

# Understanding ITO decisions and implementations in Malaysia public healthcare sector: The evidence from a pilot case study

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**Abstract**—As IT Outsourcing (ITO) grows in complexity, there is a call for effective management of ITO relationship to reduce risks. ITO relationship receives a lot of attention from researchers recently. Many studies, however, are conceptual or hypothesis-testing in nature. In addition, no one study focuses on full and comprehensive ITO decisions and implementations using Simon’s stage model as a framework of inquiry. Thus, this study adopts case study research and grounded theory to investigate in detailed the ITO decisions and implementations of a pilot case in Malaysia public sector. In addition, we perform literature review, websites, documents, news as well as interviews. Our findings indicate that Malaysia practice is not much difference from developed countries except for the Asian cultural values still a dominant factor in local service providers. The research finds that public sector lacks IT resources competences and capabilities while relationship exchange varies from one case to another. Many working relationship factors are generated from iterative data reduction processes. Hence, this study contributes to literature as well as Malaysian ITO practical reference for business managers.

**Keywords**- *IT outsourcing, decisions and implementations, relationship, resource competence and capabilities, social exchange, success, public sector, Malaysia*

## I. INTRODUCTION

Harvard Business Review lists outsourcing as one of the best business ideas of the past 100 years. In developed countries, private and public sectors resort to ITO for many reasons. In Malaysia, however, ITO is practised a few years later through public sector modernisation programmes. Since then, ITO has evolved to complex arrangements and implementations beyond traditional commodity buyer-seller relationships. Dyadic or multi-dyadic relationships entered by both parties signify that businesses models change rapidly. Businesses have to adapt to these changes innovatively [3] [4] [18].

Thus, understanding the important ITO decision and implementation issues is what the current research aims to achieve. The primary question such as “How could public sector agencies attain maximum benefits of ITO from approaches they adopted?” sets the tone of the study. Further to that, questions on “How initial decision process was done?” and “Why and how did they decide and implement the ITO projects?” and “What or which problems they encountered?” will provide sufficient answers to understand the ITO phenomenon and best practices in public sector generally and health sector specifically. In answering these

questions, we first describe the empirical findings that emerged from our grounded theory (GT) and then develop a theoretical framework that conceptualizes the findings in terms of three central categories: strategic conduct, institutional context, and change process.

The paper is structured as follows. The first section presents on related literatures followed by description of the research design for the study. The next section presents the research findings, describing the experience of the pilot Case Wahid. The conclusion part wraps up the gysts of the paper.

Specifically, the study aims to answer the followings:

- How ITO decisions and implementations in Malaysia public healthcare sector agencies are done?
- What motivates ITO decisions in Malaysia public healthcare sector agencies?
- What are the problems and challenges faced during ITO implementations?
- How can the ITO relationship be successfully managed?
- What are the critical factors influencing ITO relationship efficacy?
- How can resources competences and capabilities contribute to ITO relationship efficacy?

## II. LITERATURE REVIEW

From literatures, early studies on ITO focus on determinants, motivations and success factors or also known as decisions stage. As ITO researches evolve, more researches that focus on the links between ITO and resources competences, capabilities and relationships (also known as implementations stage) begin to take place. In developed countries like US and UK, for instance, studies on ITO and relationship help us to understand various areas in outsourcing stages that shape ITO decisions and implementations.

In contrast to the West, ITO has received little academic attention in the non-Western context. In a developing country like Malaysia, however, early researches focus on ITO motivations and implementations [21] [18], practices [6], strategy [3] [18] and success factors [12]. A search on literature hardly finds any studies in Malaysia that focus on resources competences, capabilities and relationship during decision and implementation stages in one study or different studies. In addition, no case study research (CSR) on decision and implementation is conducted in Malaysia public sector. Furthermore, ITO in the public sector is particularly under-studied [1] [9] especially in Malaysia.

Moreover, reference [14] shows that Simon’s stage model can be applied to ITO stages and this is where a CSR

in Malaysia public sector can contribute significantly the findings on new or underexplored areas of research towards ITO literature. Literature search also suggests that research in this area is still at its infancy stage. There is still very much to be researched and learned in order to understand the nature of ITO decision and implementation in the Malaysian public or even private sectors.

This argument is supported by [14] and [25] that studies on these areas are more established in developed countries compared to developing countries. Hence, there is a gap for such noble studies to be undertaken to understand more about ITO decision and implementations especially on resources competences, capabilities and relationship in developing countries. This type of research is believed to be the first of its kind in Malaysia context especially.

In the last ten years, there seems to be rapid adoption of ITO in Malaysia public sector. Understanding this development particularly issues surrounding their decisions and implementation success is greatly important particularly in the Malaysian context. The importance of research into this area is further underscored by [9] argument that in order to reach the magnitude of improvements ascribed to ITO, organizations need to undertake proper risk assessment and effectively manage outsourcing relationships. These all have to be done before and during the service provider (SP)/technology selection assessment and contract negotiation process. Lockett (as cited in [3]) argues that many IT projects in general failed to meet their objectives, due to a lack of focus in the part of planning concerning people and organizational issues and not because of technology. The need to understand what are the key factors, their effects and interactions in the decisions and implementations of ITO in the Malaysian public sector agencies, calls for research into this area.

### III. RESEARCH DESIGN

The paradigm of this study is interpretivist whereby it assumes that reality at relative and subjective meaning of the reality is constructed and reconstructed through human and social interaction process [30]. Epistemologically, this paradigm assumes that scientific knowledge is obtained through understanding of human and social interactions. An interpretivist researcher aims to understand a phenomenon through meanings that people assign to them.

The study employed mixed method approach using the sequential exploratory strategy in data collecting and analysis [10]. Mixed methods approach has many advantages, among which is it enables researchers to capture many dimensions of an information systems research [28].

Reference [8] and [15] adopted pluralist approaches in their studies and they concluded that it is a valid and highly useful approach in information systems research. The initial and dominant approach is the qualitative approach followed by the quantitative approach. Quantitative results are used to elaborate and enhance the interpretation of qualitative findings. In this paper, only qualitative findings are reported.

The CSR and GT approaches are useful here because they allow a focus on contextual and processual elements as well as the action of key players associated with ITO decisions and implementations, elements that are often omitted in IS studies that rely on variance models and cross-sectional, quantitative data [20] [29]. While the findings of this GT study are detailed and particularistic, a more general explanation can also be produced from the results [16]. Yin [24] refers to this technique as "analytic generalization" to distinguish it from the more typical statistical generalization that generalizes from a sample to a population. Here the generalization is of theoretical concepts and patterns. We further extend this generalization by combining the inductive concepts generated by the field study with insights from existing formal theory, in this case, from the ITO literature (a strategy recommended by [7]). The outcome is a general conceptualization of the decisions and implementations especially relationship model associated with ITO decisions and implementations that both contributes to our research knowledge and informs Information system (IS) practice.

#### A. The Grounded Theory Approach

Data were collected during a period of three months starting with detailed document, intranet and other reviews followed by interviews. The case site was one of the important departments in the Ministry. Prior to obtaining access, a formal request letter was sent to the Head of IT Division. The site was chosen due to its contract nature and services and functions outsourced as well as a successful project. The participants were selected among the management, technical middle managers and executive staff who directly involved in the ITO project.

In congruence with the GT methodology, semi-structured in-depth interviews were conducted which lasted between fifty to ninety minutes, in private and mutually agreed location and time. Participants were asked to recall situations or incidents in the project that shaped their understanding, perception, views and behavior as a participant or stakeholder of the project. Among the issues discussed were ITO decisions and implementations, actions taken to overcome or handle situations, problems or challenges and the underlying reasons for their actions. They were also asked to elaborate on the critical elements that contributed to their success or failure in the project. Interview protocol was developed to ensure consistencies throughout data collection. Interviews are tape-recorded to ensure all the details were captured. In minimizing the tape-recording drawbacks, assurance of the confidentiality on the issues discussed was made before the interview.

Theoretical sampling guided the process of selecting participants and directs the data collection process. A total of 5 service receiver (SP) and 1 service provider staff were interviewed, comprising 2 females and 4 males. They represent higher management, middle management, technical IT and executive management level staff. All interviews were transcribed in verbatim after each interview by the researchers. Data was analyzed and coded based on the GT methodology. Thematic analysis [27] and three levels of GT coding were performed starting with open coding, axial

coding and selective coding. Initially, in the open coding, we started with sentence by sentence analysis. In second round, we analysed segments of the interviews because most of the time, the main idea was embedded in a story which requires more than a sentence to elaborate. To overcome the difficulty in assigning the code words, themes or categories to sections of interviews that identified pertinent concepts, the researcher relied on theoretical memos for clarity on ideas. Paradigm modeling, an analytical tool used to identify the key themes and cluster them into broad themes which eventually summarizing and categorizing the emerging strategy in a structured form of causal condition → phenomenon → context → intervening condition → action strategies → consequences [13] assisted the researchers in the analysis phase. Due to limited space, themes or categories identified are not elaborated here.

### *B. Empirical findings*

From the analysis, the case study of Wahid is presented below. For ease of understanding, the authors summarise them in tabular formats in addition to explanatory stories.

The public sector, especially the Ministry agencies provide continuous training and education for their staff. Case Wahid specialises in the management, administration and provision of teaching and learning to the Ministry staff especially doctors, nurses and teacher trainers. There are many learning centres within the Ministry across Malaysia totalling thirteen sites. This project, however, involves three pilot sites only. Table I provides the summary according to Simon's stage model mapped to ITO stages applications [14]. The summary findings below are further described and illustrated in the following sections.

### *C. Case Wahid System Needs*

The traditional tacit-based knowledge management system is still prevalent in Training Division whereby education system relies heavily on teachers' and tutors' tacit knowledge and experience. Not much data and information has been recorded explicitly on the curriculum and learning materials. As such, when the teachers and tutors leave their jobs then all the knowledge and experience are brought with them. Hence, it is a loss for the division. This was the main reason that Project Wahid was called for. This project was implemented in three pilot sites consisting of the headquarters, Port Dickson and Alor Setar sites.

### *D. ITO Considerations of Case Wahid i.e Decision Making Stage*

Any ITO project is initiated by project owners at division or agency levels. In this project, BPM acts as an IT advisor and assists on any IT-related matters. Initially, the project owner division put up a proposal for campus and learning management system for them and was then submitted to MAMPU for further consideration. Through an appointed panel, any decisions for/against any project were made here. Earlier, service receiver and provider representatives had met and negotiated on the project twice. Many issues were discussed on the services to be rendered and also the negotiated prices. Upon agreement, a proposal was prepared

for approval. Consequently, this project was procured through direct negotiation basis.

Strategically, the Ministry approved the project based on the negotiated proposal for many reasons including the National Plan for Public Sector automisation and modernisation initiatives and others. ITO has been recognised in the Public Sector led by MAMPU and IT Divisions of each Ministry. Since the proposed project involves a big scale investment on the part of public sector, ITO is thought to be more appropriate compared to normal supply and install project. Consequently, a contract is drawn and effected for eight months. As required by public sector practice, term of reference is presented in the kick off meeting and other relevant documents. The ITO contract highlights scope of work, hardware and software specifications, application technical and functional specifications, forms, timeline, performance bond, training and change management as well as project committees and team functional chart.

### *E. Implementation of Case Wahid project*

The strategic planning and decision-making was handled at the top management level whereby Steering Committee was formed to handle this. Once the selection of SP was finalised, Implementation Committee was set up to carry out the project until completion. This committee monitors, discusses and solves any implementation issues. Any technical issues that could not be solved here should be escalated to technical committee. Only three meetings at Steering Committee level is planned throughout the entire project duration while Implementation committee meeting is planned every month. After the project was completed, Steering Committee only met twice and Implementation Committee met four times. Technical meeting at BPM level was also arranged. Project secretariat is handled by the project owner. Despite this, SP reports on its project development stage on monthly basis via email to SR. So, other means of communication such as telephone, emails and individual meetings are also used to enhance relationship as well as monitor and solve problems quickly.

Initially, a kick-off meeting started the project initiation and follows by a user requirement study (URS) undertaken by SP. Consequently, SP had to make necessary amendments to modules and others suggested by SR. Many issues were raised during meetings which indicate problems of SP, SR, systems and others. Despite SP delivered its promises, the system does not meet what SR raised during initial meeting such as interfaces with other current systems, financial module, local content and others due to many reasons or constraints. At closing stage, induction course and basic ICT training and user acceptance test are carried out appropriately. Phase 1 training for headquarters staff and systems trainings for two pilot sites are given by SP.

### *F. Difficulties, Challenges and Problems of Case Wahid*

The evidences on these issues were collected from several meetings, discussions and conversations with personnels involved and via document reviews and observations. The researcher analysed the information and

summarised some of the main problems and challenges encountered during the project which include:

1) Organising and management of SR's team such as meetings and others. Due to each staff's commitment with his own daily routines and schedules, bringing all key team members together into a meeting was a challenging task. Most often that a few members could not make it to the scheduled meetings due to many job-related and personal reasons.

2) Not enough competent and capable IT resources. Both Steering committee meetings highlighted the need for IT officer and assistant positions in headquarters as well as in each location of the projects nationwide. So far, no full time permanent IT staff was available even in headquarters division to verify technical issues. Presently, only a part-time officer and assistant assisted in IT area in the division on a one-year contractual basis. There were many limitations of part-time staffs.

3) Had to rely on service providers' capabilities and competences mostly. BPM has many levels of IT staffs who provide inputs and advices on IT-related areas in the Ministry. However, each of the BPM personnel has to oversee many of other agencies' projects concurrently. This resulted in suboptimal focus and efficiency due to time and load constraints.

4) Changing of SR chairpersons at Implementation committee level to monitor and ensure the project was carried out as planned. This posed problems for new chairperson to understand the project from the beginning and imparted her knowledge and experience for the success of the project. No change in SP team members however.

5) The project did not follow tender process since it was directly negotiated. This had impact on project team members and users since the project was entered based on different objectives of the higher management and users. Hence, no proper project proposal or planning was done to ensure the project achieve what actually the division needs from the project.

6) Another challenge was to identify a suitable monitoring team for this project at headquarters level to explain the importance of the system to staff or users and to identify any overlap systems with proposed system that produces redundant information. In addition, there was also a concern on the readiness of the division to set up a technical team to take over responsibilities from SP after handover so that the system is fully optimised in terms of usage and maintenance.

7) Short project duration was a big limitation for matters raised in meetings such as interface with other systems, local content, finance module and others that could not be implemented and satisfied.

Lessons learned from the project:

- To streamline and standardise curriculum and learning contents for all training institutes under the division.
- To develop software by stages before local content can be fully used applicably.
- To ensure that system usage is fully optimised by all staff and that level of usage competence among staff is further improved.

- To prepare a thorough project proposal for a project and advertise for a competitive tendering exercise.

#### *G. Resources competences, capabilities and relationship factors*

Resources play pivotal roles in ITO project decisions and implementations. In such a big project, there were many stakeholders involved either directly or indirectly depending on their positions, competences and capabilities. It is evident that public sector has structured organisations and procedures which require representatives from proposal initiator department, division or agency itself, procurement division, finance division, legal division, MAMPU and others to follow. From the analysis, financial resource was sufficient because they were agreed upon award of contract but SR management and BPM respondents urged that SP be more transparent in their pricing. However, the questionable issue was the selection of suitable manpower for the SR project team. It seemed that technical committee assistance in giving advice to the steering and implementation committees was not sufficient as indicated by one SR interviewee. In addition, the division did not have permanent IT officer who could oversee the project from technical aspect continuously. Technical committee representative was not on the location on full-time basis as argued by one interviewee. Another interviewee argued that unsuitable users were selected for project team members in URS study. In addition, most of the users and key team members gave priority to their core jobs first and only attended to project meetings when they were free. This had effect on the staff commitment towards the project. Moreover, this project was the first IT project in the division and hence they did not have similar experience previously.

On the competence and capability aspect, SR acknowledged that internal resources were not up-to-date in terms of technology and wide technical experience. This is one of the main reasons they outsourced. All interviewees assert that technical IT, management and business process knowledge are required by SR in order to achieve better outcomes. Project owners understand well on their business processes but the problem is to get the right people in the team and standardise all the business processes according to ISO standard, for example, to avoid confusion of responsibilities. In addition, the Ministry IT division (BPM) is competent and capable in their jobs but they also have other projects to look after simultaneously. To ensure quality, as required by MAMPU, the IT division annually conducts all ITO projects performance review and audit.

All interviewees agree that SP delivers the system as specified in contract and URS and within time. The inability of the system to integrate with existing systems and add new modules make it less attractive to technical and user team. SP mentioned their previous project with another ministry as their reference but the SR team did not verify that through reference checking. SP does not have any international certifications to show their level of competences and capabilities in system integration and development jobs.

#### H. Management of ITO relationship

All interviewees agree that good relationship between SP and SR is crucial to ensure the project run smoothly and consequently leading to project success. One interviewee firmly stated that “but at the time being, so far, we have good working relationship with SP because they did not say we are on our own once the project is finished. No. They still come back to us. They still report to us what is happening on the ground. Meaning there is a mutual cooperation here.” He went on “The most important one is communication. If we have good communication, we can understand. We can understand their point of view. They can understand our point of view. You know. Therefore, from there we develop cooperation. Flexibility also exists. If we do not listen, we do not communicate with each other, there will be conflict. When conflict happens, this project will not run smoothly.”

In short, both parties in the relationship utilised formal and informal channels of communication to solve any issues. Informal discussions, however, were later formalised through minutes of meetings. Contract is believed to be an important factor for SP to honour since detailed terms and clauses as well as system specifications and others that SP must fulfill were documented. In addition, performance guarantee also acts as a security for SR and compliance for SP to perform. Both parties must reciprocate and exchange with one another for agreed benefits and rewards. SR assisted SP to accomplish all required tasks while SP acted in return to receive rewards for the services rendered for SR.

#### IV. CONCLUSION AND FUTURE RESEARCH

This paper has presented the findings of a CSR and GT study into the ITO decisions and implementations in-detailed for Case Wahid pilot study. The stories concern the problems, challenges, difficulties and relationship management. It is important to note that by taking into account the existing institutional, organizational and SP contexts and SR and SP's intentions for and actions around ITO, the nature and locus of relationship associated with decisions and implementations as well as the consequences of these processes can be anticipated, explained, and evaluated. The relationship emergent theory indicates that such relationship emerges from particular interactions of institutional, organizational and SP contexts, key players' intentions and actions, and the ITO technology. The findings and framework articulated here have implications for both the research and practice of ITO.

In the next stages, we will further replicate to another four case agencies in the Ministry. In addition, a survey to staff in the five cases who have involved in any ITO projects previously can provide more evidence for triangulation. Consequently, a grounded stage-based practical relationship model will be developed from the study.

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TABLE I. A SUMMARY OF CASE WAHID ITO STAGES APPLICATION

Simon's model application	Case study qualitative findings
A) Phase 1: Decision Process	
1. Why: Determinants and advantages /disadvantages	a) Rationale/reasons: <ul style="list-style-type: none"> <li>Previously use traditional methods of teaching and data recording system.</li> <li>Part of modernisation initiative for the division/agency towards more ICT usage among its staffs, trainers and students. So far, its usage is not encouraging.</li> <li>A few systems have been developed previously but no satisfactory outcomes.</li> </ul> b) Advantages/disadvantages: <ul style="list-style-type: none"> <li>The proposed modules have been used by some universities overseas. So, it is an advantage for the division to use tested modules rather building from scratch. It saves a lot of time and effort.</li> <li>Tender process may result in more competitive outcomes compared to direct negotiation basis. Despite this, user requirements process is extensive.</li> <li>Some modules cannot be developed due to time and integration constraints.</li> </ul>
2. What: Degree of ownership and degree of outsourcing	<ul style="list-style-type: none"> <li>Project is owned 100% by agency</li> <li>ITO is traditional selective type with single service provider</li> <li>Original contract period is 8 months (extendible) plus one more warranty year.</li> <li>Comprising information system packages, modules, hardware and software, network installation, training and change management programs.</li> </ul>
3. Which: Guidelines, procedures and stakeholders of decision initiation, evaluation and making	<ul style="list-style-type: none"> <li>Follow directive for public sector and MAMPU guidelines for entering into ITO arrangement</li> <li>Stakeholders involve agency/department (project owner), finance and legal ministries as well as Information Management Division (BPM, MINISTRY)</li> <li>Initiation by project owner at division/agency/department level and escalated to MAMPU for consideration.</li> <li>Two direct negotiation meetings between service provider and MINISTRY, especially procurement division, demarcate the early roles and responsibilities and project specifications. Increase in project scope, bill of quantities variations and others are confirmed during the meetings.</li> <li>Evaluation/decision making is collectively performed by the parties involved in procurement.</li> </ul>
B) Phase 2: Implementation	
1. How: Service provider selection, relationship building and relationship management	<ul style="list-style-type: none"> <li>Service provider is selected after two direct negotiation meetings with MINISTRY</li> <li>Relationship of dyadic 1:1 between service provider and receiver</li> <li>Both parties are governed by contract</li> <li>Pilot project is carried out at three sites/states</li> <li>Now new company is created or staff transferred</li> <li>At service receiver, steering committee and implementations committee is established</li> <li>Only two steering committee meetings are held during the project life.</li> <li>Implementations committee meetings are held almost every week initially and later on is on fortnightly basis. Most communications are through telephone calls, emails and on-call meetings. This involves SP and SR.</li> <li>Any issues are solved in the meetings. No major issues are observed in minutes of meetings.</li> </ul>
2. Outcome: Experience/learning, types of success and determinants of success	<ul style="list-style-type: none"> <li>The project is not considered totally successful since no proper planning was done due to improper evaluation and decision making initially.</li> <li>Some modules achieve their objectives.</li> <li>User acceptance is reported welcoming though no full statistic or evaluation reports are available to the researchers.</li> <li>Important measures of success are user acceptance and satisfaction.</li> <li>Technical performance report and audit are done periodically after warranty period.</li> </ul>