsourcing contract. From the details provided in Table 3, it appeared that the criteria for selecting the outsourcing vendor were all highly rated with responses ranging from 5.42 to 5.92. The requirement for a good track record by the vendor was rated the highest (5.92) and also indicated the greatest agreement among respondent because of the lowest standard deviation.

For the task of determining the outsourcing contract, the responses to the decision criteria showed a greater variation and ranged from 4.71 to 5.71. Responses indicated that determining services to be provided (5.71) and negotiating service levels (5.61) were regarded most important. They also had the lowest standard deviations. Least important was the contract period, i.e. determining the duration of the contract (4.71) and possibility of extending the contract (4.73).

The second highest rated phase was *evaluation and monitoring*. Decision criteria responses ranged from 3.95 to 6.18. The need to provide an acceptable level of service had the highest mean response (6.18) with a relatively low standard deviation. Other IT outsourcing objectives rated highly were improved quality of services and products, objectives are consistent with organisational objectives, objectives meet senior managements’ needs, and delivery of cost savings. Less importance appeared to be placed on IT staffing issues such as dealing with redundant staff (4.65) and turning IT employees into internal or external contractors (3.95).

The findings of the study provide guidelines for management of large organisations required to evaluate IT outsourcing as an option. They can now give their attention to those phases and tasks, discussed above, regarded most important in successful IT outsourcing. Since this study highlighted the importance of the action phase, suggestions on how to manage this area are provided below.
7. Suggestions for Managing the Action Phase

The study reflected the findings of Kether and Walstrom (1993) who commented "the difference between successful outsourcing and a disaster may simply be determined by the selection of the vendor and the terms of the contract." (p. ??) It is recommended that a suitable contact methodology be adopted to manage the life cycle of an outsourcing contract. This is outlined below.

7.1 Pre-contract Activities

- **The vendor selection process.** Halvey and Melby (1996) suggested three steps that should be undertaken to select the best outsourcing vendor. In the first step, 'making the first move', potential vendors are identified through comprehensive research. In the next step, the vendors' experiences are explored by talking to their clients and visiting their outsourcing sites. In the third step, a screening process, using the selection criteria identified below, the organisation narrows the list to those that are potentially capable of providing the required services.

- **Vendor selection criteria.** Many criteria have been identified over time (e.g. Halvey and Melby, 1996; Minoli, 1995) and they generally seem to focus on the following: track record, knowledge of industry, technical and industry experience, financial stability, willingness to negotiate, and ability to set up measurement systems.

7.2 Negotiating the Contract Conditions

- **General terms.** Contracts are entered into for varying periods of time and the ability to break the contract because of poor performance is an important issue. Furthermore, there should be a general understanding and commitment by the vendor to support the business objectives of their client. The contract should include details on pricing mechanisms for the addition or deletion of base services.

- **Specific terms.** The contract should clearly indicate the scope and levels of services to be performed. Performance standards for each of the services should be established and include response times, processing priorities and systems availability. These are not easy tasks to carry out and require a great deal of insight into current and future IT and business activities. Appropriate penalties should be determined when service levels become inadequate.

7.3 Post-contract Management

- **Performance management.** Service levels need to be explicitly detailed and quantified in such areas as cost reductions, service delivery, service improvements, and user satisfaction.

- **Contract compliance.** A recent study (Kern and Willcocks, 1999) revealed an interesting contact control issue. They found that while legal experts can be consulted for contract compliance, enforcement is very much dependent on client and vendor account managers.

8. Conclusion and Study Limitation

The main conclusion that can be drawn from the findings of the study is that ‘actioning’ IT outsourcing is the most important decision-making phase. This appears to be largely
influenced by the track record of the potential vendor and the ability to provide high service levels for the client. The need for an acceptable level of service is reinforced by the finding that management places great importance on this when they evaluate and monitor the outcome of IT outsourcing.

While the research was meticulously designed and the data collected indicated a high degree of reliability, a potential criticism can be levied against the number of 44 useable responses. This sample size was largely due to the high number of uncompleted questionnaires returned because of incorrect addresses on the database and lack of information about organisational IT outsourcing. No data currently exists in Australia on the extent of IT outsourcing, viz. number and type of organisations, scope of IT outsourcing, etc. This study is among the first to provide empirical evidence on how the important activity of decision-making for outsourcing IT is currently managed.

**References**


